BAU BAHÇEŞEHİR UNIVERSITY

SDG 9: INDUSTRY, INNOVATION AND INFRASTRUCTURE



2024-2025

BAU AT A GLANCE

Since its foundation in 1998, the vision of BAU has been to be a global university known for its contribution to scientific, technological, and cultural knowledge through innovative education models and research approaches that reflect international standards as well as service to society. Currently, BAU Global Network comprises of 5 universities (Istanbul, Washington D.C., Berlin, Cyprus, Batumi), 5 liaison offices (BAU Global Azerbaijan Jordan, Uzbekistan, Mongolia, Pakistan) and 5 language schools.

Bahçeşehir University (BAU) is committed to advancing the wellbeing of local and global communities by integrating the United Nations Sustainable Development Goals (SDGs) into its institutional governance, operations, organisational culture, educational programmes, academic research and stakeholder partnerships. Through this integrated approach, BAU seeks to align its academic mission and institutional practices with sustainable development priorities and contribute to positive societal change.

Bringing together staff, students and alumni, BAU promotes a university community guided by ethical conduct, social responsibility and global citizenship. The University encourages its members to recognise their responsibilities towards one another, wider society and the environment, and to apply their knowledge and skills to building a more inclusive, equitable and sustainable future.

BAU IN THE TIMES HIGHER EDUCATION

BAU participates in the Times Higher Education (THE) Impact Rankings since 2019. According to the current rankings, BAU belongs to the 1000-12000 band in the World University Rankings, 59th in the Impact Rankings and the 251-300 in the Asia University Rankings 2026. Also, BAU is ranked as the top university in Türkiye.

The university continuously increases its standing in categories related to the UN Sustainable Development Goals. As of 2026, BAU holds the following standings in the THE Impact Rankings;

- 2nd in Gender Equality
- 6 th in Quality Education
- 77 th in Peace, Justice and Strong Institutions
- 89 th in Partnership for the Goals
- Ranks between 101-200 in Reducing Inequalities
- Ranks between 201-300 in Industry, Innovation and Infrastructure

The University takes the above-mentioned rankings as evaluation criteria for progress regarding its adherence and contribution to the UN Sustainable Development Goals and will continue to report its advancement in the rankings on a yearly basis.

An Integrated Ecosystem for Industry, Innovation and Infrastructure at Bahçeşehir University

A. INSTITUTIONAL COMMITMENT AND GOVERNANCE FOR SDG 9

Bahçeşehir University demonstrates a strong and structured commitment to Sustainable Development Goal 9 (Industry, Innovation and Infrastructure) through its institutional strategies, policies, and governance mechanisms. This commitment is anchored in the university's official policy framework and reinforced by a culture of research integrity, transparency, and sustainable growth.

1. Strategic and Policy Framework

The University's Research and Development Policy establishes the foundation for advancing excellence in science, innovation, and technology transfer. It outlines clear objectives for fostering interdisciplinary collaboration, strengthening research infrastructures, and translating academic knowledge into societal and industrial impact—core pillars of SDG 9.

See the mentioned policy; https://kms.kaysis.gov.tr/Home/Goster/207062?AspxAutoDetectCookieSupport=1

Aligned with this policy, the Bahçeşehir University Strategic Plan 2024–2030 defines the institutional roadmap for research and innovation under two key objectives:

• A2 – Excellence in Research and Development, which ensures that BAU's research organization and operations function effectively to generate global impact, and

• A6 – Financial Sustainability, which supports continuous investment in infrastructure and innovation capacity.

These strategic priorities also advance SDG 4 (Quality Education) by promoting research-based learning, and SDG 17 (Partnerships for the Goals) through multi-stakeholder collaboration.

See the mentioned strategic plan; https://cdn.bau.edu.tr/content/ssm2leqyuekp8-BAU%20SP%202024-2030.pdf

2. Research Integrity and Operational Governance

Beyond its research policy, Bahçeşehir University maintains a comprehensive set of guidelines ensuring that all research activities are conducted ethically, transparently, and responsibly. These include the Ethics Policy, Research Misconduct Policy, Conflict of Interest Policy, Anti-Fraud, Bribery and Corruption Policy, Financial Procedures Policy, Incoming Funds Management Policy, Travel and Expense Policy, Risk Management Policy, and Health and Safety Policy.

Together, these frameworks safeguard accountability and good governance across all innovation and industry-engagement processes, reinforcing BAU's adherence to the principles of integrity, openness, and innovation that underpin SDG 9.

Ethics Policy: https://kms.kaysis.gov.tr/Home/Goster/207069

Research Misconduct Policy: https://kms.kaysis.gov.tr/Home/Goster/207066

Conflict of Interest Policy: https://kms.kaysis.gov.tr/Home/Goster/207067

Anti-Fraud, Bribery and Corruption Policy: https://kms.kaysis.gov.tr/Home/Goster/207068

Financial Procedures Policy: https://kms.kaysis.gov.tr/Home/Goster/207071

Incoming Funds Management Policy: https://kms.kaysis.gov.tr/Home/Goster/207074

Travel and Expense Policy: https://kms.kaysis.gov.tr/Home/Goster/207073

Risk Management Policy: https://kms.kaysis.gov.tr/Home/Goster/207074

Health and Safety Policy: https://kms.kaysis.gov.tr/Home/Goster/207070

3. Institutional Structures Supporting Innovation and Industry Engagement

Within the research governance structure, the Directorate of Research Policies, Technology Transfer and Entrepreneurship (BAUTTO)—serving institutionally as the Dean of Research—acts as the principal driver of innovation management at Bahçeşehir University. Guided by its motto of delivering services at private-sector speed, BAUTTO transforms research outputs into societal and economic value through:

• managing intellectual-property rights and commercialization processes,

• facilitating university–industry collaboration and contract-based R&D,

• supporting access to national and international funding programs, and

• promoting entrepreneurship and innovation across academic departments.

https://tto.bau.edu.tr/en/

BAUTTO also oversees implementation of the Bahçeşehir University Intellectual and Industrial Property Rights and Commercialization Directive and the Public and Private Sector Consultancy Services Directive, ensuring that knowledge transfer activities are legally, ethically, and strategically aligned with both national priorities and the UN SDGs.

Through these coordinated mechanisms, BAUTTO functions as the institutional bridge linking academic research, industry partners, and public institutions thereby contributing directly to the development of resilient infrastructure, sustainable industrialization, and innovation-driven economic growth.

4. Internal Funding and Sustainability Mechanism

Complementing its governance framework, Bahçeşehir University maintains an internal research-funding policy through the Scientific Research Projects Directive (BAUBAP). BAUBAP provides institutional resources to strengthen innovation capacity, prototype development, patent applications, and commercialization activities. As such, it represents the university's dedicated mechanism for sustaining SDG 9-aligned innovation from idea to market readiness, while simultaneously supporting SDG 8 (Decent Work and Economic Growth) by fostering new employment and entrepreneurship opportunities.
https://tto.bau.edu.tr/en/scientific-research-projects-baubap/

B. BAU INNOVATION ECOSYSTEM AND INSTITUTIONAL MECHANISMS

Bahçeşehir University sustains an integrated innovation ecosystem that bridges academia, industry, and society, translating research outcomes into tangible technological and economic value. This ecosystem comprises a series of interconnected units and programs that collectively strengthen the University's contribution to SDG 9 (Industry, Innovation and Infrastructure).

1. Directorate of Research Policies, Technology Transfer and Entrepreneurship (BAUTTO)

Operating under the Dean of Research, the Directorate of Research Policies, Technology Transfer and Entrepreneurship (BAUTTO) serves as the central coordination body for the University's research and innovation ecosystem. BAUTTO enables the conversion of academic outputs into commercial, social, and environmental impact by:

- managing intellectual-property portfolios, patenting, and licensing,
- facilitating industry partnerships, co-funded R&D, and consultancy agreements,
- promoting participation in TÜBİTAK, Horizon Europe, and other international funding programs, and
- mentoring entrepreneurial faculty and students toward venture creation.

With its agile structure and private-sector efficiency ethos, BAUTTO plays a pivotal role in ensuring that innovation processes—from idea generation to commercialization—are sustainable, ethical, and aligned with global priorities.

This structure contributes not only to SDG 9 but also to SDG 17 (Partnerships for the Goals) through its extensive industry and public-sector collaborations.

2. BAU Hub – Incubation and Entrepreneurship Center

The BAU Hub Incubation and Entrepreneurship Center acts as a catalyst for early-stage innovation and start-up growth. It provides an end-to-end incubation model that supports idea validation, prototype development, and business scaling through:

• mentorship programs led by academics and industry experts,

• acceleration modules and networking events with investors,

• Demo Days, hackathons, and innovation challenge series, and

• continuous access to BAU's research and technical resources.

BAU Hub hosts more than 70 active start-ups and has facilitated the growth of ventures in fields such as AI, health technologies, fintech, and creative industries. By promoting entrepreneurial mindsets and sustainable innovation, BAU Hub directly supports SDG 9 and SDG 8 (Decent Work and Economic Growth) through job creation, start-up investment, and technological advancement.

https://bau-hub.com/en/homepage/

3. BUG Lab TEKMER – Technology Development Centre for the Gaming and Creative Industries

Established with the support of the Small and Medium Enterprises Development Organization (KOSGEB) — a national public agency under the Ministry of Industry and Technology of the Republic of Türkiye — BUG Lab TEKMER functions as a certified Technology Development Centre (TEKMER) dedicated to advancing the creative and digital-gaming industries.

As part of Bahçeşehir University's innovation ecosystem, BUG Lab TEKMER integrates the full education–production–commercialization cycle for digital creativity. It unites students, researchers, entrepreneurs, and established studios within a single structure that supports the entire innovation journey—from idea generation and prototyping to company formation and international growth.

• The centre builds upon BUG Lab's more than ten years of experience in game design and development, including Türkiye's first Bachelor's and Master's programmes in Digital Game Design.

• As a TEKMER-certified facility, BUG Lab provides a structured, two-tier incubation model tailored to different entrepreneurial maturity levels: a Pre-Incubation (Level 1) phase for idea and prototype development, and an Incubation (Level 2) phase for incorporated start-ups and growth-stage studios.

• The centre offers end-to-end support including mentorship, business development, investor access, legal and IP consultancy, workspace solutions, and professional networking opportunities.

• By connecting education with production, BUG Lab TEKMER enables a continuous talent pipeline for Türkiye's fast-growing game industry, while hosting both emerging start-ups and established studios that serve the broader gaming ecosystem.

Through this education-to-industry model, BUG Lab TEKMER enhances research–industry linkages, fosters technology commercialization, and strengthens the national infrastructure for creative digital production. Its contributions extend across multiple Sustainable Development Goals:

• SDG 9 (Industry, Innovation and Infrastructure) by developing resilient creative infrastructures and promoting inclusive industrialization in the digital-games sector.

• SDG 8 (Decent Work and Economic Growth) by generating employment and entrepreneurship opportunities in the creative economy.

• SDG 4 (Quality Education) by embedding practical, innovation-driven learning within academic curricula.

• SDG 12 (Responsible Consumption and Production) by encouraging sustainable, resource-efficient production processes in digital media and interactive technologies.

In summary, BUG Lab TEKMER represents a unique national model for university-led, government-supported innovation. It demonstrates how education, creativity, and technology can converge to build a sustainable and globally competitive ecosystem in line with SDG 9.

https://buglab.ist/en/home-page

4. BAU Leuven International Innovation & Technology Liaison Office (Belgium)

The BAU Leuven Office, established on 23 May 2022, serves as Bahçeşehir University's strategic liaison point for research, innovation, and entrepreneurship in Europe. Located in Leuven, just 20 km from Brussels, the administrative heart of the European Union, the office enables direct participation in the EU's research, innovation, and technology networks, particularly Horizon Europe, EIT, and Eurostars frameworks.

Functioning as a non-promotional academic and strategic cooperation office, it focuses exclusively on international R&D collaborations, technology transfer partnerships, and the internationalization of innovation-driven Turkish enterprises. It does not operate as a recruitment or representation office but as an institutional bridge between Türkiye and Europe's high-tech ecosystem.

Strategic Objectives and Achievements

Through its proximity to KU Leuven—one of Europe's leading universities in research funding—the office has facilitated access to high-impact research collaborations, consortium memberships, and European R&D calls. Between 2022 and 2024, BAU researchers participated in multiple Horizon Europe proposals (such as CoolMind, Transilient, CIRCLE-ART, GRACE, and ENRICH-TT), with several reaching threshold or second-stage evaluation. These initiatives strengthen BAU's institutional capacity for international research funding and contribute to SDG 17 (Partnerships for the Goals).

The Leuven Office has also established cooperation channels with international research infrastructures such as IMEC and NERF, supporting the donation of advanced laboratory equipment to BAU and promoting researcher exchange under the framework of Türkiye's Higher Education Law (Article 2547, Additional 46).

Internationalization of Turkish Technology Firms

In alignment with BAU's internationalization policy and SDG 9's emphasis on sustainable industrial growth, the Leuven Office supports Turkish innovation-oriented enterprises in expanding into European markets.

Through the BAU Hub Belgium program, the office has:

• Assisted 10 Turkish ICT and engineering companies (including Hit Bilişim, Electra IC, and Aura Bilişim) in establishing their entities within the Flanders region of Belgium,

• Provided access to regional funding mechanisms, business acceleration services, and EU-based incubators such as Start it @KBC Global,

• Guided 9 early-stage entrepreneurs through a multi-country acceleration model across Belgium (Leuven), the Netherlands (Maastricht), and Germany (Aachen), where they engaged in company formation, investor meetings, and export-oriented strategic planning.

As a result, Turkish start-ups founded by BAU academics—such as Mol-E, Omnisense, and Auto Train Brain—have entered the European market, contributing to the internationalization of Türkiye's innovation output and strengthening the global visibility of its technology ecosystem.

https://bau-hub.com/en/hub-belgium-2/

Transition Toward UTPO

By 2025, the Leuven Office will evolve into the International Technology and Marketing Office (UTPO), supported by the Ministry of Trade of the Republic of Türkiye.

This transition formalizes its role under the national UTPO framework, enabling long-term government-backed operations to enhance export capacity, market integration, and cross-border technology commercialization.

The transformation reflects BAU's strategic vision to institutionalize international entrepreneurship and research collaborations under a sustainable, policy-aligned model.

The Leuven Office and its forthcoming UTPO structure exemplify Bahçeşehir University's dedication to advancing global partnerships and innovation ecosystems in line with the UN Sustainable Development Goals:

• SDG 9 (Industry, Innovation and Infrastructure): by fostering technology transfer and industrial partnerships across borders, strengthening resilient digital and R&D infrastructure.

• SDG 8 (Decent Work and Economic Growth): by creating employment and export opportunities for Turkish technology companies in European markets.

• SDG 17 (Partnerships for the Goals): by deepening international cooperation between academia, government, and industry.

Through the Leuven–Brussels axis, Bahçeşehir University demonstrates how national innovation ecosystems can achieve sustainable globalization, transforming research excellence into international economic and social impact.

5. BAUBAP – Internal Research and Innovation Funding Program

The Bahçeşehir University Scientific Research Projects Program (BAUBAP) serves as the university's core internal mechanism for supporting research, development, and innovation. Rooted in the University's commitment to SDG 9 (Industry, Innovation and Infrastructure), BAUBAP ensures a continuous institutional investment in scientific excellence, infrastructure capacity, and innovation-driven growth.

Managed under the Directorate of Research Policies, Technology Transfer and Entrepreneurship (BAUTTO), BAUBAP provides structured and competitive internal grants designed to advance both fundamental and applied research. It operates through specialized subprograms that respond to diverse institutional needs and stages of innovation:

- BAUBAP-NAP (Academic Research Support): Encourages high-quality, peer-reviewed scientific production and fosters interdisciplinary collaboration across faculties.

- BAUBAP-R&D Lab. (Applied Research and Prototyping): Funds laboratory-scale experimentation, prototype development, and proof-of-concept studies aimed at technology transfer and commercialization.

- BAUBAP–Entrepreneurship and Commercialization Support: Provides direct financial and mentoring support for researchers and students seeking to transform research results into start-ups, patents, and market-ready innovations.

- BAUBAP-SOS (Social Responsibility and Community Impact): Supports research and innovation projects with measurable social benefit, particularly in health, environment, and education.

Each program is evaluated through transparent criteria emphasizing scientific merit, innovation potential, and sustainability impact. Funded projects are systematically aligned with Türkiye's national R&D priorities and the University's 2024–2030 Strategic Plan objectives A2: Excellence in Research and Development and A6: Financial Sustainability.

BAUBAP's impact extends beyond internal capacity building—it catalyzes university-industry collaboration, strengthens research infrastructure, and enables the creation of new intellectual property and commercialization pathways. The program has directly supported projects that led to national and international patent applications, Horizon Europe participation, and technology-based start-up formation under the BAU Hub ecosystem.

Through this comprehensive model, BAUBAP contributes to multiple Sustainable Development Goals:

• SDG 9 (Industry, Innovation and Infrastructure): by investing in R&D capacity and innovation infrastructure.

• SDG 4 (Quality Education): by funding student-led and faculty-supervised research that integrates learning with discovery.

• SDG 8 (Decent Work and Economic Growth): by supporting technology-based entrepreneurship and employment generation.

• SDG 17 (Partnerships for the Goals): by leveraging internal resources to complement international and industry-funded projects.

In essence, BAUBAP exemplifies Bahçeşehir University's long-term strategy to build a resilient, self-sustaining innovation ecosystem—one that transforms institutional knowledge into economic, societal, and global impact consistent with the vision of SDG 9.

https://tto.bau.edu.tr/en/scientific-research-projects-baubap/

C. ACTIONS AND ACHIEVEMENTS SUPPORTING SDG 9

Bahçeşehir University actively advances SDG 9 (Industry, Innovation and Infrastructure) through a wide range of initiatives that promote innovation-driven learning, technology transfer, and entrepreneurship.

The University not only generates research but also transforms it into visible, community-facing actions that strengthen industrial capacity, digital infrastructure, and innovation ecosystems both locally and globally.

These actions demonstrate BAU's operational commitment to connecting education, research, and industry, in line with the principles of sustainable development and inclusive growth.

Activities are implemented through interdisciplinary collaboration across all contributing units of Bahçeşehir University, encompassing faculties, research centers, and entrepreneurship platforms such as BAUTTO, BAU Hub, BUG Lab TEKMER, and the BAU Leuven Office. Through the concerted efforts of these academic and administrative bodies, the University adopts a whole-of-institution approach to advancing national innovation priorities and the UN Sustainable Development Goals.

The following subsections group the University's key initiatives under two thematic clusters—reflecting their complementary roles in supporting SDG 9 outcomes.

1. INNOVATION & TECHNOLOGY EVENTS

This subsection covers flagship conferences, summits, and academic–industry collaborations that position Bahçeşehir University as a leading hub for innovation dialogue and technology dissemination. These events are collectively:

• bring together public institutions, technology firms, and academia to discuss innovation policy and industrial transformation,

• disseminate new knowledge on AI, automation, and creative technologies,

• foster interdisciplinary exchange between engineering, business, and design sectors, and

• enhance Türkiye's global visibility in science-based innovation.

Each event contributes to the SDG 9 targets of building resilient infrastructure and fostering inclusive and sustainable industrialization, while also advancing:

• SDG 4 (Quality Education) through learning opportunities and capacity building,

• SDG 8 (Decent Work and Economic Growth) by promoting technology-based entrepreneurship and employment, and

• SDG 17 (Partnerships for the Goals) through multi-stakeholder cooperation.

BAU Initiatives and Events Supporting SDG 9: Industry, Innovation and Infrastructure

Bahçeşehir University Hosts the Future AI Summit 2024



Bahçeşehir University (BAU) hosted the Future AI Summit 2025 on 16–17 April 2025 at its Future Campus in Istanbul, bringing together leaders from academia, industry, and public institutions to explore the transformative power of artificial intelligence across all sectors.





The event featured over 65 distinguished speakers, 70 entrepreneurs, and 50 international brands, welcoming more than 3,000 participants to more than 45 sessions and panels held under the main theme "Innovation and Disruption: The Future AI Paradigm."

Throughout the two-day program, panels and workshops addressed a wide range of topics including AI and ethics, AI in education, agriculture and food systems, industrial automation, finance, creative industries, and law and governance. Participants examined how artificial intelligence is shaping innovation, productivity, and sustainable development in both public and private sectors.

Keynote speakers included Prof. Dr. Hasan Mandal, President of TÜBİTAK; and Enver Yücel, President of BAU Global. Their discussions emphasized the crucial role of universities in guiding policy, research, and education in the age of AI transformation.

In addition to global leaders, representatives from Microsoft, Intel, Huawei, IBM, and Adobe participated through experience zones, live demonstrations, and workshops, showcasing cutting-edge AI solutions in sectors ranging from health to logistics.

Panels such as "AI in Agriculture and Sustainable Food Systems," "AI Governance and Global Regulations," and "Generative AI in Creativity and Design" provided an inclusive, interdisciplinary perspective on the technological, ethical, and societal dimensions of AI.

The summit reaffirmed Bahçeşehir University's role as a regional hub for innovation and technological collaboration, advancing the objectives of SDG 9 (Industry, Innovation, and Infrastructure) by promoting resilient digital infrastructures, research-driven industrial practices, and human-centered innovation ecosystems.

With its global reach and visionary approach, Future AI Summit 2024 not only strengthened academic and industrial cooperation but also demonstrated BAU's commitment to ensuring that the integration of artificial intelligence serves the common good—building a sustainable, inclusive, and innovative future for all.

The summit supported SDG 9: Industry, Innovation and Infrastructure, particularly Target 9.5, by strengthening knowledge exchange and research collaboration between universities, industry and entrepreneurs. Discussions on AI applications in industrial automation, alongside live demonstrations and workshops, also contributed to the dialogue on technological upgrading and more sustainable industrial practices under Target 9.4.

Event movie: https://www.youtube.com/watch?v=--9qXIgIdDM&list=PLNOG7iad1e7Metuayk_-E0ZefRuWAMGYM&index=7

Day 1: https://www.youtube.com/watch?v=Fje4pNvMW_E&list=PLNOG7iad1e7Metuayk_-E0ZefRuWAMGY
Day 2: https://www.youtube.com/watch?v=swQKNALo2E4&list=PLNOG7iad1e7Metuayk_-E0ZefRuWAMGYM&index=7

Bahçeşehir University and Huawei Sign MoU to Advance Artificial Intelligence and Next-Generation Technologies





In 2024-2025 academic year, Bahçeşehir University (BAU) and Huawei signed a Memorandum of Understanding (MoU) during the Huawei Connect 2024 event held in Shanghai, China, which gathered global leaders from academia, industry, and technology. The agreement marks the beginning of a strategic partnership focused on research and development in artificial intelligence (AI) and other emerging technologies.

Representing BAU, Serdar Şenel, Vice President of BAU Global, and Prof. Dr. A. Arif Ergin, Dean of the Faculty of Engineering and Natural Sciences, held high-level meetings during the event to discuss the integration of AI into education, digital transformation, and R&D collaboration. The discussions emphasized innovative educational models, the enhancement of technological infrastructure, and preparing students for the professions of the future.

The partnership aims to explore AI-driven personalized learning, data analytics, and automation systems to advance innovation in both the education and technology sectors. By combining Huawei's global experience in technological development with BAU's academic expertise, this collaboration seeks to create a foundation for sustainable technological advancement and AI-focused innovation on a global scale.

Through this collaboration, Bahçeşehir University continues to strengthen its role as a leading institution in technology-oriented research and education, contributing directly to inclusive industrial innovation and resilient digital infrastructure, in line with the objectives of Sustainable Development Goal 9.

https://bauglobal.com/new/bau-10/

https://bau.edu.tr/news/17373-bau-%E2%80%93-huawei-strategic-solution-partnership-agreement-is-signed

Bahçeşehir University and STM Collaborate to Develop Türkiye's First Fully Domestic CTD Probe System



In alignment with SDG 9 (Industry, Innovation and Infrastructure), Bahçeşehir University (BAU) and STM Defense Technologies Engineering and Trade Inc. have launched a groundbreaking partnership to produce Türkiye's first fully domestic "CTD Probe" system, designed to collect oceanographic data on the physical properties of seawater for both scientific and defense applications.

Supported by the Ministry of Industry and Technology under the Technology-Oriented Industry Move (HAMLE) Program, the project will eliminate foreign dependency in this critical field. Developed through collaboration between STM and BAU Innovation and Consulting Inc. (BAUMIND), the CTD Probe features 100% locally produced sensors for measuring conductivity, temperature, and depth, providing vital data for sonar systems and underwater research.

This initiative represents a major advancement in university–industry cooperation, strengthening Türkiye's capabilities in marine technologies, R&D, and strategic innovation. The system will not only enhance the operational performance of the Turkish Naval Forces but also contribute to civil oceanography and environmental studies, supporting the national vision for sustainable technological independence and innovation-led growth.

Bahçeşehir University Hosts the 6th Aviation, Space, and Psychology Congress on Safety Management



In 2024-2025 academic year, in alignment with SDG 9 (Industry, Innovation and Infrastructure), Bahçeşehir University (BAU) hosted the 6th Aviation, Space, and Psychology Congress on 7–8 December 2024 at its South Campus, with the central theme of "Safety Management."

The congress brought together researchers, industry experts, and practitioners from fields such as aerospace engineering, psychology, and aviation management to discuss innovations in aviation safety systems, human factors in aerospace operations, and technological advancements supporting flight safety and infrastructure resilience.

Organized in collaboration with Pegasus Airlines, MNG Airlines, and professional platforms such as Havacılık ve Uzay Tıbbı Platformu, the event highlighted how interdisciplinary cooperation between engineering, psychology, and safety sciences contributes to building safer, smarter, and more sustainable aviation systems.

Through this initiative, Bahçeşehir University reaffirmed its role in advancing research, innovation, and industrial collaboration in high-technology sectors, strengthening its commitment to fostering innovation-driven infrastructure and sustainable industry development in line with the Sustainable Development Goals.

Bahçeşehir University Hosts Seminar on RWA Sector and 2025 Crypto Market Outlook



In the 2024-2025 academic year, in alignment with SDG 9 (Industry, Innovation and Infrastructure), Bahçeşehir University (BAU) hosted a seminar titled "RWA Sector and 2025 Crypto Market Outlook" on 17 December 2024, organized by BAU Investment Club, BAU Financial Research and Application Center (BFRC), and the Dean of Students Office (DSO), in collaboration with Skipex.

The event featured Ata Potok, Chief Marketing Officer of Skipex, who delivered an in-depth session on the Real World Assets (RWA) sector, the future of digital assets, and the shifting dynamics of the global cryptocurrency markets. Participants explored how blockchain and fintech innovations are reshaping financial systems, enhancing transparency, and fostering new infrastructures for sustainable digital economies.

This event also supported the university's vision of fostering innovation-driven entrepreneurship and preparing students for emerging industries in the digital economy.

Through this seminar, Bahçeşehir University emphasized its commitment to advancing technological literacy, financial innovation, and sustainable industry development, providing students and young professionals with insights into the evolving intersection of technology, finance, and infrastructure modernization.

The seminar supported SDG 9: Industry, Innovation and Infrastructure, particularly the technological capability dimension of Target 9.5, by developing participants' understanding of blockchain, digital assets and emerging financial technologies. By examining the potential of these technologies to broaden access to finance, it also encouraged discussion relevant to Target 9.3, which focuses on financial services and market integration for small-scale enterprises.

Bahçeşehir University Explores M&A Transactions, Start-up Investments, and Competition Law



In the 2024-2025 academic year, in support of SDG 9 (Industry, Innovation and Infrastructure), Bahçeşehir University (BAU) Faculty of Law, through the Research Center for Law and Economics (BAU RHM), hosted an online seminar titled "M&A Transactions, Start-up Investments, and Competition Law" on 3 December 2024.

The event featured Attorney Baran Arıkan and Attorney I. Ünal Doğan, who discussed the evolving legal landscape surrounding mergers and acquisitions, venture capital investments, and competition regulations in the context of Turkey's innovation-driven economy. Participants examined how legal frameworks and policy mechanisms play a vital role in fostering fair competition, entrepreneurial growth, and sustainable industrial ecosystems.

Through this seminar, Bahçeşehir University emphasized the significance of establishing robust legal and institutional infrastructures that support innovation, entrepreneurship, and industrial development — key enablers of sustainable and inclusive economic progress in alignment with the UN Sustainable Development Goals.

The seminar contributes to SDG 9 (Industry, Innovation and Infrastructure), particularly Target 9.5, by promoting awareness of legal and regulatory frameworks that support innovation, start-up investment, entrepreneurship, and fair competition, highlighting their importance in fostering sustainable and inclusive industrial development.

Bahçeşehir University Strengthens Research and Innovation Capacity through Strategic Collaboration: Research Roundtable Breakfast



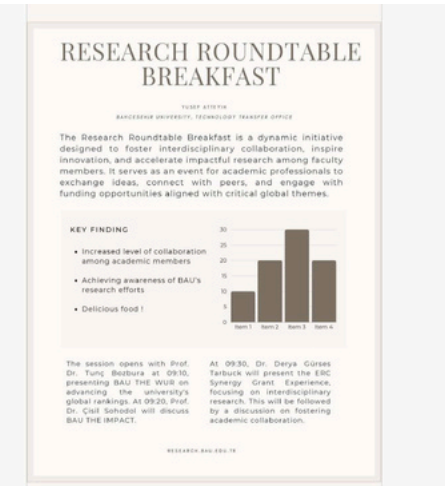


In the 2024-2025 academic year, in alignment with SDG 9 (Industry, Innovation and Infrastructure), Bahçeşehir University (BAU) continues to enhance its institutional research and innovation ecosystem through strategic initiatives led by the BAUTTO.

A roundtable meeting was held with researchers and academic leaders to discuss strategies for improving research performance, increasing participation in TÜBİTAK and Horizon Europe projects, and fostering greater interdisciplinary cooperation. The discussions also focused on identifying priority research areas, strengthening industry partnerships, and developing mechanisms to accelerate knowledge transfer and innovation impact.

Through these coordinated efforts, Bahçeşehir University continues to reinforce its research infrastructure and innovation capacity, supporting sustainable technological development and contributing to the advancement of inclusive, resilient, and knowledge-based growth in accordance with the Sustainable Development Goals.

The initiative contributes to SDG 9 (Industry, Innovation and Infrastructure), particularly Target 9.5, by strengthening Bahçeşehir University's research and innovation capacity, promoting interdisciplinary collaboration, expanding opportunities for national and international research funding, and encouraging industry–academia partnerships that support technological development and knowledge transfer.


RESEARCH ROUNDTABLE BREAKFAST

The Research Roundtable Breakfast is a dynamic initiative designed to foster interdisciplinary collaboration, inspire innovation, and accelerate impactful research among faculty members. It serves as an event for academic professionals to exchange ideas, connect with peers, and engage with funding opportunities aligned with critical global themes.

KEY FINDING

- Increased level of collaboration among academic members
- Achieving awareness of BAU's research efforts
- Delicious food !



National Policy Forum on Artificial Intelligence and Technology in Hazelnut Farming



In the 2024-2025 academic year, The National Policy Forum on Artificial Intelligence and Technology in Hazelnut Farming, held in Giresun in December 2024, was organized under the coordination of the Ministry of Agriculture and Forestry and the Giresun Governorship, with the support of Bahçeşehir University (BAU), Giresun University, the Eastern Black Sea Development Agency (DOKA), and several other public, academic, and private sector stakeholders. The forum brought together government representatives, universities, research institutions, industry leaders, and farmer organizations to develop a national roadmap for integrating artificial intelligence (AI) and digital technologies into Türkiye's agricultural production systems, particularly in the hazelnut sector, which plays a strategic role in the country's economy.

Bahçeşehir University contributed to the forum through its expertise in AI applications, sustainable food systems, and policy research, supporting the formulation of data-driven agricultural strategies, evidence-based policy recommendations, and innovation-oriented frameworks.

By connecting national and local institutions, the initiative promotes the digital transformation of agriculture and strengthens Türkiye's commitment to the UN Sustainable Development Goals (SDGs)—especially SDG 2 (Zero Hunger), SDG 1 (No Poverty), SDG 9 (Industry, Innovation, and Infrastructure), and SDG 13 (Climate Action)—advancing inclusive, climate-smart, and technology-driven agricultural development.

The initiative contributes to SDG 9 (Industry, Innovation and Infrastructure), particularly Target 9.5, by promoting the integration of artificial intelligence and digital technologies into agricultural production, strengthening research and innovation capacity, and fostering collaboration among universities, government, and industry to advance technological innovation and sustainable agricultural development.





Bahcesehir University Innovation Focus Open Training Program 2024-2025

The images below show the official posters for the BAU “Innovation Focus Open Training Program,” featuring the speakers and schedule.









The 7th and 8th editions of the Bahcesehir University Innovation Focus Program, organized by the BAU Hub Incubation Center in collaboration with the BAU Technology Transfer Office (TTO) was held during the 2024 - 2025 Academic Year.

This free and open-access educational program aimed to raise awareness and share knowledge on entrepreneurship, innovation, project development, patent application processes, incentives, and available supports. Through informative presentations and experience-sharing sessions, participants gained valuable insights into the entrepreneurial ecosystem and innovation landscape.

The program took place between November 12 2024 and November 26 2025, and was conducted across two interactive sessions designed to inspire participants to take their first steps into the world of projects, startups, and innovation.

In addition to these thematic sessions, the program also featured entrepreneurship training modules focusing on:

How to find and validate innovative ideas

• How to design and write effective project proposals

• Fundamentals of entrepreneurship and business modeling

• Accessing funding, incentives, and patent registration processes

• Case studies and experience sharing from successful BAU entrepreneurs and alumni

The BAU Innovation Focus Program provided an inclusive learning environment for students, young professionals, and aspiring entrepreneurs, helping them to develop their entrepreneurial mindset and creative problem-solving skills.

Conducted in an open and completely free format, the program once again reflected Bahçeşehir University's commitment to innovation, entrepreneurship, and lifelong learning.

The programme contributes to SDG 9 (Industry, Innovation and Infrastructure), particularly Target 9.5, by strengthening innovation and entrepreneurial capacity through free, accessible training in project development, intellectual property, funding opportunities, and business modelling, while encouraging knowledge transfer and the development of technology-driven start-ups.

Bahçeşehir University's BAU Hub Explores Strategic Communication for Startups



In 2024-2025 academic year, as part of its ongoing efforts to strengthen Türkiye's innovation and entrepreneurship ecosystem under SDG 9 (Industry, Innovation and Infrastructure), Bahçeşehir University (BAU), through its BAU Hub Incubation Center, organized an online event titled "What Should Be the Purpose of Communication for Startups?"

Held on November 29, the session featured Atıl Ünal, CEO of Lagalugacılar, who shared key insights into the role of communication in startup growth. The discussion covered essential topics such as digital communication strategies, target audience engagement, content creation, performance metrics, and the effective use of social media platforms.

Through such events, BAU Hub continues to support entrepreneurs by equipping them with the strategic communication skills and digital competencies needed to scale their ventures, strengthen brand visibility, and achieve sustainable growth in competitive markets.

The event contributes to SDG 9 (Industry, Innovation and Infrastructure), particularly Target 9.5, by strengthening the innovation and entrepreneurship ecosystem through practical training in digital communication, audience engagement, and performance measurement, helping startups build the strategic capabilities needed for sustainable growth, competitiveness, and innovation-driven business development.

Bahçeşehir University Hosts “Introduction to Cloud Projects: Firebase 101” Workshop



In 2024-2025 academic year, as part of its commitment to promoting digital literacy and innovation under SDG 9 (Industry, Innovation, and Infrastructure), Bahçeşehir University’s Google Developer Groups (GDG On Campus) organized the workshop “Introduction to Cloud Projects: Firebase 101” on 19 December 2024.

Led by Atakan Yiğit Çengeloğlu, founder of Klein Pixel, the session introduced students to cloud-based project development and the fundamentals of Google Firebase, enabling participants to explore real-world applications of cloud infrastructure in software design.

The workshop aimed to strengthen students’ understanding of digital ecosystems, encourage hands-on learning in emerging technologies, and inspire innovation in software and data-driven industries. Through initiatives like this, Bahçeşehir University continues to empower young developers and contribute to building sustainable digital infrastructure for the future.

The workshop contributes to SDG 9 (Industry, Innovation and Infrastructure), particularly Target 9.5, by enhancing students’ technological skills and innovation capacity through practical training in cloud computing and software development, supporting the development of digital competencies essential for technological innovation and research-driven industries.

Bahçeşehir University Promotes Technological Skills with “C Programming for Microcontrollers” Training

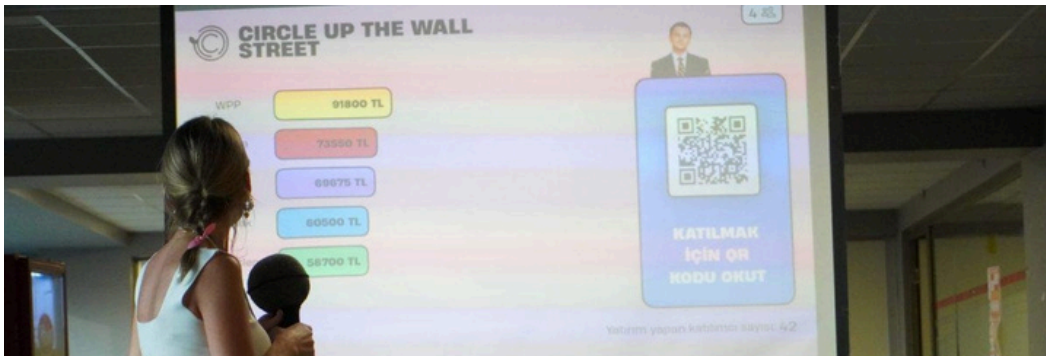


In 2024-2025 academic year, in alignment with SDG 9 (Industry, Innovation and Infrastructure), Bahçeşehir University (BAU) organized a hands-on technical training titled “C Programming for Microcontrollers” on 13 December 2024, hosted by the IEEE Robotics and Automation Society, in collaboration with the IEEE BAU Student Branch and the Dean of Students Office (DSO).

The session was led by Samet Akçalar, Senior Embedded Software Engineer and Technical Trainer, who provided participants with in-depth knowledge of embedded systems, hardware programming, and microcontroller-based automation. Students gained valuable practical experience in designing and coding for real-world applications in robotics and industrial technology.

This workshop supported BAU’s ongoing commitment to empowering students with industry-relevant digital competencies, fostering innovation-driven learning, and preparing future engineers to contribute to the advancement of smart infrastructure, automation, and technological development.

Bahçeşehir University Hosts Circle Up 2024 Camp to Empower Youth in Sustainable Entrepreneurship



In 2024-2025 academic year, supporting the UN Sustainable Development Goal 8 (Decent Work and Economic Growth), Bahçeşehir University (BAU) hosted the Circle Up 2024 Camp from September 2–4 at its North Campus, bringing together high school and university students to enhance their entrepreneurial skills and develop socially impactful business ideas.

Organized with the support of the BAU Hub Incubation Center, the camp offered participants intensive workshops, training sessions, and team-based projects focusing on social entrepreneurship and sustainable economic growth. Throughout the event, students worked with mentors and industry experts, gaining hands-on experience in project development, collaboration, and innovative problem-solving.

This year's theme, centered on "Decent Work and Economic Growth," encouraged young participants to design creative and viable solutions addressing economic sustainability. Over three days, teams refined their ideas using sociocratic decision-making methods and presented their projects before a jury comprising BAU faculty and entrepreneurship professionals.

Through initiatives like Circle Up, Bahçeşehir University continues to foster an entrepreneurial mindset among youth, empowering them to become agents of sustainable change and contributors to inclusive economic development.

The initiative contributes to SDG 9 (Industry, Innovation and Infrastructure), particularly Target 9.5, by fostering innovation and entrepreneurial skills among young people through hands-on training, mentorship, and collaborative project development, encouraging the creation of innovative, socially impactful business solutions and strengthening the next generation's capacity to contribute to sustainable economic and technological development.



Sustainability and New Technologies in Creative Industries: 3D Printing Open Workshop



In the 2024-2024 academic year, Bahçeşehir University hosted the “3D Printing and Innovation” Open Workshop, which introduced participants to the fundamentals of 3D printing technology and its role in promoting sustainable production and design practices. Organized as part of the University’s broader commitment to public education, innovation, and sustainability awareness, the workshop welcomed both BAU students and members of the wider community.

Participants explored the entire process of 3D printing—from digital design and modeling to the creation of tangible prototypes—using environmentally conscious methods and sustainable materials. Alongside hands-on sessions, expert-led discussions examined the industrial, engineering, and creative applications of 3D printing, emphasizing its potential to reduce waste, optimize resource use, and support circular economy principles.

By combining theory, practice, and sustainability, the workshop fostered learning, skill development, and environmental responsibility among participants. It also highlighted how technological innovation can serve as a catalyst for sustainable development and the future workforce.

The “Sustainability and New Technologies in Creative Industries: 3D Printing Open Workshop” directly contributes to several Sustainable Development Goals through its focus on innovation, education, and responsible production. By providing participants with hands-on learning experiences in digital design and sustainable manufacturing, the workshop advances SDG 4 (Quality Education) by fostering technical literacy and lifelong learning. It supports SDG 8 (Decent Work and Economic Growth) through the development of future-oriented skills that enhance employability and innovation within the creative and industrial sectors.

In line with SDG 9 (Industry, Innovation and Infrastructure), the workshop demonstrates how emerging technologies such as 3D printing can drive sustainable industrial innovation, optimize resource use, and strengthen technological capacity. Moreover, by emphasizing the use of eco-friendly materials and circular design principles. The workshop contributes to SDG 9 (Industry, Innovation and Infrastructure), particularly Targets 9.4 and 9.5, by introducing participants to innovative 3D printing technologies and sustainable manufacturing methods, strengthening technical skills while demonstrating how advanced production techniques, resource-efficient design, and environmentally conscious materials can support cleaner industrial processes and technological innovation.

BAUGO: "Women and Technology: Discover Your Role and Enhance Your Potential"



Conducted by Prof. Dr. Ebru Canan-Sokullu, this training focused on exploring women's role in the technology field and strengthening their participation in an increasingly digital world. It emphasized that while women today are shaping technology as innovators, leaders, and creators, gender inequality and stereotypes continue to limit equal access and representation.

Based on modules such as historical perspectives on equality in technology, gender and equal opportunity, international approaches, statistical insights, and women's contribution to science and technology in Türkiye, the training encouraged participants to reflect on challenges and strategies for achieving equality in tech. By promoting awareness and empowering women to take active roles in technological innovation, Bahçeşehir University highlighted its commitment to inclusive and equitable progress in this field.

This initiative directly contributes to SDG 5: Gender Equality by addressing gender disparities in technology and supporting women's empowerment, and it also aligns with SDG 4: Quality Education and SDG 9: Industry, Innovation and Infrastructure through its focus on inclusive participation and knowledge-based development. The training contributes to SDG 9 (Industry, Innovation and Infrastructure), particularly Target 9.5, by promoting women's participation in science, technology, and innovation, addressing gender-related barriers to technological development, and strengthening awareness of equal opportunities in research and innovation ecosystems, thereby supporting a more inclusive and diverse technological workforce.

https://baugo.online/instructor/ebru-canan-sokullu

Research Visibility and Innovation Impact Initiatives Supporting SDG 9

Bahçeşehir University extends its commitment to SDG 9 (Industry, Innovation and Infrastructure) beyond research and project development to include the visibility and dissemination of knowledge through international collaboration, public engagement, and academic outreach.

The University recognizes that innovation achieves its fullest impact when scientific ideas and project outcomes are shared across borders and disciplines.

Within this scope, BAU researchers and experts actively participate in global events, conferences, and collaborative networks that promote the exchange of best practices and emerging technologies aligned with SDG 9.

These activities not only enhance the institution's international research profile but also strengthen its role in shaping global discussions on sustainable industrialization, technological advancement, and data-driven policy development.

The initiatives presented under this section represent two complementary dimensions of visibility and impact:

- Research and Project Dissemination, where BAU contributes to international platforms focused on measuring, monitoring, and improving innovation infrastructure; and

- Academic Outreach and Public Engagement, where faculty and researchers deliver presentations, lectures, and conference papers that translate scientific knowledge into societal and industrial benefit.

Through these combined efforts, Bahçeşehir University ensures that its research and innovation outcomes extend beyond academic boundaries—informing policy, inspiring collaboration, and fostering a culture of shared progress in line with the vision of SDG 9 and the broader UN 2030 Agenda.

RETORNA Project: Advancing Biotechnological Innovation for Sustainable Health Solutions



The RETORNA Project is an EU-funded international research initiative focused on developing innovative RNA-based therapeutic technologies to restore vision. As a core partner representing Türkiye, Bahçeşehir University (BAU) contributes to this multidisciplinary effort to advance biomedical research, technological innovation, and the development of next-generation healthcare solutions.

Bahçeşehir University's participation is led by Dr. Serdar Durdağı from the School of Medicine, Department of Biophysics, with a focus on scientific coordination and computational modelling of RNA-based therapeutics.

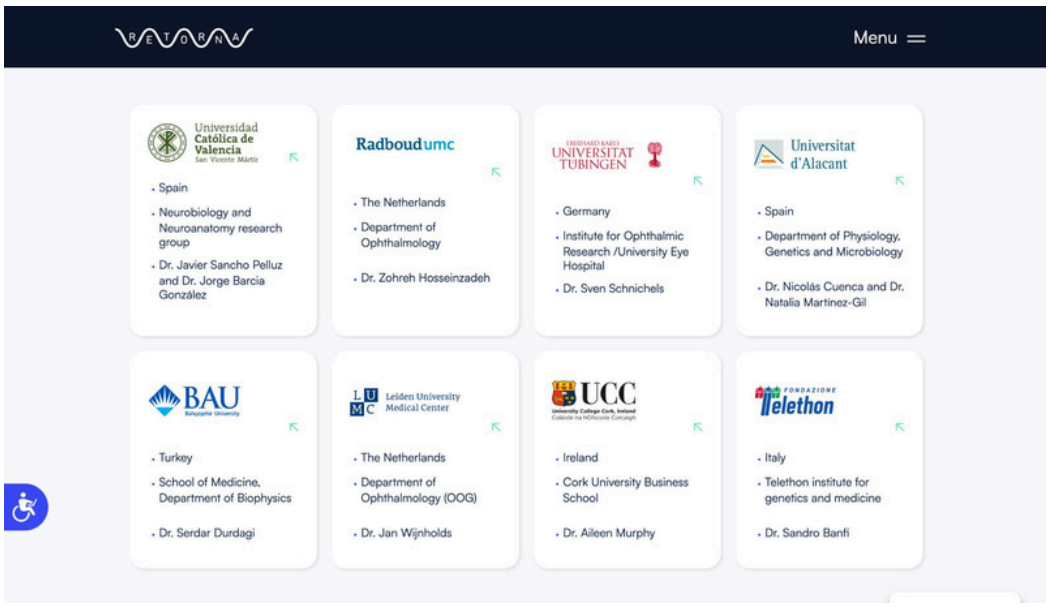
The project brings together leading European research institutions, including Universidad Católica de Valencia, Radboud University Medical Center, University of Tübingen, Universitat d'Alacant, Leiden University Medical Center, University College Cork, and the Telethon Institute of Genetics and Medicine. This international collaboration combines scientific expertise and research infrastructure to accelerate innovation in vision science and biotechnology.

RETORNA contributes directly to SDG 9 (Industry, Innovation and Infrastructure), particularly Target 9.5, by strengthening advanced biomedical research, promoting technological innovation, and enhancing international R&D capacity. Through computational modelling, interdisciplinary scientific cooperation, and the development of RNA-based therapeutic approaches, the project supports the advancement of biotechnology and the translation of scientific knowledge into potential healthcare applications.

The initiative also supports SDG 3 (Good Health and Well-Being) through research into treatments for vision-related conditions, SDG 8 (Decent Work and Economic Growth) through its potential to strengthen biotechnology innovation and specialised research capacity, and SDG 17 (Partnerships for the Goals) through international scientific collaboration.

Through its participation in RETORNA, Bahçeşehir University strengthens its contribution to international research excellence, biomedical innovation, and the development of advanced technological solutions, reinforcing its commitment to SDG 9 and sustainable scientific progress.

https://retorna.eu/about-retorna/



STE²AM Project: Shaping the Future through Interdisciplinary and Entrepreneurial Education



The STE²AM Project, co-led by Bahçeşehir University (Türkiye) in collaboration with partners from Italy, Lithuania, and Greece, is an EU Erasmus+-funded initiative integrating Science, Technology, Engineering, Arts, Mathematics, and Entrepreneurship into innovative educational approaches.

The project aims to strengthen interdisciplinary learning, technological competencies, creativity, and entrepreneurial thinking, preparing students to develop innovative solutions to complex societal and industrial challenges. Through comparative research, co-creation workshops, and international knowledge exchange, STE²AM promotes educational models that connect academic knowledge with practical innovation and emerging technological needs.

The project contributes to SDG 9 (Industry, Innovation and Infrastructure), particularly Target 9.5, by strengthening the knowledge, technical competencies, and innovation-oriented skills that underpin scientific research and technological development. By integrating entrepreneurship with STEAM disciplines, the initiative encourages students to transform interdisciplinary knowledge into practical ideas, technological applications, and potential innovative solutions.

STE²AM also supports the development of human capital for research-intensive and technology-driven industries, helping bridge the gap between education, innovation ecosystems, and evolving labour-market needs. Its emphasis on creative problem-solving, interdisciplinary collaboration, and entrepreneurial capacity contributes to building a more inclusive and innovation-oriented technological workforce.

Beyond SDG 9, the project supports SDG 4 (Quality Education) through innovative teaching approaches, SDG 8 (Decent Work and Economic Growth) through entrepreneurship and future-oriented skills development, and SDG 17 (Partnerships for the Goals) through international academic cooperation.

Through STE²AM, Bahçeşehir University contributes to strengthening the foundations of sustainable industrial innovation by equipping future generations with the knowledge, creativity, and technological capabilities needed to participate in research, innovation, and knowledge-based economic development.

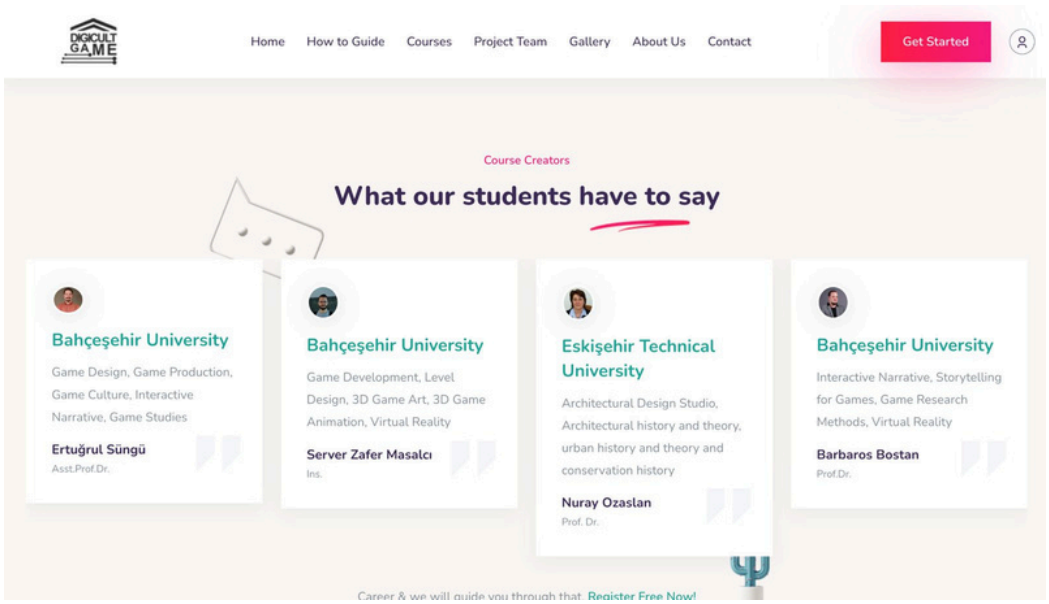
DIGICULTGAME Project: Innovative Tools to Digitize the East and West Cultural Heritage



The DIGICULTGAME Project, with Bahçeşehir University (Türkiye) as a key partner alongside Universitat Politècnica de Catalunya (Spain), University of Florence (Italy), Eskişehir Osmangazi University (Türkiye), Azerbaijan University of Architecture and Construction (Azerbaijan) and other institutions, is an international research and innovation initiative that pioneers the digital transformation of cultural heritage through interactive game design.

By integrating digital technologies, data-driven methodologies, and applied design research, DIGICULTGAME develops innovative tools to preserve and transfer both tangible and intangible cultural assets to younger generations. Its e-learning platform, educational materials, and game-based learning models promote cultural awareness, creativity, and social inclusion through technology-enhanced education.

The project contributes directly to SDG 9 (Industry, Innovation and Infrastructure) by advancing the digitalization of cultural and creative industries, strengthening innovation capacity, and promoting sustainable technological solutions for heritage preservation. It also supports SDG 4 (Quality Education) by integrating digital literacy and cultural education into learning environments, and SDG 11 (Sustainable Cities and Communities) by fostering inclusive cultural sustainability and safeguarding heritage through modern digital infrastructures.



Through collaborative research and international knowledge exchange, DIGICULTGAME exemplifies how universities and creative sectors can work together to build a sustainable innovation ecosystem, where education, culture, and technology converge to promote resilient, knowledge-based, and culturally connected communities.

https://digicultgame.com/

MIXAP Project: Developing Research-Based Innovative Pedagogical Practices through Mixed Reality in Education



The MIXAP Project (Mixed Reality in Education)—coordinated by Le Mans Université (France) in collaboration with the Technical University of Denmark (Denmark) and Bahçeşehir University (Türkiye)—advances innovation in educational technology by integrating Mixed Reality (MR) into teaching and learning environments. This international research and best-practice initiative aims to empower educators to design, implement, and evaluate immersive MR-based learning experiences that enhance engagement, inclusivity, and cognitive understanding.

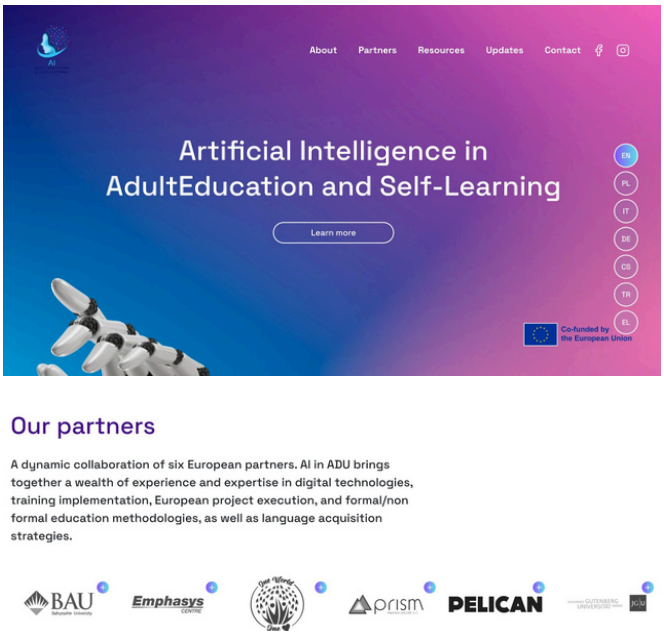
Through its participatory co-design approach involving workshops, classroom pilots, and cross-country collaboration, MIXAP builds capacity among teachers to adopt emerging technologies within evidence-based pedagogical frameworks. Its practical outputs—including an open-access augmented reality authoring tool, digital learning resources, and a sustainable teacher community—demonstrate how innovative infrastructure can transform learning environments.

The project directly contributes to SDG 9 (Industry, Innovation and Infrastructure) by developing digital infrastructure for educational innovation, fostering human capacity for technological adaptation, and bridging the gap between research, technology, and classroom application. It also advances SDG 4 (Quality Education) through its focus on inclusive, accessible, and technology-enhanced learning, and SDG 17 (Partnerships for the Goals) through its model of collaborative international research and open knowledge exchange.

By aligning research, technology, and practice, MIXAP shapes the future of education as an innovation-driven ecosystem, strengthening both digital pedagogy and institutional readiness for the next generation of intelligent learning infrastructures.

https://mixap-lium.univ-lemans.fr/team/

AI in ADU Project: Artificial Intelligence in Adult Education and Self-Learning



The AI in ADU Project (Artificial Intelligence in Adult Education and Self-Learning)—with Bahçeşehir University (Türkiye) as a partner alongside Emphasys Centre (Cyprus), One World One Heart (Poland), PRISM Impresa Sociale (Italy), Bupnet GmbH (Germany), and KulturLife gGmbH (Germany)—is an EU Erasmus+–supported international research and best practice initiative that explores how artificial intelligence can enhance adult learning and lifelong education.

By conducting comparative research, focus groups, surveys, and AI platform analyses, the consortium identifies opportunities and challenges in integrating AI into learning processes, designing personalized, flexible, and data-driven education models. The project's practical outcomes include methodological guidelines, digital resources, and video-based training modules that enable educators and self-learners to effectively use AI tools for skill development and self-directed learning.

The initiative directly supports SDG 9 (Industry, Innovation and Infrastructure) by fostering technological innovation in education, strengthening digital learning infrastructures, and promoting the responsible adoption of emerging technologies in lifelong learning ecosystems. It also contributes to SDG 4 (Quality Education) by improving the accessibility and quality of adult education, and to SDG 17 (Partnerships for the Goals) through its strong emphasis on international cooperation and open-access knowledge sharing.

Through its evidence-based design and collaborative approach, AI in ADU exemplifies how artificial intelligence can serve as both a technological and social innovation tool—empowering individuals, enhancing institutional capacities, and building the foundation for inclusive, innovation-oriented, and sustainable educational ecosystems aligned with the goals of SDG 9.

https://aiineducation.eu/

Bahçeşehir University's AI-Driven Chip Design Project Receives EU Funding



In alignment with SDG 9 (Industry, Innovation and Infrastructure), Bahçeşehir University (BAU) has been selected as a key partner in the European Union's Horizon Europe Key Digital Technologies (KDT) initiative with its groundbreaking project, "RIBL – Remote Innovations in Boolean Logic." The project, supported by a total EU budget of €16 million, aims to revolutionize chip design through the integration of artificial intelligence and open-source technologies.

Led by Dr. Fatih Kahraman (BAU), Dr. Binnur Kurt, and Suna Akbayır (Artech International BVBA), the RIBL project combines AI-assisted design tools with RISC-V and open-source chip architecture to enhance efficiency and accessibility in integrated circuit design. This milestone positions BAU among Europe's strategic partners in semiconductor innovation and represents a major step forward for Türkiye's digital transformation.

In addition to research collaboration, BAU will contribute through specialized master's and doctoral programs in Digital IC Design and Verification, developing future experts in semiconductor technology. The initiative reinforces BAU's commitment to advancing technological innovation, education, and sustainable industrial growth, contributing directly to the goals of SDG 9.

STExperiMents Project: Developing International Best Practices in STEM Education through Comparative Research and Collaboration

The STExperiMents Project, implemented in partnership with Bahçeşehir University (Türkiye), Charles University (Czech Republic), Johannes Kepler University (Austria), and the University of Jyväskylä (Finland), is an international research and innovation initiative designed to strengthen STEM and STEAM education through comparative analysis and collaborative development of innovative teaching practices. Supported under the European Union's research and education frameworks, the project responds to the rising demand for science, technology, and digital competencies in the European labor market.

By creating, testing, and refining both real and virtual STEM experiments, the project fosters an integrated model of technological innovation in education, equipping teachers with tools and methodologies to enhance hands-on science and technology learning. Its open-access digital toolkit—comprising experimental designs, evaluation guidelines, and pedagogical resources—serves as an international reference model for innovation in STEM education.

The initiative contributes directly to SDG 9 (Industry, Innovation and Infrastructure) by building the knowledge infrastructure and technological capacity necessary for innovation-driven learning environments. STExperiMents contributes to SDG 9 (Industry, Innovation and Infrastructure), particularly Target 9.5, by strengthening scientific and technological capabilities through research-based educational innovation. The development of virtual experimentation tools, digital learning resources, and evidence-based methodologies supports the technological competencies and scientific skills essential for future research, engineering, and innovation-driven industries.
It also advances SDG 4 (Quality Education) by promoting inclusive, high-quality, and research-based teaching approaches, and SDG 17 (Partnerships for the Goals) through cross-border collaboration and shared academic expertise.

Through its comparative research, pilot studies, and dissemination of best practices, STExperiMents exemplifies how universities can integrate industrial innovation principles into education, bridging the gap between technological development and human capital formation. The project ultimately supports a sustainable innovation ecosystem, preparing educators and learners to thrive in a rapidly evolving, technology-oriented society.

https://stexperiments.pedf.cuni.cz/about-the-project/

Software Talent and Employment Center Project: Building a Skilled and Sustainable Digital Workforce



Implemented through a strategic partnership between the Ministry of Industry and Technology of the Republic of Türkiye, Bahçeşehir University – Wissen Academy and supported by the Istanbul Development Agency (ISTKA), the Software Talent and Employment Center Project represents a comprehensive model that integrates advanced training, direct employment placement, and post-program monitoring within Türkiye's growing digital economy.

Launched in 2023 and continuing until 2026, the program provides 480 hours of intensive, free-of-charge training in key technology domains including Full Stack Programming, Network and Cyber Security, Data Science, Artificial Intelligence, and Game Development. Beyond technical training, the program's innovative design includes career mentorship, professional certification, and structured job placement mechanisms, ensuring that each participant transitions directly from education to employment.
Distinct from conventional education initiatives, the Center operates as a full employment ecosystem, maintaining long-term collaboration with technology companies to match graduates with workforce needs and to monitor employment sustainability. The program thus fosters a continuous feedback loop between academia and industry, improving curriculum relevance and labor market responsiveness.

By strengthening Türkiye's digital talent pipeline and connecting education to high-value employment, the initiative directly supports SDG 9 (Industry, Innovation and Infrastructure) through innovation capacity-building in the technology sector; SDG 4 (Quality Education) by providing accessible, high-quality technical education; and SDG 8 (Decent Work and Economic Growth) by facilitating youth employment and supporting sustainable economic transformation.

Through its inclusive design targeting young unemployed graduates aged 18–35, the Software Talent and Employment Center exemplifies an impact-driven public–private partnership model that advances digital skills, employment resilience, and long-term innovation infrastructure development.

https://tto.bau.edu.tr/yazilim-yetenek-egitim-ve-istihdam-merkezi-lansmani-bahcesehir-universitesi-guney-yerleskesinde-gerceklesti/

AI-Based Sustainable Agriculture Collaboration Between Türkiye and Malta: Designing an Integrated System Using Artificial Intelligence for Sustainable Resource Management



The AI-Based Sustainable Agriculture Project, jointly led by Assoc. Prof. Dr. Zeynep Tacer Caba from Bahçeşehir University (Türkiye) and Barbara Bracone, Director of Malta Wes Trade Ltd. (Malta), represents a bilateral innovation partnership supported under the TÜBİTAK–Malta Council for Science and Technology (MCST) Bilateral Cooperation Program. The initiative develops an AI-driven integrated system to address critical challenges in water, soil, and energy management for olive cultivation in Mediterranean rural regions.

By combining artificial intelligence, environmental science, and precision agriculture technologies, the project builds a scalable model for climate-smart and resource-efficient farming. Through comparative field research and data-driven modeling, the collaboration identifies best practices in both Türkiye and Malta, facilitating knowledge transfer and adaptation of sustainable agricultural methods across different agroecological contexts.

This initiative contributes directly to SDG 9 (Industry, Innovation and Infrastructure) by strengthening the technological infrastructure of agricultural production and fostering innovation in sustainable agritech systems. It also advances SDG 2 (Zero Hunger) by promoting food security and sustainable agriculture, SDG 12 (Responsible Consumption and Production) through the efficient use of natural resources, and SDG 17 (Partnerships for the Goals) by fostering cross-border scientific collaboration and policy dialogue.

By integrating artificial intelligence into agriculture, the Türkiye–Malta collaboration exemplifies how data-driven innovation can transform traditional industries, enhance environmental resilience, and support sustainable rural development. The project positions Bahçeşehir University as a key contributor to AI-enabled green innovation, bridging research excellence with practical applications for a more sustainable and technologically empowered Mediterranean region.

TÜBİTAK ARDEB 3501 Project: AI-Supported Neurofeedback Biomarker Detection for Improving Reading Performance in Dyslexic Children



Conducted by Dr. Günet Eroğlu, Faculty Member at the Department of Computer Engineering, Bahçeşehir University, this TÜBİTAK ARDEB 3501 Career Development Project develops an AI-assisted neurofeedback system to enhance reading performance and learning outcomes in children with dyslexia. By integrating neuroscience, artificial intelligence, and educational technology, the project pioneers a data-driven approach to personalized cognitive training.

Through 14-channel quantitative EEG (QEEG) recordings collected via the Auto Train Brain mobile application, the research monitors and evaluates neurofeedback sessions among 7–10-year-old dyslexic children. The AI-based biomarker detection algorithm distinguishes typical and dyslexic brain activity patterns with over 95% accuracy, providing measurable evidence that neurofeedback can normalize brain activity and improve learning capacity.

The initiative contributes directly to SDG 9 (Industry, Innovation and Infrastructure) by advancing neurotechnology and digital health innovation, strengthening research infrastructure in cognitive sciences, and fostering technology-driven therapeutic solutions. It also supports SDG 3 (Good Health and Well-Being) by promoting non-invasive and personalized interventions for neurodevelopmental conditions, and SDG 4 (Quality Education) by improving accessibility to evidence-based tools that support learning for children with reading difficulties.

By combining artificial intelligence with neuroscience, the project exemplifies how innovation in data science and digital infrastructure can address pressing educational and health challenges. It establishes a scalable, accessible model for personalized neurofeedback training, contributing to a sustainable ecosystem of research, technology, and social impact aligned with the objectives of SDG 9.

https://www.guncelkadin.com.tr/disleksili-bireylere-umut-olacak-calisma-yayinlandi/

https://bau-hub.com/bau-hub-girisimi-auto-train-brain-8-2-milyon-usd-degerleme-uzerinden-yatirim-aldi/

TÜBİTAK ARDEB 3501 Project: Racks from the Viewpoint of Finite Group Theory



Conducted by Asst. Prof. Dr. Mert Çağlar from the Department of Mathematics, Faculty of Engineering and Natural Sciences, Bahçeşehir University, this TÜBİTAK ARDEB 3501 Career Development Project (2023–2026) explores the algebraic, combinatorial, and geometric properties of mathematical structures assigned to finite groups, with a particular focus on racks and quandles.

Situated at the intersection of algebraic topology, combinatorics, and finite group theory, the project investigates the structure of specific subsets of finite groups through the lens of rack theory. Racks are algebraic objects equipped with a binary operation exhibiting self-distributivity, appearing in various contexts—most notably in knot theory, where they are used to define link invariants. This research aims to strengthen the theoretical connections between rack theory and group theory, contributing to the understanding of conjugation operators and subgroup structures in finite groups.

Through this interdisciplinary framework, the project examines conjugacy class racks and p-power order element racks, analyzing their combinatorial and topological characteristics. The subrack structures will be explored as partially ordered sets (posets) under inclusion, allowing their properties to be studied using the tools of algebraic topology, such as order complexes and homological invariants.

The project contributes to SDG 9 (Industry, Innovation and Infrastructure) by enhancing Turkey's research capacity in abstract algebra and mathematical sciences, fostering innovative theoretical frameworks with potential applications in cryptography, information theory, and computational topology. It also supports SDG 4 (Quality Education) through the integration of undergraduate and graduate research training, strengthening academic networks and fostering international collaboration in fundamental mathematics.

By advancing mathematical innovation and interdisciplinary knowledge production, this 2023–2026 project exemplifies how foundational research in group theory can generate sustainable scientific impact, aligning with the goals of SDG 9 through research excellence and knowledge-driven innovation.

https://tto.bau.edu.tr/dr-ogr-uyesi-selcuk-kayacanin-projesi-3501-kariyer-gelistirme-programi-kapsaminda-destek-kazandi/

TÜBİTAK ARDEB 3501 Project: Emotional Labor and Gender in Academia



Led by Assoc. Prof. Dr. Ayşegül Akdemir from the Faculty of Economics, Administrative, and Social Sciences, Bahçeşehir University, this TÜBİTAK ARDEB 3501 Career Development Project (2023–2026) investigates the relationship between emotional labor and gender within academic institutions, aiming to understand how gender roles influence emotional expectations, professional interactions, and well-being in higher education settings.

Emotional labor refers to the physical and cognitive efforts—such as gestures, facial expressions, and emotional regulation—that individuals employ to manage relationships and maintain social harmony in professional environments. Previous international studies have demonstrated that women are often expected to perform higher levels of emotional labor due to social assumptions that they are more empathetic or emotionally competent. However, despite academia's relational nature, comprehensive studies focusing on the Turkish higher education context remain limited.

This project addresses that gap by examining both academics' emotional labor practices and students' expectations, adopting a dual perspective to reveal how gendered dynamics shape emotional engagement in academic life. Using case studies, focus group interviews with students, and semi-structured in-depth interviews with faculty, the study applies critical discourse analysis to explore how emotional labor intersects with gender, academic rank, and institutional culture.

The research contributes to SDG 9 (Industry, Innovation and Infrastructure) by advancing social science innovation and evidence-based institutional development, supporting the creation of more equitable, inclusive, and sustainable academic environments. It also contributes to SDG 5 (Gender Equality) by promoting gender-sensitive understanding of workplace practices, and to SDG 4 (Quality Education) by enhancing awareness of emotional well-being and equitable academic relations.

By offering a comprehensive analysis of emotional labor in academia, this 2023–2026 project will produce policy recommendations and awareness tools—including academic publications, a web platform, social media dissemination, and a stakeholder workshop—aimed at improving equality and well-being in higher education. Through its interdisciplinary and participatory approach, the project exemplifies how gender-focused social research can strengthen institutional innovation and contribute to the broader objectives of SDG 9.

https://akaduygusalemek.wixsite.com/akaduygusalemek

https://tto.bau.edu.tr/doc-dr-aysegul-akdemirin-projesi-desteklenmeye-hak-kazandi/

TÜBİTAK ARDEB 1001 Project: 3DNANOCOM – Modeling and 3D Printing of Acoustic Metamaterials



Led by Asst. Prof. Dr. Amir Navidfarin from the Faculty of Engineering and Natural Sciences, Bahçeşehir University, this TÜBİTAK ARDEB 1001 Project (2023–2026) focuses on developing, modeling, and 3D printing mechanically enhanced acoustic metamaterials (AMMs) through the integration of 3D-structured hybrid carbon nanofillers into polylactic acid (PLA) nanocomposites. The research aims to establish both material-based and design-based innovation pathways for creating lightweight, multifunctional materials with advanced sound absorption and mechanical performance.

Recognizing that noise pollution is a growing global environmental challenge, the project addresses the limitation of conventional sound absorbers in controlling low-frequency waves (<500 Hz). Through simulation-driven design and additive manufacturing (FDM 3D printing), the project aims to create coiled and Helmholtz-type acoustic metamaterials capable of manipulating low-frequency acoustic waves with at least 30% improvement in mechanical and acoustic properties over standard polymers.

The research introduces a novel class of 3D hybrid CNT/GNP nanofillers, combining carbon nanotubes and graphene nanoplatelets to improve filler dispersion and interfacial bonding within the polymer matrix. This hybrid structure enhances energy dissipation via interfacial friction, resulting in superior damping behavior and durability. The hybrid nanocomposite filaments will be extruded using twin-screw technology and fabricated into AMMs through precision 3D printing, followed by mechanical and acoustic performance validation against computational models.

The project's results will advance nanocomposite design, acoustic engineering, and additive manufacturing, offering scalable applications in automotive, defense, aerospace, and consumer industries.

This research contributes to SDG 9 (Industry, Innovation and Infrastructure) by strengthening nanomaterials innovation and sustainable industrial design, while also supporting SDG 12 (Responsible Consumption and Production) and SDG 13 (Climate Action) through the development of biodegradable, lightweight, and energy-efficient materials.

By merging materials science, computational modeling, and 3D manufacturing, this 2023–2026 project exemplifies sustainable engineering innovation, reinforcing Bahçeşehir University's role in advancing smart materials and green technology solutions under SDG 9.

https://tto.bau.edu.tr/dr-ogr-uyesi-amir-navidfarin-projesi-tubitak-1001-programi-kapsaminda-destek-kazandi/

TÜBİTAK ARDEB 1001 Project: Identification of Novel IL-17A Inhibitor Molecules from Molecular Databases for Multiple Sclerosis Therapy



Led by Assoc. Prof. Dr. Timuçin Avşar from the Department of Biophysics, School of Medicine, Bahçeşehir University, this TÜBİTAK ARDEB 1001 Project (2023–2025) focuses on the identification of new small-molecule inhibitors targeting IL-17A, a key proinflammatory cytokine involved in Multiple Sclerosis (MS) and other autoimmune disorders. The study combines in silico modeling, molecular docking, and structural biology with in vitro validation and animal model studies to develop more effective and safer therapeutic agents for MS.

Multiple Sclerosis is an inflammatory, demyelinating, and neurodegenerative disease of the central nervous system, characterized by immune-mediated myelin damage. The cytokine Interleukin-17A (IL-17A), primarily secreted by Th17 cells, CD8+ T cells, and natural killer cells, plays a pivotal role in sustaining chronic inflammation and neurodegeneration in MS. Although existing monoclonal antibodies such as brodalumab, secukinumab, and ixekizumab inhibit IL-17A or its receptor, their use is limited due to non-specific side effects and high dosages. This project aims to overcome these limitations by identifying novel IL-17A inhibitory compounds through computational drug repurposing and screening of approved drug and small-molecule libraries.

The research employs integrated computational and experimental workflows, including molecular dynamics, binding mode analysis, and cell-based assays, complemented by X-ray crystallography performed with the Turkish Light Source in collaboration with national partners. The biological activity of selected compounds will be evaluated in a cuprizone-induced MS mouse model, assessing their ability to suppress inflammation, prevent demyelination, and promote remyelination.

The project directly supports SDG 9 (Industry, Innovation and Infrastructure) by advancing biomedical innovation, computational modeling, and molecular design capabilities, while also contributing to SDG 3 (Good Health and Well-Being) by targeting novel therapeutic mechanisms for neuroinflammatory diseases. Additionally, through the training of two PhD and one MSc researchers, it strengthens SDG 4 (Quality Education) and builds interdisciplinary expertise bridging biophysics, pharmacology, and structural biology.

By integrating AI-assisted molecular screening with experimental pharmacology, this 2023-2025 project exemplifies BAU's contribution to research-driven innovation and sustainable health technologies, advancing the scientific and infrastructural objectives of SDG 9.

https://tto.bau.edu.tr/doc-dr-timucin-avsarin-projesi-1001-bilimsel-ve-teknolojik-arastirma-projelerini-destekleme-programi-kapsaminda-destek-kazandi/

TÜBİTAK ARDEB 3501 Project: Mechanisms of Host Innate Immune Response Regulation by SARS-CoV-2



Led by Asst. Prof. Dr. Elif Eren from the Department of Molecular Biology and Genetics, Faculty of Engineering and Natural Sciences, Bahçeşehir University, this TÜBİTAK ARDEB 3501 (2023-2026) Career Development Project explores how the SARS-CoV-2 virus modulates the host innate immune system at the molecular level. Building upon over a decade of research on inflammasome complexes, the project aims to reveal the mechanisms by which viral proteins interact with and regulate inflammasome activity in epithelial cells, providing new insights into COVID-19 pathogenesis and immune regulation.

The study focuses on identifying the inflammasome type activated by the SARS-CoV-2 ORF6 protein and uncovering its molecular activation mechanism using advanced cellular and

molecular biology methods, including CRISPR/Cas9 screening, immunoprecipitation, immunostaining, and mutagenesis in human lung epithelial cell models. Findings will contribute to understanding virus–host interactions and to developing targeted therapeutic approaches against COVID-19 and future viral infections.

The project contributes directly to SDG 9 (Industry, Innovation and Infrastructure) by advancing biomedical research infrastructure, fostering innovation in molecular immunology, and supporting the training of early-career researchers in high-impact scientific fields. It also supports SDG 3 (Good Health and Well-Being) by addressing viral pathogenesis and inflammation, and SDG 4 (Quality Education) by involving graduate and undergraduate students in cutting-edge experimental and data-driven research.

By integrating biotechnology, molecular innovation, and research training, this initiative strengthens Turkey's scientific capacity to respond to global health crises through innovation-driven biomedical discovery, aligning with the goals of SDG 9.

https://tto.bau.edu.tr/dr-ogretim-uyesi-elif-erenin-projesi-desteklenmeye-hak-kazandi/

TÜBİTAK ARDEB 1001 Project: Development of Dynamic Pharmacophore Models for YB-1 Inhibitors



Led by Prof. Dr. Serdar Durdağı from the Faculty of Pharmacy, Bahçeşehir University, this TÜBİTAK ARDEB 1001 Project (2024–2026) focuses on developing and validating AI-assisted dynamic pharmacophore models to discover novel YB-1 (Y-box binding protein 1) inhibitors, contributing to the advancement of computational drug discovery and pharmaceutical innovation infrastructure in Türkiye.

Led by Prof. Dr. Serdar Durdağı from the Faculty of Pharmacy, Bahçeşehir University, this TÜBİTAK ARDEB 1001 Project (2024–2026) focuses on developing and validating AI-assisted dynamic pharmacophore models to discover novel YB-1 (Y-box binding protein 1) inhibitors, contributing to the advancement of computational drug discovery and pharmaceutical innovation infrastructure in Türkiye.

YB-1 is a multifunctional protein implicated in cancer progression and drug resistance, making it a critical therapeutic target in precision oncology. The project integrates computational modeling, pharmacophore generation, and molecular dynamics simulations to define the structural and energetic principles governing YB-1 inhibition. This scientific approach addresses one of the key challenges in drug development — transforming complex biological data into actionable molecular models that accelerate target-based drug design.

Through in silico screening of large compound libraries, candidate molecules predicted to bind YB-1 will be prioritized for molecular docking and in vitro validation. The dynamic pharmacophore framework will then be optimized iteratively using machine learning and structural refinement, leading to the identification of high-affinity inhibitor scaffolds with improved selectivity and safety profiles.

The project's expected outcomes include a validated computational workflow for YB-1 inhibitor discovery, a curated database of drug-like molecules, and increased research capacity in AI-powered medicinal chemistry. Beyond scientific discovery, the initiative enhances the national ecosystem for preclinical innovation, laying the foundation for potential translational collaborations with industry and research hospitals.

This research directly supports SDG 9 (Industry, Innovation and Infrastructure) by strengthening Türkiye's innovation capacity in pharmaceutical R&D and promoting advanced computational infrastructure for drug discovery. It also aligns with SDG 3 (Good Health and Well-being) through its focus on novel therapeutics addressing complex diseases.

By merging computational chemistry, artificial intelligence, and molecular biology, this 2024–2026 project exemplifies sustainable innovation in biomedical research, reinforcing Bahçeşehir University's role in advancing AI-driven healthcare solutions under SDG 9.

https://tto.bau.edu.tr/prof-dr-serdar-durdaginin-projesi-tubitak-1001-programi-kapsaminda-destek-kazandi/

TÜBİTAK ARDEB 3501 Project: Augmented Reality Marketing – Sensory Simulation, Psychological Ownership, and Brand Outcomes



Led by Asst. Prof. Dr. Vahideh Arghashi from Faculty of Economics, Administrative and Social Sciences, Bahçeşehir University, this TÜBİTAK ARDEB 3501 Career Development Project (2024–2026) explores how augmented reality (AR) technologies transform consumer experience through sensory simulation and psychological ownership, ultimately shaping brand perception, engagement, and loyalty.

In the era of digital transformation and smart economies, augmented reality has emerged as a critical marketing innovation that bridges the gap between physical and digital experiences. This project investigates how immersive AR environments replicate multi-sensory cues—such as sight, sound, and spatial presence—to enhance consumers' sense of product ownership before purchase. By empirically modeling these mechanisms, the study provides a behavioral framework for understanding how AR-based marketing tools can drive sustainable brand growth and innovation.

The research combines experimental design, behavioral analysis, and computational modeling to measure the mediating role of sensory immersion and the moderating effect of individual psychological traits in AR marketing experiences. Using virtual simulation platforms, consumer responses will be evaluated through physiological and cognitive indicators, linking immersive exposure to tangible marketing performance outcomes.

Findings from this project are expected to expand theoretical and practical understanding of human–technology interaction in marketing contexts, offering data-driven strategies for brand differentiation and consumer relationship management. The project also supports the design of responsible digital ecosystems by highlighting ethical and psychological dimensions of extended reality technologies.

By fostering research at the intersection of digital technology, behavioral science, and marketing innovation, this project contributes directly to SDG 9 (Industry, Innovation and Infrastructure) by advancing the creative industries' technological capacity and digital innovation literacy. It further aligns with SDG 8 (Decent Work and Economic Growth) and SDG 12 (Responsible Consumption and Production) through its focus on sustainable digital consumer engagement and data-informed marketing practices.

By merging augmented reality, consumer psychology, and data analytics, this 2024–2026 project exemplifies innovation in digital marketing research, reinforcing Bahçeşehir University's leadership in smart and sustainable business transformation under SDG 9.



TÜBİTAK ARDEB 1001 Project: AI-Cam – Model Optimization and Artificial Intelligence-Based Camera Design for Low-Power Edge Devices



Led by Asst. Prof. Dr. Hassan İmani from the Faculty of Engineering and Natural Sciences, Bahçeşehir University, this TÜBİTAK ARDEB 1001 Project (2023–2026) focuses on the development of an innovative AI-based camera system optimized for low-power edge devices, aiming to enhance real-time image processing, energy efficiency, and data security in embedded systems.

The AI-Cam project addresses a critical technological challenge in artificial intelligence applications: how to achieve high computational performance and model accuracy within the limited power and memory constraints of edge hardware. The research integrates model compression, pruning, and quantization techniques with advanced hardware–software co-design methods to create AI models that can operate efficiently without relying on cloud-based resources.

The project's main objectives are to (1) design a modular and scalable AI camera architecture, (2) optimize neural network models for embedded processing, and (3) evaluate real-time performance in various computer vision tasks such as object detection, motion tracking, and environmental sensing. By implementing on-device inference, AI-Cam reduces latency, enhances data privacy, and minimizes energy consumption — critical factors for applications in smart cities, autonomous vehicles, and industrial automation.

Through cross-disciplinary collaboration among computer engineers, data scientists, and hardware designers, the research also contributes to the advancement of edge AI ecosystems and supports the development of next-generation IoT infrastructure in Türkiye. The project's outcomes include open-source tools, hardware prototypes, and training modules to foster innovation in applied AI engineering.

This initiative contributes directly to SDG 9 (Industry, Innovation and Infrastructure) by strengthening Türkiye's capacity for sustainable digital infrastructure development and AI-driven industrial transformation. It also aligns with SDG 7 (Affordable and Clean Energy) through its emphasis on energy-efficient design, and SDG 11 (Sustainable Cities and Communities) via smart and connected technology solutions.

By uniting machine learning optimization, embedded systems, and hardware innovation, this 2023–2026 project exemplifies sustainable engineering research, reinforcing Bahçeşehir University's leadership in AI-based technological innovation and smart infrastructure under SDG 9.

TÜBİTAK ARDEB 3501 Project: Climate Change Teaching Module – A Socioscientific Approach



Led by Asst. Prof. Dr. Nilay Öztürk from the Faculty of Educational Sciences, Bahçeşehir University, this TÜBİTAK ARDEB 3501 Career Development Project (2023–2026) aims to develop and implement an innovative teaching module on climate change based on a socioscientific issues (SSI) framework. The project integrates environmental science, ethics, and social inquiry to enhance climate literacy and critical thinking among students, fostering sustainable and innovation-oriented learning environments.

Through the SSI approach, the project encourages learners to critically analyze complex real-world problems such as carbon emissions, sustainable energy management, and environmental justice by connecting scientific evidence with social responsibility and policy implications. This interdisciplinary model empowers students to engage in informed debate, evidence-based reasoning, and collaborative problem-solving — essential competencies for sustainable innovation.

The project employs mixed-method research, combining classroom implementations, focus group interviews, and qualitative discourse analysis to evaluate the module's impact on both teachers and students. The results will contribute to the design of effective, scalable educational tools and strategies for integrating sustainability topics into formal curricula.

By equipping educators with evidence-based resources and pedagogical models, the initiative supports the development of a climate-aware education infrastructure, strengthening the link between science, innovation, and sustainability in academic settings.

This project contributes directly to SDG 9 (Industry, Innovation and Infrastructure) by fostering innovation-driven educational systems and resilient institutional capacity. It also supports SDG 4 (Quality Education) through improved STEM pedagogy and SDG 13 (Climate Action) by promoting climate literacy and responsible citizenship.

By integrating education for sustainability, digital innovation, and social responsibility, this 2023–2026 project reinforces Bahçeşehir University's leadership in developing forward-looking educational models under SDG 9.

TÜBİTAK ARDEB 1001 Project: Development of a Turkish Sign Language Dataset – AI-Based Recognition and Translation



Led by Asst. Prof. Dr. Arezoo Sadeghzadeh from Bahçeşehir University's Faculty of Engineering and Natural Sciences, this TÜBİTAK ARDEB 1001 research project (2023–2026) aims to develop a comprehensive Turkish Sign Language (TSL) dataset and an AI-based recognition and translation system to improve communication accessibility for deaf and hard-of-hearing individuals.

The project addresses a critical gap in existing technological research: the limited availability of large-scale, publicly accessible datasets for continuous Turkish Sign Language recognition and translation. By collecting multimodal data, including RGB, depth, and infrared recordings from 35 fluent signers, the research establishes a foundation for advanced machine learning applications.

The dataset incorporates fingerspelling, isolated signs, continuous sign sequences, and emotion-based expressions, with detailed annotations supporting research in computer vision, deep learning, natural language processing, and cross-lingual sign translation.

The project contributes directly to SDG 9 (Industry, Innovation and Infrastructure), particularly Target 9.5, by strengthening scientific research, expanding national AI research capacity, and developing the digital data infrastructure required for innovative assistive technologies. Its integration of multimodal data collection, advanced computational modelling, and AI-based translation supports technological development in an area where accessible digital solutions remain limited.

By creating research resources and developing new approaches to sign language recognition, the initiative also contributes to inclusive technological innovation, demonstrating how advanced AI research can address societal needs and support the development of more accessible digital services.

The project additionally supports SDG 10 (Reduced Inequalities) by addressing communication barriers and SDG 4 (Quality Education) through the potential application of accessible technologies in learning environments.

Through this research, Bahçeşehir University strengthens Türkiye's technological and scientific capabilities in artificial intelligence while advancing human-centred innovation, reinforcing its contribution to SDG 9 and the development of inclusive digital technologies.

TÜBİTAK ARDEB 1004 Project (ILATERA Platform): Development of a Lightweight, Thermally Conductive, and Energy-Efficient Hybrid Nanocomposite Battery Enclosure for Sustainable Vehicle Technologies



Led by Asst. Prof. Dr. Amir Navidfar from the Department of Mechatronics Engineering, Faculty of Engineering and Natural Sciences at Bahçeşehir University, this TÜBİTAK ARDEB 1004 Project (2023–2026) is conducted under the ILATERA Platform – Environment-Compatible Sustainable Advanced Vehicle Technologies, which aims to advance high-technology automotive research and develop innovative solutions suitable for industrial application.

The project focuses on developing a thermoplastic hybrid nanocomposite-based battery enclosure for electric vehicles, designed to improve energy efficiency, thermal management, mechanical strength, and lightweight performance. By reducing battery enclosure weight while maintaining structural integrity and effective heat dissipation, the research aims to enhance electric vehicle performance, driving range, and operational safety.

The research involves the synthesis of polyolefin-based thermoplastics reinforced with graphene and/or hexagonal boron nitride (h-BN), alongside advanced material characterization, composite manufacturing, and component prototyping. Battery system-level testing will evaluate thermal conductivity, mechanical durability, and safety performance, supporting the development of materials with potential for large-scale industrial applications.

The project contributes directly to SDG 9 (Industry, Innovation and Infrastructure), particularly Targets 9.4 and 9.5. In alignment with Target 9.5, it strengthens scientific research and technological innovation through advanced materials engineering, nanocomposite development, and experimental validation. By connecting university-based research with industrial applications, the project also supports technology transfer and the development of domestic automotive manufacturing capabilities.

In relation to Target 9.4, the initiative advances research into more resource-efficient and environmentally sustainable industrial technologies. Its emphasis on lightweight materials, improved thermal performance, and energy-efficient vehicle components supports innovation toward cleaner and more sustainable automotive production.

The project also aligns with SDG 12 (Responsible Consumption and Production) through its focus on material efficiency and SDG 13 (Climate Action) through research supporting more energy-efficient electric mobility.

Through its participation in the ILATERA High-Technology Platform, Bahçeşehir University contributes to strengthening Türkiye's advanced manufacturing research, technological innovation capacity, and industry-oriented R&D ecosystem, supporting the transition toward more sustainable and competitive automotive technologies.

https://ilatera.itu.edu.tr/

TÜBİTAK 4005 Project: Technology Integration Planning Model – Instructional Product Development through Generative AI



Led by Prof. Dr. Şefika Feza Orhan from the Faculty of Educational Sciences at Bahçeşehir University, this TÜBİTAK 4005 Project (2023–2026) aims to strengthen teachers' professional competencies in integrating Generative Artificial Intelligence (GenAI) into instructional design and classroom practices.

The project introduces a structured in-service training programme based on the Technology Integration Planning (TIP) Model, enabling public school teachers in Istanbul to develop practical skills in AI-supported lesson planning, digital content creation, assessment design, and personalised feedback.

Through hands-on activities and micro-teaching sessions, participants learn to evaluate, adapt, and apply GenAI tools according to pedagogical objectives while considering ethical responsibilities and the limitations of AI-generated content.

The project supports SDG 9 (Industry, Innovation and Infrastructure), particularly Target 9.5, by strengthening technological competencies and promoting the practical adoption of emerging AI technologies within educational institutions. By equipping teachers with the skills to integrate GenAI into instructional processes, the initiative contributes to building the human capacity and digital expertise that underpin broader technological innovation.

The project also encourages technology-driven innovation in educational practices, supporting the development of adaptable digital learning environments and strengthening educators' ability to respond to technological transformation.

Beyond SDG 9, the initiative contributes directly to SDG 4 (Quality Education) by improving teachers' digital pedagogical competencies and supports SDG 17 (Partnerships for the Goals) through cooperation between university researchers and public schools.

Through this research-based training initiative, Bahçeşehir University promotes responsible AI adoption, digital capacity-building, and innovation-oriented education, contributing to the development of technological skills essential for an increasingly digital society.

https://tto.bau.edu.tr/prof-dr-sefika-feza-orhanin-projesi-tubitak-4005-programi-kapsaminda-destek-kazandi/

TÜBİTAK TEYDEB 1505 Project: Multi-Modal Content Tagging Using Machine Learning Techniques



Led by Assoc. Prof. Dr. Tevfik Aytekin from the Department of Computer Engineering, Faculty of Engineering and Natural Sciences at Bahçeşehir University, this TÜBİTAK TEYDEB 1505 University–Industry Collaboration Project (2025–2026) focuses on developing an advanced machine learning-based, multimodal content tagging system for the automatic classification and analysis of digital video content.

The project addresses the growing need for efficient and scalable content management technologies by integrating visual, auditory, and textual data into a unified artificial intelligence framework. Using supervised and self-supervised machine learning techniques, the system aims to generate detailed semantic labels, improve content searchability and recommendation accuracy, and reduce reliance on manual annotation.

By combining advanced AI research with practical industrial applications, the project seeks to develop an automated tagging engine capable of processing complex video datasets and supporting intelligent digital media services.

The initiative contributes directly to SDG 9 (Industry, Innovation and Infrastructure), particularly Target 9.5, by strengthening applied scientific research, advancing artificial intelligence technologies, and promoting innovation through university–industry collaboration. Its focus on multimodal machine learning, automated data processing, and scalable digital solutions supports the development of advanced technological capabilities and research-driven innovation within the digital media industry.

The project also demonstrates the importance of transferring academic research into commercially applicable technologies, strengthening connections between universities and industry while contributing to Türkiye's digital innovation ecosystem.

Additionally, the initiative supports SDG 17 (Partnerships for the Goals) through collaborative research and knowledge exchange between academic and industrial stakeholders.

Through this TÜBİTAK-supported research initiative, Bahçeşehir University contributes to technological innovation, industry-oriented R&D, and the development of advanced AI applications, reinforcing its role in strengthening scientific and technological capacity under SDG 9.

https://tto.bau.edu.tr/doc-dr-tevfik-aytekinin-projesi-desteklenmeye-hak-kazandi/

Conference Paper: "Remanufacturing and Circular Business Models in Electric Mobility"

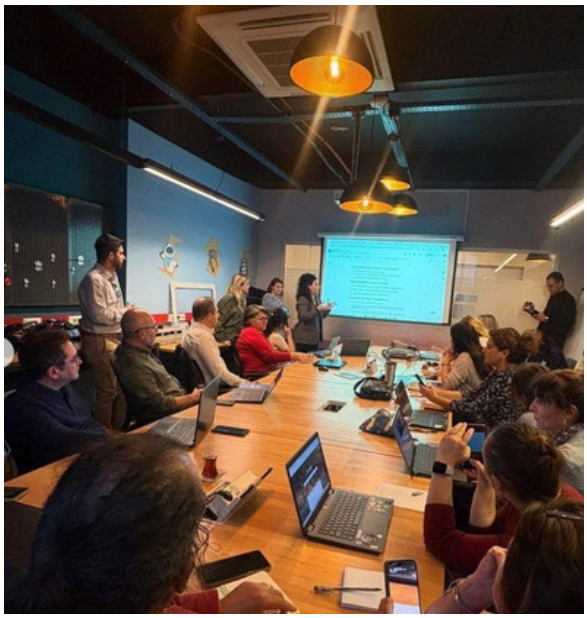


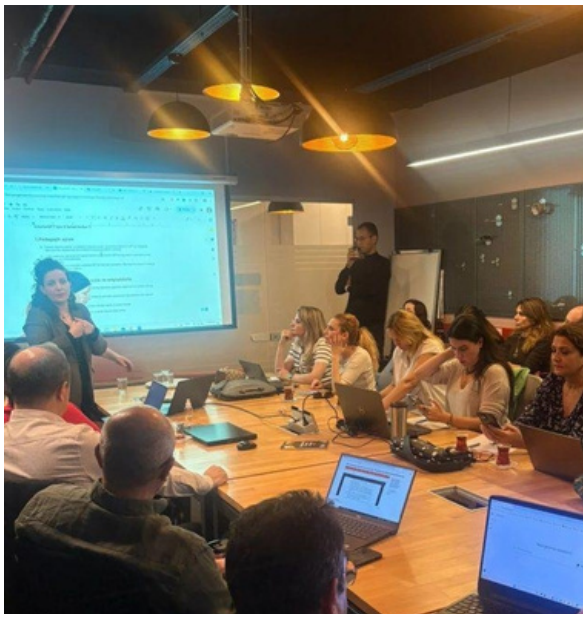


In the 2024-2025 academic year, Presented at the International Conference on Manufacturing and Civil Engineering (ICMCE 2024), the study by Joanna Oleśków-Szłapka, Adnan Corum, Patrycja Hoffa-Dąbrowska, and Agnieszka Stachowiak examines the role of remanufacturing in shaping sustainable and circular business models within the electric mobility sector. As the automotive industry transitions toward cleaner technologies, the paper highlights how remanufacturing processes can mitigate the environmental impacts of electric vehicle production, usage, and end-of-life management.

The study contributes to SDG 9 (Industry, Innovation, and Infrastructure) by fostering innovation in sustainable manufacturing systems, advancing circular economy principles, and promoting environmentally responsible industrial practices that enhance efficiency, resilience, and technological progress in the mobility industry.

Advancing Educational Innovation through AI-Enhanced Course Design: CourseGPT Workshop at Bahçeşehir University





On 3 November 2025, Bahçeşehir University's Faculty of Educational Sciences organized a hands-on CourseGPT Workshop in collaboration with OpenAI, the AI Competency Unit, and the Center for Learning and Teaching (CLT). Led by Dr. Sezin Eşfer Öndünç, Dr. Meltem Özmutlu, and Dr. Zeynep Cömert, the workshop brought together 30 faculty members to strengthen the University's capacity to integrate artificial intelligence into higher education. Moving beyond theoretical discussions, the initiative provided participants with practical experience in designing and customizing AI-powered teaching assistants around the objectives, content, and learning needs of their own courses.

Using OpenAI tools, participants developed interactive CourseGPT assistants and explored how generative AI could support course planning, instructional content development, student engagement, and personalized learning. These course-specific digital assistants offered new possibilities for improving the accessibility of learning materials, providing additional academic guidance, and responding to diverse learning preferences. The workshop also positioned faculty members as active contributors to educational technology development, encouraging experimentation, interdisciplinary knowledge exchange, and the responsible adoption of innovative teaching tools.

By developing digital competencies and supporting the practical application of emerging technologies, the initiative contributed directly to SDG 9: Industry, Innovation and Infrastructure, particularly its emphasis on strengthening technological capabilities, research, and innovation. It also advanced SDG 4: Quality Education through faculty professional development and the creation of more accessible, inclusive, and responsive learning environments. As the first phase of a planned university-wide training series, the workshop demonstrated Bahçeşehir University's commitment to establishing sustainable institutional infrastructure for responsible AI integration and extending innovation-oriented teaching practices across its faculties.

Advancing Human–Computer Interaction and AI Innovation: HCI-E 2024



During the 2024–2025 academic year, Bahçeşehir University hosted the 3rd Eurasian Conference on Human–Computer Interaction (HCI-E 2024) under the theme "Human–Computer Interaction in the Age of Artificial Intelligence." The conference brought together international researchers and practitioners to exchange scientific knowledge and explore developments in artificial intelligence, human-centred technologies, usability, interactive systems, and technology-enhanced learning.

Dr. Sezin Eşfer Öndünç contributed to the conference's organisation and scientific activities. She also co-authored a study examining the relationship between AI-supported automated writing evaluation and teacher feedback in English-language education, exploring how intelligent technologies can complement human expertise in educational settings.

The conference contributes to SDG 9 (Industry, Innovation and Infrastructure), particularly Target 9.5, by promoting scientific research, technological innovation, and international knowledge exchange in artificial intelligence and human–computer interaction. By bringing together researchers working on emerging digital technologies, the event supported the dissemination of research findings, interdisciplinary collaboration, and the development of knowledge relevant to advanced technological applications.

The conference also highlighted the importance of human-centred AI innovation, encouraging research into intelligent systems that are effective, accessible, and responsive to human needs. Its academic programme demonstrated how scientific research can inform practical technological applications across education and other digital environments.

Additionally, the initiative supported SDG 4 (Quality Education) through research on AI-enhanced learning and SDG 17 (Partnerships for the Goals) through international academic collaboration.

Through HCI-E 2024, Bahçeşehir University strengthened its contribution to scientific knowledge exchange, AI research, and innovation capacity, reinforcing its commitment to advancing technological development under SDG 9.

Building Digital Innovation Capacity through the Erasmus+ DigiSET Project



On 24 December 2025, the Bahçeşehir University Technology Transfer Office (BAUTTO) announced that The Academy of Digitally Sustainable European Teacher (DigiSET), led at Bahçeşehir University by Dr. Sezin Eşfer Öndünç, had received funding under the Erasmus+ Teacher Academies Programme. The three-year international project allocated €58,118 to Bahçeşehir University, supporting its participation in European educational innovation and professional development networks.

DigiSET aims to strengthen teachers' ability to integrate digital technologies into educational practices while promoting environmental sustainability and responsible technology use. Through international collaboration, professional training, and knowledge exchange, the project supports the development of innovative teaching methodologies and sustainability-oriented digital competencies.

The project supports SDG 9 (Industry, Innovation and Infrastructure), particularly Target 9.5, by strengthening technological capabilities and encouraging innovation through the effective integration of digital technologies into educational institutions. Its focus on digital skills development, innovative educational practices, and international knowledge transfer contributes to building the human capacity necessary for broader technological transformation and innovation-driven development.

By connecting digital innovation with environmental sustainability, DigiSET also promotes awareness of how emerging technologies can be applied responsibly and efficiently, supporting the development of more sustainable digital learning environments.

The initiative additionally contributes to SDG 4 (Quality Education) through teacher professional development and SDG 17 (Partnerships for the Goals) through sustained cooperation among European educational institutions.

Through its participation in DigiSET, Bahçeşehir University strengthens its international engagement in digital innovation, technological capacity-building, and sustainable educational transformation, reinforcing its contribution to the broader objectives of SDG 9.

Advancing Medical Technologies through Artificial Intelligence Research

Bahçeşehir University researchers contributed to a series of health-oriented artificial intelligence studies between December 2024 and December 2025. The research addressed endoscopic disease detection, depression detection using electroencephalography signals, brain tumour classification, scoliosis detection from spinal radiographs, and the interpretability of medical AI models. Together, these outputs explored how computational methods can support the analysis of complex medical data, improve diagnostic workflows, and advance the development and evaluation of digital health technologies.

This body of research contributes directly to SDG 9: Industry, Innovation and Infrastructure by advancing innovation in medical imaging, automated classification, explainable AI, and data-driven healthcare technologies. By connecting expertise from engineering, computer science, and health research, Bahçeşehir University supported the interdisciplinary technological capacity needed to develop more accurate, reliable, and clinically relevant diagnostic support systems. The emphasis on interpretability was particularly important for responsible innovation, as transparent models can help clinicians and researchers understand and critically assess how automated systems generate their outputs.

The studies also support SDG 3: Good Health and Well-Being by investigating technologies that may enable earlier detection, more accurate classification, and more informed evaluation of health conditions. Research on endoscopic lesions, depression indicators, brain tumours, scoliosis, and medical-image interpretation demonstrates how technological innovation can contribute to evidence-based healthcare while supporting the responsible digital transformation of medical practice.

- Selective RGB Channel Jittering for Robust Endoscopic Disease Detection Across Multiple Lesion Types

29 December 2025; early publication 11 December 2025 | Sakarya University Journal of Computer and Information Sciences, 8(4), 785–797

10.35377/saucis...1771175

- Interpretable Deep Learning for Depression Detection in Neurological Patients Using EEG Signals

December 2025 | MethodsX, 15, 103736

10.1016/j.mex.2025.103736

- Task-Specific Architecture Analysis for Brain Tumor Classification

First online 28 October 2025 | MCO 2025 proceedings, LNNS 1689, 323–334

10.1007/978-3-032-08384-5_27 Bibliographic year 2026; first published online within this reporting period.

- Harnessing CNNs and Decision Trees for Autonomous Scoliosis Diagnosis on Spinal Radiographs

6–7 December 2024 conference | ISAS 2024, 1–7

10.1109/ISAS64331.2024.10845516

- Enhancing medical AI Interpretability Using Heatmap Visualization Techniques

2025 | Explainable AI in Healthcare Imaging for Medical Diagnoses, 71–91

10.1016/B978-0-443-23979-3.00004-X





Strengthening Digital Competencies and Lifelong Learning through Open-to-the-Public Extracurricular Tech Talks

Dr. Duygu Çakır from Bahçeşehir University organized and hosted the Extracurricular Tech Talks, a series of eight online workshops and discussions held via Microsoft Teams between 17 October and 24 December 2025. Open to the general public as well as current students and alumni of Bahçeşehir University, the initiative provided opportunities to engage with industry practitioners and explore emerging developments in artificial intelligence, software engineering, cybersecurity, and digital technologies. By welcoming participants beyond the university community, the programme extended access to specialized technology education to individuals from diverse educational and professional backgrounds. Conducted between 19:00 and 21:00 Türkiye time, the sessions complemented formal academic curricula while offering accessible learning opportunities for anyone interested in developing their digital competencies.

The programme covered eight specialized sessions addressing contemporary technological developments and their practical applications:

Date	Session	Speaker or speakers
17 Oct 2025	Next-Generation AI: The Agentic Approach	Hayriye Anıl
24 Oct 2025	MCP: The USB-C for AI	Enes Başbuğ
31 Oct 2025	Cybersecurity: Offensive Penetration Testing	Gani Nazar
7 Nov 2025	2D Game Development: From Design to Go-Live	Aylin Görgün
19 Nov 2025	Fullstack Development: Python Web Application	Mehmet Önal
4 Dec 2025	Parallel & Distributed Systems: Foundations and Modern Practices	Emre Barış
18 Dec 2025	Test Engineering: Modern Test Automation Practices	Mehmet Kılıç and Sevde Kuzu Sivaslı
24 Dec 2025	Artificial Intelligence, Law, and Responsibility	Buse Nazan Taşkın and Ece Sülüngür

Through these sessions, participants explored contemporary AI technologies, software development methodologies, cybersecurity practices, and the legal and ethical implications of artificial intelligence. The diversity of topics encouraged interdisciplinary learning and provided opportunities to strengthen technical knowledge relevant to rapidly evolving professional environments. The public accessibility of the sessions also supported knowledge sharing between academic communities, technology professionals, and interested members of society.

The initiative directly contributed to SDG 4: Quality Education by expanding extracurricular learning opportunities, supporting continuous professional development, and strengthening digital literacy and technology-related competencies. By making these educational sessions available to the general public, Bahçeşehir University extended learning opportunities beyond its enrolled student population, reinforcing its commitment to inclusive education, educational outreach, and lifelong learning for the wider community. The programme also aligned with SDG 8: Decent Work and Economic Growth by addressing professional skills relevant to employment and career development in the technology sector, while supporting SDG 9: Industry, Innovation and Infrastructure through knowledge exchange on emerging technologies and digital innovation. By connecting academic communities, industry experts, and members of the public, Bahçeşehir University supported the wider dissemination of technological knowledge and future-oriented competencies.

Strengthening University–Industry R&D through AI and Machine Learning Consultancy (September 2024 - December 2025)

During the 2024-2025 academic year, Dr. Duygu Çakır from Bahçeşehir University provided research consultancy to three technology companies—IBSS Teknoloji ve Yazılım, Endpoint Bilgi Teknolojileri Güvenliği ARGE, and Egemsoft. These collaborations connected Bahçeşehir University's academic expertise in artificial intelligence and machine learning with applied industrial needs, supporting the development of research-based technological solutions in industrial R&D, cybersecurity, and software testing.

IBSS Technology ve Software (September 2024–December 2025)

Dr. Çakır supported IBSS in applying machine-learning methods within its industrial research and development activities. His consultancy included academic guidance for TÜBİTAK project applications, patent submissions, and scientific publications, helping translate industrial challenges into structured research questions and potential technological outputs. The collaboration supported not only product-oriented development but also the production, documentation, and dissemination of technical knowledge.

Endpoint Information Technologies Securities ARGE (March–December 2025)

The consultancy provided to Endpoint focused on an AI-powered API security project. Dr. Çakır contributed to the project application and advised on the use of language models to analyse API traffic, recognize suspicious patterns, and support the detection of potential cyber threats. By combining AI research with cybersecurity development, the work addressed the resilience and protection of digital infrastructure as increasingly interconnected systems face more complex security risks.

Egemsoft (November–December 2025)

Dr. Çakır advised Egemsoft on the development of an AI-powered test automation framework based on large language models and agent-based methods. The consultancy covered automated test-scenario generation, adaptation of models to domain-specific requirements, integration of intelligent agents, and mechanisms for maintaining automated tests as software systems evolve. It also addressed security considerations and the definition of evaluation criteria needed to assess the framework's reliability and effectiveness.

Together, these consultancies contribute directly to SDG 9: Industry, Innovation and Infrastructure by supporting industry-oriented R&D, strengthening technological capabilities, and facilitating the transfer of academic knowledge into practical innovation. The cooperation also advances SDG 17: Partnerships for the Goals through sustained university–industry engagement. The cybersecurity work further relates to SDG 16: Peace, Justice and Strong Institutions by supporting more secure digital systems, while the development of commercially relevant AI capabilities contributes to SDG 8: Decent Work and Economic Growth through innovation and skills development in the technology sector.

Bahçeşehir University Provides Artificial Intelligence Expertise and Training to the Presidency's Digital Transformation Office: Supporting Government Capacity and National Digital Innovation



T.C.
CUMHURBAŞKANLIĞI
Dijital Dönüşüm Ofisi Başkanlığı
Yönetim Hizmetleri Dairesi Başkanlığı

Sayı : E-50209289-903.07.02-19870
Konu : Dr. Merve Ayyüce KIZRAK

BAHÇEŞEHİR ÜNİVERSİTESİ REKTÖRLÜĞÜNE

İlgi : 21.11.2024 tarihli ve 81858953-92693 sayılı yazınız.

Üniversitenize Mühendislik ve Doğa Bilimleri Fakültesinde Araştırma Görevlisi olarak görev yapan Dr. Merve Ayyüce KIZRAK (T.C.46714331054) ilgide kayıtlı muvafakat ile Başkanlığımızda 21/6/2006 tarihli ve 5523 sayılı Cumhurbaşkanlığına Bağlı Ofislere İlişkin Bazı Düzenlemeler Yapılması Hakkında Kanunun 10 uncu maddesinin üçüncü fıkrası çerçevesinde görevlendirilmişti. Ancak adı geçenin görevlendirme usulünün yenilenmesi ihtiyacı hasıl olmuştur.

Söz konusu personelin, 21/6/2006 tarihli ve 5523 sayılı Cumhurbaşkanlığına Bağlı Ofislere İlişkin Bazı Düzenlemeler Yapılması Hakkında Kanunun 10 uncu maddesinin üçüncü fıkrası çerçevesinde yapılan görevlendirmesinin sonlandırılarak, tüm özlük, mali ve sosyal hakları Cumhurbaşkanlığı Dijital Dönüşüm Ofisi tarafından karşılanmak üzere 375 sayılı Kanun Hükmünde Kararnamenin Ek 25 inci maddesi ve Kurumlar Arası Geçici Görevlendirme Yönetmeliğinin 4 üncü maddesinin birinci fıkrasının (b) bendi çerçevesinde (1) yıl süreyle Başkanlığımıza aylıksız izinli olarak görevlendirilmesi için muvafakat verilmesi hususlarında;

Bilgilerinizi ve gereğini rica ederim.

Yusuf TANCAN
Dijital Dönüşüm Ofisi Başkan V.

Ek: Geçici Görevlendirme Formu (3 Sayfa)

T.C.
BAHÇEŞEHİR ÜNİVERSİTESİ REKTÖRLÜĞÜ
Mühendislik ve Doğa Bilimleri Fakültesi Dekanlığı

Sayı : E-75538006-903.07-97259
Konu : Görevlendirme - Dr. Merve Ayyüce KIZRAK

BAHÇEŞEHİR ÜNİVERSİTESİ REKTÖRLÜĞÜNE

Fakültemiz Yapay Zeka Mühendisliği Bölümü'nde Araştırma Görevlisi olarak görev yapan Dr. Merve Ayyüce KIZRAK'ın, 01/01/2025 - 01/01/2026 tarihleri arasında, Türkiye/Ankara'da bulunan Dijital Dönüşüm Ofisi Başkanlığı'nda 1 yıl süreyle aylıksız izinli olarak görevlendirilmesi hususunu arz ederim.

Prof.Dr. Ahmet Arif ERGİN
Dekan Vekili

Ek:
1- İlgi Yazı
2- Karar Örneği

BAHÇEŞEHİR ÜNİVERSİTESİ YÖNETİM KURULUNUN 06.02.2025 TARİH VE 2025/03/08 SAYILI KARAR ÖRNEĞİDİR.

KARAR:2025/03/08

Üniversitemiz Mühendislik ve Doğa Bilimleri Fakültesi Arş. Gör. Merve Ayyüce KIZRAK'ın Cumhurbaşkanlığına Bağlı Ofislere İlişkin Bazı Düzenlemeler Yapılması Kanunu uyarınca görevlendirilmesi konusu görüşüldü.

Görüşmeler sonunda; Cumhurbaşkanlığının 24.12.2024 tarih ve E-50209289-903.07.02-19870 sayılı yazısı ile Üniversitemiz Mühendislik ve Doğa Bilimleri Fakültesinin 07.01.2025 tarih ve 2025/01/01 sayılı Fakülte Yönetim Kurulu kararı gereği; Mühendislik ve Doğa Bilimleri Fakültesi Yapay Zeka Mühendisliği Bölümü Arş. Gör. Merve Ayyüce KIZRAK'ın, tüm özlük, mali ve sosyal hakları T.C. Cumhurbaşkanlığı Dijital Dönüşüm Ofisi tarafından karşılanacak şekilde 375 sayılı Kanun Hükmünde Kararnamenin Ek 25 inci maddesi ve Kurumlar Arası Geçici Görevlendirme Yönetmeliğinin 4 üncü maddesinin birinci fıkrasının (b) bendi kapsamında 01 Ocak 2025 – 01 Ocak 2026 tarihler arasında 1 (bir) yıl ücretsiz izinli sayılmasına oy birliği ile karar verildi.

---/---/2025
ASLI GİBİDİR
Deniz ÇALIŞ
Yönetim Destek ve Bilgi Sistemleri Direktörü

Bahçeşehir University contributes specialist academic knowledge directly to national government through Dr. Merve Ayyüce Kızrak, a faculty member at the University's Faculty of Engineering and Natural Sciences, who provides artificial intelligence training to the Presidency of the Republic of Türkiye's Digital Transformation Office. Her formal assignment to the Office creates a direct channel through which BAU's expertise in AI is transferred to a central public institution responsible for Türkiye's digital transformation. By supplying government personnel with specialised knowledge of an emerging technology, the University simultaneously strengthens public-sector capacity under SDG 16: Peace, Justice and Strong Institutions and supports technological development under SDG 9: Industry, Innovation and Infrastructure.

This activity represents a concrete example of Bahçeşehir University providing expert advice and capacity-building support to the national government. Rather than limiting its AI expertise to academic teaching and research, BAU makes this knowledge available to the Presidency's Digital Transformation Office through targeted training delivered by a qualified academic specialist. The training enables a national public institution to engage with artificial intelligence from a stronger technical and analytical foundation, demonstrating how university expertise can inform the work of government and improve institutional readiness for technological change. This direct government-facing knowledge transfer reinforces SDG 16 by supporting more capable and informed public institutions, while its focus on AI knowledge and digital transformation advances SDG 9.

From an institutional-governance perspective, the initiative shows how Bahçeşehir University contributes to the development of effective public administration by responding to a specific area of government need. Artificial intelligence increasingly affects the design and delivery of public services, data-informed decision-making and the management of digital systems. Providing expert AI training to the Presidency's Digital Transformation Office therefore helps public officials and institutional teams develop the knowledge required to assess technological opportunities, limitations and implementation challenges. BAU's contribution strengthens SDG 16 by enhancing the expertise and operational capacity of a national government institution, while also supporting SDG 9 by facilitating the informed adoption of advanced digital technologies within the public sector.

Dr. Kızrak's delivery of AI training constitutes a direct form of expert support from Bahçeşehir University to the national government: academic knowledge is transferred to the Presidency's Digital Transformation Office for use within a public-sector setting. It strengthens the knowledge base on which government institutions can evaluate and manage AI-related developments. In this way, BAU advances SDG 16 through university-to-government expertise and SDG 9 through the dissemination of knowledge needed for responsible digital innovation.

The programme also demonstrates the wider public value of university expertise in artificial intelligence. The effective use of AI in government requires more than access to technology; it also depends on personnel who understand its capabilities, technical requirements and institutional implications. By supporting the Presidency's Digital Transformation Office with academic training, Bahçeşehir University helps bridge the gap between research-based AI knowledge and its practical application within national institutions. This contribution reinforces SDG 9 by building technological capability and encouraging innovation-oriented institutional development, while advancing SDG 16 by helping government structures respond to digital transformation with greater competence and preparedness.

Overall, Bahçeşehir University's provision of AI expertise to the Presidency's Digital Transformation Office illustrates an integrated contribution to strong institutions and national innovation capacity. Through Dr. Kızrak's government-facing role, BAU supplies specialized knowledge to a national authority, strengthens the professional capacity of the public sector and extends the impact of its academic expertise beyond the University. The activity therefore makes a substantial contribution to SDG 16: Peace, Justice and Strong Institutions through direct expert support to national government and to SDG 9: Industry, Innovation and Infrastructure through AI education, digital-capacity development and the transfer of technological knowledge into public administration.

Bahcesehir University- and the Association of Real Estate Investors (GYODER): “Construction Sector and Labor Dynamics in Turkey ” Research Report



During the 2024–2025 academic year, Bahçeşehir University (BAU) contributed to SDG-related research through its collaboration with the Association of Real Estate Investors (GYODER), a leading Turkish non-governmental organization (NGO) representing stakeholders in the real estate and construction sectors.

The collaboration was undertaken through BAU's Center for Economic and Social Research (BETAM) and resulted in the research report “Construction Sector and Labour Dynamics: Türkiye ” (İnşaat Sektörü ve İş Gücü Dinamikleri: Türkiye 2024). The study examined structural challenges and emerging opportunities within Türkiye's construction industry, one of the country's major sources of economic activity and employment.

Combining BAU's academic research expertise with GYODER's sectoral knowledge and stakeholder engagement, the study investigated workforce composition, employment patterns, labour productivity, skills development, and the effects of digital transformation on the construction sector. Drawing on comparative international data and sector-specific insights, the research provided an evidence-based assessment of challenges affecting the industry's workforce and long-term development.

A central dimension of the research concerned the relationship between employment quality, workforce skills, gender equality, and sustainable economic growth. By examining these interconnected issues, the study contributed to a better understanding of how the construction industry can strengthen labour market participation, improve working conditions, and respond to changing technological and economic demands.

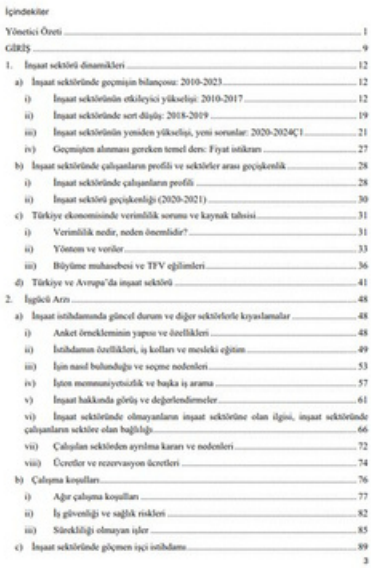
The BAU–GYODER collaboration demonstrates the role of university–NGO research partnerships in generating knowledge relevant to the Sustainable Development Goals. Through BETAM, BAU contributed academic analysis and research capacity, while GYODER provided an important connection to the sector and its practical challenges. This cooperation helped bridge academic research, industry experience, and evidence-informed approaches to sustainable development.

The research also generated findings relevant to labour market strategies, vocational education, inclusive employment, and sectoral transformation, providing a knowledge base that can inform future discussions among researchers, civil society organizations, industry stakeholders, and policymakers.

The initiative primarily contributes to SDG 8 (Decent Work and Economic Growth) through research on employment dynamics, productivity, and working conditions; SDG 5 (Gender Equality) through attention to gender disparities and inclusive workforce participation; SDG 9 (Industry, Innovation and Infrastructure) through the examination of digital transformation and sectoral development; and SDG 17 (Partnerships for the Goals) through collaborative research between academia and an NGO.

By conducting research in partnership with GYODER, Bahçeşehir University strengthens its contribution to SDG-oriented knowledge production and demonstrates how academic institutions and civil society organizations can work together to address economic, social, and sustainability challenges through evidence-based research.

The images below show the cover page and table of contents of the report 'Construction Sector and Labor Force Dynamics: Türkiye'24,' prepared through a collaboration between Bahcesehir University and GYODER, presenting national research on labor dynamics and sustainable industry development.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Bahcesehir University Policy Forum and Outcome Report on Artificial Intelligence and Technology in Hazelnut Agriculture with NGOs



During the 2024–2025 academic year, Bahçeşehir University (BAU) contributed to collaborative SDG-related research, the development of educational resources, and open-access knowledge dissemination through the Policy Forum and Workshop on Artificial Intelligence and Technology Use in Hazelnut Agriculture, held in Giresun, Türkiye.

The initiative brought together the Ministry of Agriculture and Forestry, the Eastern Black Sea Development Agency (DOKA), other public institutions, universities, non-governmental organizations (NGOs), agricultural cooperatives, and private-sector representatives to explore the integration of artificial intelligence (AI) and digital technologies into hazelnut production, a sector of strategic importance to Türkiye's agricultural economy and rural communities.

BAU contributed academic and scientific expertise to the workshop, supporting collaborative discussions and knowledge exchange on agricultural innovation, digital transformation, productivity, workforce development, and environmentally sustainable production practices. The participation of civil society organizations, agricultural stakeholders, researchers, and technology specialists enabled the integration of academic perspectives with practical experience and sector-specific knowledge.

A central outcome of the workshop was the development and publication of the “Outcome Report of the Workshop on Artificial Intelligence and Technology in Hazelnut Agriculture.” The report consolidated the findings of the collaborative discussions, identified sectoral challenges and priorities, and presented recommendations concerning AI adoption, technological adaptation, agricultural productivity, workforce training, and sustainable farming practices.

Importantly, the outcome report was made openly accessible, extending the educational and research value of the workshop beyond its original participants. By making the findings available to a wider audience, the initiative transformed the knowledge generated through multi-stakeholder collaboration into an open-access educational resource for researchers, educators, agricultural professionals, NGOs, cooperatives, and other stakeholders interested in sustainable agriculture and technological innovation.

The report provides a structured reference for understanding the opportunities and challenges associated with agricultural digitalization, including the role of emerging technologies in improving production processes, strengthening workforce capabilities, and supporting environmental sustainability. Its open dissemination contributes to knowledge sharing, professional learning, and the development of educational resources relevant to sustainable food systems.

Through the workshop and its published outcome report, BAU helped connect academic research with the practical knowledge of NGOs, agricultural cooperatives, public institutions, and industry stakeholders, supporting collaborative knowledge production and the wider dissemination of research findings. The initiative demonstrates how university–NGO cooperation can contribute to both SDG-related research and the development of accessible educational materials addressing real-world sustainability challenges.

The collaboration also supported evidence-informed policy discussions concerning technological innovation and sustainable agricultural development. While the workshop's policy recommendations contributed to broader discussions on agricultural transformation, its documented outcome report represents a tangible research and educational resource, extending the impact of the initiative beyond policy dialogue alone.

The initiative contributed to SDG 9: Industry, Innovation and Infrastructure by advancing research and multi-stakeholder knowledge exchange on the application of artificial intelligence and digital technologies in hazelnut agriculture. Its focus on technological adaptation, data-informed production, agricultural productivity, workforce capabilities and the practical adoption of emerging technologies supported the development of a more innovative and technologically resilient agricultural sector. The openly accessible outcome report further strengthened this contribution by converting workshop findings into a reusable knowledge resource that can inform future research, sectoral applications and evidence-based decisions on agricultural digitalisation.



The initiative also supported SDG 2: Zero Hunger through its attention to sustainable agricultural production, SDG 4: Quality Education through open dissemination of research-based educational material, and SDG 13: Climate Action through environmentally sustainable farming approaches. Cooperation among Bahçeşehir University, public institutions, universities, NGOs, cooperatives and private-sector representatives additionally advanced SDG 17: Partnerships for the Goals, demonstrating how multi-stakeholder collaboration can generate and disseminate knowledge for technology-driven and sustainable agricultural transformation.

FEASS Research Seminar on Innovation and Responsible AI in Academic Supervision

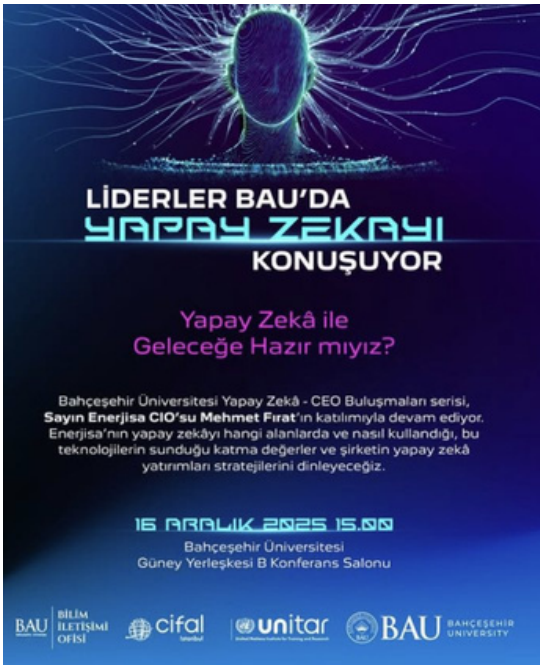


In the 2024-2025 academic year, as part of the FEASS Research Seminars, Dr. Radu Godina of NOVA School of Science and Technology delivered the presentation “Supervising in the Age of AI: Navigating Student Use of ChatGPT in Graduate and Undergraduate Work.” Organised through collaboration among Bahçeşehir University’s Faculty of Economics, Administrative and Social Sciences, CIFAL Istanbul, and UNITAR, the seminar examined the growing role of generative AI in undergraduate and graduate research and supervision.

The session explored how tools such as ChatGPT can support idea development, academic feedback, research planning, and other elements of the supervisory process. Alongside these opportunities, it addressed the ethical, pedagogical, and methodological challenges associated with AI-supported academic work, including responsible use, academic integrity, transparency, and the need to preserve students’ independent reasoning and research skills.

By strengthening institutional knowledge of emerging technologies and encouraging their responsible integration into academic practices, the seminar contributed to SDG 9: Industry, Innovation and Infrastructure. It also supported SDG 4: Quality Education by promoting informed and ethically grounded approaches to AI in teaching, research, and supervision. Cooperation between BAU, CIFAL Istanbul, UNITAR, and NOVA School of Science and Technology further aligned the event with SDG 17: Partnerships for the Goals through international academic knowledge exchange.

Leaders Discuss Artificial Intelligence at BAU II: AI Innovation and the Future of the Energy Sector





On 16 December 2025, Bahçeşehir University hosted the seminar "Leaders Discuss Artificial Intelligence at BAU II: Are We Ready for the Future with AI?" at its South Campus in collaboration with the BAU Science Communication Office. The event examined the transformative influence of artificial intelligence on the energy sector, offering participants a sector-specific perspective on how emerging technologies are reshaping operational processes, strategic planning, investment priorities, and institutional decision-making.

During the programme, Mehmet Fırat, Chief Information Officer of Enerjisa, discussed how AI is being applied to operational management, long-term planning, and value creation within the energy industry. His presentation connected technological development with practical industry experience, helping participants understand how data-driven systems can improve efficiency, support more informed decisions, and guide future-oriented innovation and investment. The seminar thereby strengthened knowledge exchange between higher education and industry around the real-world adoption of AI.

By creating a platform for the exchange of expertise on industrial AI applications and digital transformation, the seminar contributed directly to SDG 9: Industry, Innovation and Infrastructure. Its focus on the role of AI in improving energy-sector operations is also aligned with SDG 7: Affordable and Clean Energy, particularly through the potential of intelligent technologies to support greater efficiency and more sustainable energy systems. The event further supported SDG 4: Quality Education by making current technological and sectoral knowledge accessible within the university environment and encouraging informed discussion about the responsible development of future technologies.

Enerjisa: A Better and Sustainable Future Course—Advancing Energy Literacy through University–Industry Collaboration



During the second semester of the 2024–2025 academic year, Bahçeşehir University delivered the second edition of the "Enerjisa: A Better and Sustainable Future" course in collaboration with Enerjisa Enerji, CIFAL Istanbul and UNITAR. The semester-long course brought BAU students together with professionals working across different areas of the energy sector through weekly guest sessions. Connecting academic learning with industry experience, the programme explored sustainable energy alongside its environmental, economic, technological and social dimensions.

The programme also examined how digital transformation and green finance intersect with the energy transition. Discussions on artificial intelligence, data-driven change and evolving investment models introduced students to technological and financial developments relevant to the sector. By placing these subjects within a broader sustainability framework, the course encouraged students to consider how innovation and investment decisions can support the development of more efficient and sustainable energy practices.

Beyond technical and policy discussions, the course explored the social responsibilities of the energy sector. Topics included sustainability communication, social impact initiatives, corporate volunteerism and the integration of sustainability into organisational culture. Weekly guest contributions and opportunities for questions enabled students to engage directly with professional perspectives and connect energy-related challenges with wider questions of public awareness, corporate responsibility and social participation.



The course contributed directly to SDG 9: Industry, Innovation and Infrastructure by strengthening students' understanding of technological transformation, artificial intelligence, data-driven systems and innovation within the energy sector. Its exploration of how digital technologies, green finance and new investment models can support more efficient and sustainable energy infrastructure connected emerging technological capabilities with the practical requirements of the energy transition. The programme also supported SDG 7: Affordable and Clean Energy by advancing energy literacy and engagement with sustainable energy practices, SDG 4: Quality Education through learning enriched by professional expertise, and SDG 13: Climate Action through discussion of the environmental implications of energy choices. Collaboration among Bahçeşehir University, Enerjisa Enerji, CIFAL Istanbul and UNITAR further advanced SDG 17: Partnerships for the Goals by bringing academic, private-sector and international training perspectives together within a shared educational programme.



The Role of Public Support in Startup Incorporation and Scaling: TÜBİTAK 1812 BİGG Support



Organised online on 7 May 2025 by BAU Hub, the event introduced participants to the TÜBİTAK 1812 BİGG Programme and examined the role of public support in transforming innovative business ideas into formally established and scalable enterprises. The session provided participants with an opportunity to learn about the support mechanisms available to entrepreneurs, hear examples from practice and ask questions about the incorporation and growth processes of startups.

The programme highlighted how public funding can help early-stage ventures overcome financial and institutional barriers during critical stages of development. By facilitating access to resources, guidance and structured support, initiatives such as TÜBİTAK 1812 BİGG can enable entrepreneurs to develop viable business models, commercialise innovative ideas and build the organisational capacity required for sustainable growth. The event therefore strengthened participants' understanding of the public support ecosystem and the opportunities it offers to prospective founders and emerging startups.

The event contributed directly to SDG 9: Industry, Innovation and Infrastructure by supporting the commercialisation of innovative ideas, the establishment of technology-oriented ventures and the development of scalable enterprises. Through this online knowledge-sharing session, BAU Hub equipped entrepreneurs with practical knowledge for transforming early-stage initiatives into sustainable businesses, thereby strengthening innovation capacity and supporting the transfer of new ideas into viable products and services. The event also related to SDG 8: Decent Work and Economic Growth by supporting enterprise formation and potential employment creation, and to SDG 4: Quality Education by providing accessible, practice-oriented entrepreneurial learning.

Bahçeşehir University, CIFAL Istanbul, the United Nations Institute for Training and Research, Bağcılar Municipality and VMI Consulting: Cross-Sectoral Collaboration on Digital Transformation and Leadership in Local Government



In the 2024-2025 academic year, “Digital Transformation and Leadership in Local Government” brought together Bahçeşehir University, CIFAL Istanbul, the United Nations Institute for Training and Research, Bağcılar Municipality and VMI Consulting to explore digital change in local public services. Held at Bahçeşehir University’s Law Building Doctoral Hall, the event also involved the university’s Leadership and Entrepreneurship Club. Its cross-sectoral format provided a platform for connecting research and education with the practical organisational and technological challenges facing municipalities.

The programme connected higher education through Bahçeşehir University, the public sector through Bağcılar Municipality, private-sector cybersecurity expertise through VMI Consulting, and international sustainability training through CIFAL Istanbul and the United Nations Institute for Training and Research. This cross-sectoral partnership brought complementary perspectives to digital transformation and leadership, linking academic knowledge with municipal experience and technical expertise. The exchange offered an opportunity to consider how cooperation across sectors can strengthen institutional capacity and support the digital development of local government.

The event highlights Bahçeşehir University’s role in facilitating cross-sectoral dialogue and knowledge exchange around public-sector challenges. It contributes directly to SDG 9: Industry, Innovation and Infrastructure by supporting the transfer of digital knowledge and cybersecurity expertise to local government, strengthening municipalities’ technological capabilities, and encouraging the development of more innovative, secure and resilient public-service infrastructure. It also advances SDG 17: Partnerships for the Goals through cooperation between academic, public, private and international actors. Its attention to institutional capacity in local government further relates to SDG 16: Peace, Justice and Strong Institutions, while the use of digital transformation to improve urban services supports SDG 11: Sustainable Cities and Communities.

Scholarly Outputs on AI and Advanced Computing Methods in the 2024-2025 Academic Year

Bahçeşehir University researchers produced a series of scholarly outputs addressing computer vision, secure natural-language database interfaces, graph-based relationship recognition, retail analytics, semantic search, and distributed GPU computing. Published in peer-reviewed journals and international conference proceedings, these studies contributed to the development, evaluation, benchmarking, and dissemination of advanced computational methods.

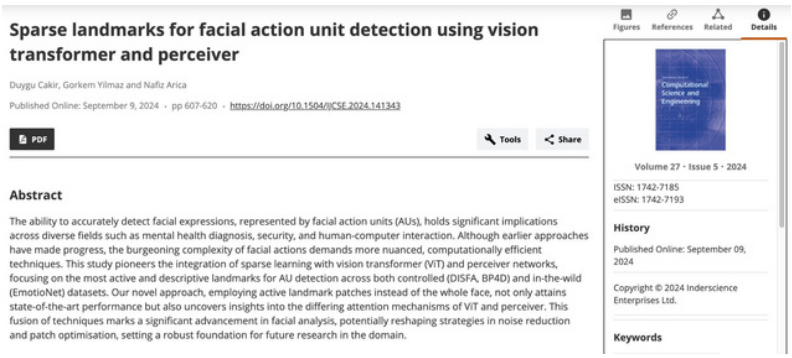
The outputs reflect several complementary areas of technological innovation. Studies on facial action unit detection and interpersonal relationship recognition advanced computer-vision methods through vision transformers, landmark-based analysis, graph attention networks, and contextual modelling. Research on semantic search evaluated transformer-based techniques and benchmarked language models using Turkish e-commerce data, contributing to the development of computational resources and applications for the Turkish language. Other work examined customer-segmentation methods for retail analytics, secure natural-language access to databases through large language models, and frameworks for efficient data-parallel computing across distributed GPUs.

Collectively, these scholarly outputs contribute directly to SDG 9: Industry, Innovation and Infrastructure by expanding knowledge in artificial intelligence, data analytics, high-performance computing, and secure digital systems. Their publication in scholarly journals and conference proceedings enables methods, benchmarks, and findings to be shared with the wider research and technology communities, supporting further innovation and the development of more capable and reliable digital infrastructure.

Peer-Reviewed Journal Articles

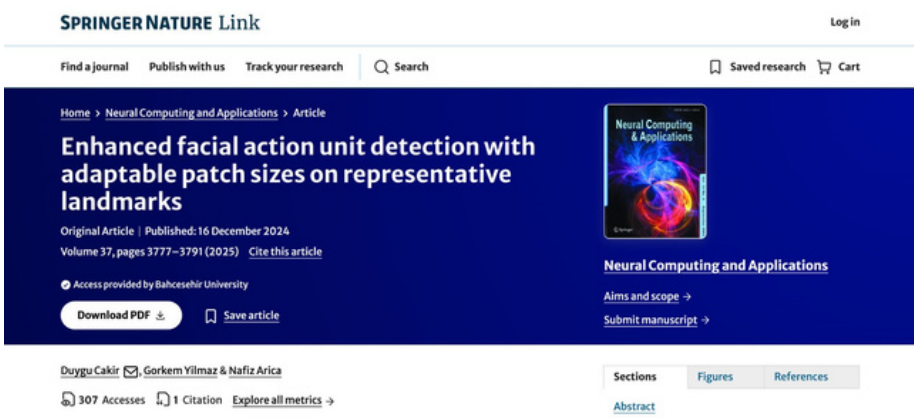
1- Sparse Landmarks for Facial Action Unit Detection Using Vision Transformer and Perceiver

This study addresses the detection of facial action units—the individual facial-muscle movements used to describe expressions—by combining sparse learning with Vision Transformer and Perceiver architectures. Rather than processing the entire face uniformly, the proposed method identifies and analyses the most active and informative facial landmarks. Testing on the controlled DISFA and BP4D datasets and the real-world EmotioNet dataset showed that using selected landmark patches could achieve strong detection performance while revealing differences in how the two attention-based architectures process facial information. The method has potential relevance to human–computer interaction, behavioural analysis, security, and technology-assisted mental-health assessment.



2- Enhanced Facial Action Unit Detection with Adaptable Patch Sizes on Representative Landmarks

Building on landmark-based facial analysis, this article investigates whether adapting the size of the image patch surrounding each representative facial landmark can improve action-unit detection. Sparse learning was used to select the most active landmarks for each action unit, after which patches of different sizes were processed separately through Vision Transformer and Perceiver models. The experiments indicated that using selected landmarks with their most representative patch sizes performed better than processing all landmarks, particularly on more challenging datasets. The study therefore advances more targeted and computationally informed approaches to facial-expression recognition.



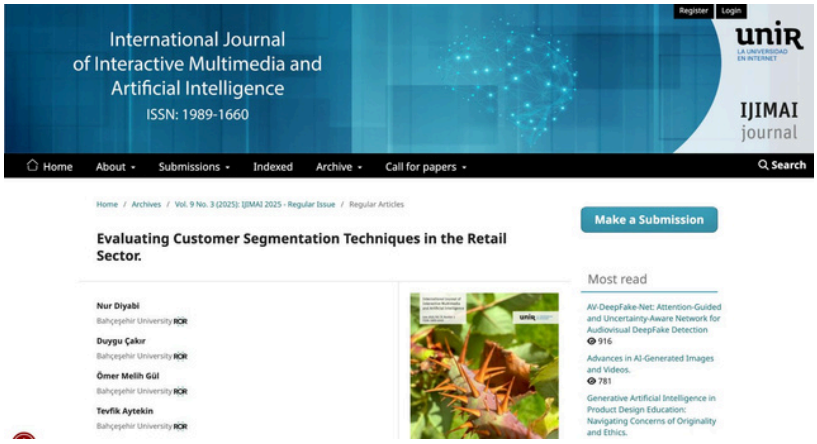
3- Interpersonal Relationship Detection Using Multi-Head Graph Attention Networks with Multi-Feature Fusion

This article introduces a multi-head graph attention network designed to recognize interpersonal relationships from images by combining multiple forms of visual and contextual evidence. The method represents individuals and their interactions through a graph structure and uses attention mechanisms to determine which features and connections are most informative for relationship classification. By integrating heterogeneous cues rather than relying on isolated facial or object features, the model addresses the complexity of interpreting social relationships in visual scenes. Its contribution is relevant to human-centred AI, social-signal processing, intelligent surveillance, and visual-content analysis.



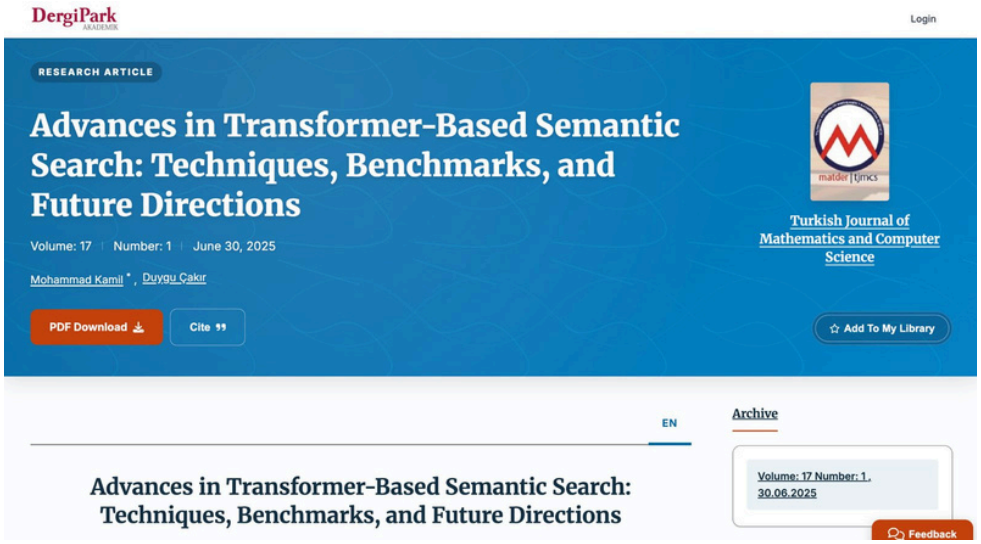
4- Evaluating Customer Segmentation Techniques in the Retail Sector

The study compares four unsupervised machine-learning techniques—K-Means, DBSCAN, Gaussian Mixture Models, and Self-Organizing Maps—for customer segmentation in the Turkish retail sector. The algorithms were evaluated using a large-scale sales dataset and a more focused marketing-campaign dataset, with measures including the Calinski–Harabasz Index and Davies–Bouldin score. K-Means offered the strongest combination of interpretability and statistical validity, while DBSCAN was effective in detecting non-spherical groups and GMM and SOM provided more granular segmentation. The resulting methodological framework demonstrates how retail data can be converted into actionable knowledge for customer-relationship management and more targeted business strategies.



5- Advances in Transformer-Based Semantic Search: Techniques, Benchmarks, and Future Directions

This review examines how transformer-based models such as BERT, RoBERTa, T5, and GPT have improved semantic search by interpreting user intent and contextual meaning rather than depending solely on keyword matching. It discusses dual-encoder and cross-encoder architectures, Dense Passage Retrieval, domain adaptation, fine-tuning strategies, and major benchmarks including MS MARCO, TREC, and BEIR. The article also identifies continuing challenges involving interpretability, bias, and computationally intensive training, while outlining emerging directions such as multimodal retrieval, personalized search, and continual learning. It provides a consolidated foundation for developing more accurate, scalable, and interpretable information-retrieval systems.



International Conference Papers and Proceedings

1- Data-Secure Natural Language Interfaces to Databases via Large Language Models

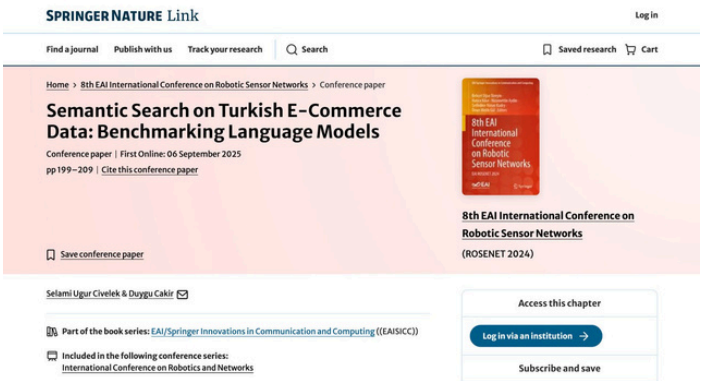
This paper examines the use of large language models in natural-language interfaces to databases, which allow users to retrieve information using ordinary language instead of formal query languages such as SQL. While LLMs can make database systems more accessible by translating questions into structured queries, their use also raises concerns about protecting confidential information and controlling access to sensitive records. The study approaches natural-language database interaction from a data-security perspective, contributing to the development of interfaces that combine ease of use with safeguards for database content. This connection between language technologies, database accessibility, and information security is especially relevant to the creation of trustworthy digital infrastructure.



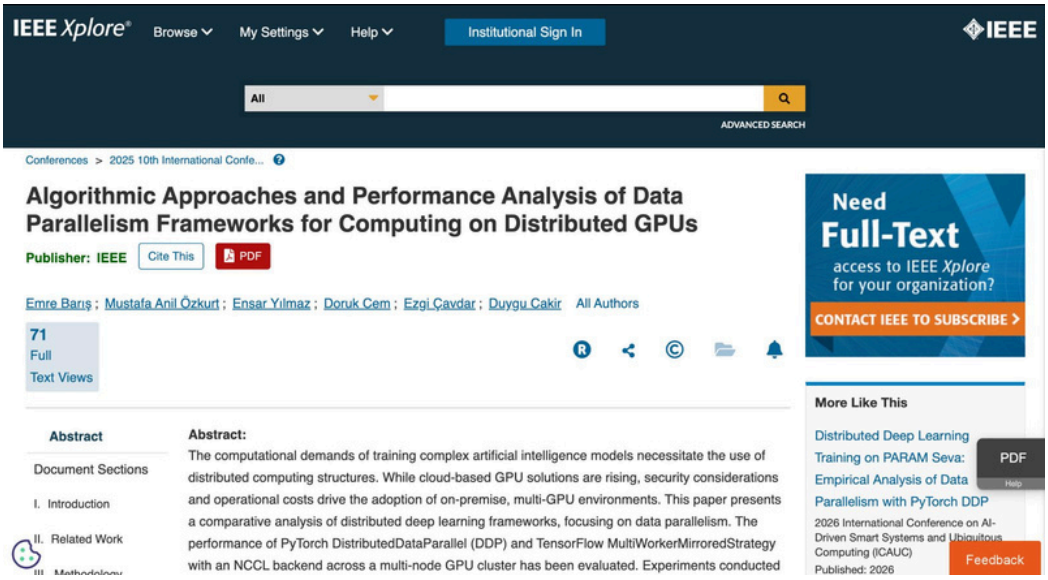
2- Semantic Search on Turkish E-Commerce Data: Benchmarking Language Models

This study benchmarks Turkish BERT, LLaMA 3.1-8B, and Voyage AI Multilingual-2 on semantic-search tasks using Turkish e-commerce product data. It investigates whether dense vector representations can capture the meaning and context of customer queries more effectively than conventional keyword-based retrieval. The findings indicate that the evaluated language models—particularly Voyage AI Multilingual-2—improved the precision and relevance of search results. By concentrating on Turkish, the study contributes evidence and benchmarking resources for a comparatively underrepresented linguistic context while demonstrating how language models can strengthen e-commerce search infrastructure.

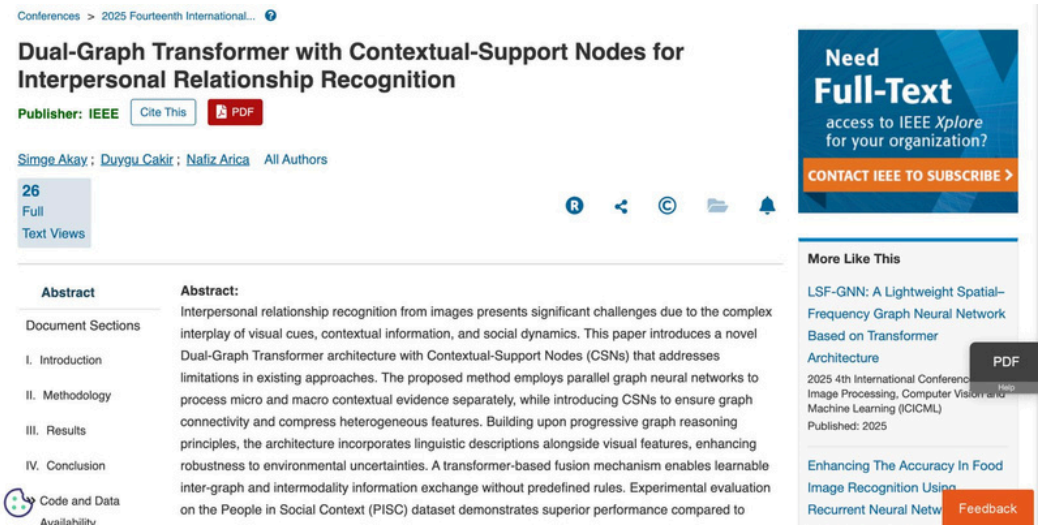
3- Algorithmic Approaches and Performance Analysis of Data Parallelism Frameworks for Computing on Distributed GPUs



Responding to the growing computational demands of complex AI models, this paper examines algorithmic approaches to data parallelism across distributed graphics-processing units. Data-parallel frameworks divide training data among multiple GPUs, coordinate the processing of model updates, and combine the resulting computations, making scalability dependent on factors such as communication overhead, synchronization, workload distribution, and hardware utilization. By analysing the performance characteristics and trade-offs of distributed GPU computing, the work contributes knowledge needed to select and optimize high-performance infrastructure for large-scale AI development.



4- Dual-Graph Transformer with Contextual-Support Nodes for Interpersonal Relationship Recognition



This paper proposes a Dual-Graph Transformer architecture with Contextual-Support Nodes to recognize interpersonal relationships in images. The method creates complementary graph representations for fine-grained cues between individuals and broader scene-level context, allowing local evidence—such as gaze, posture, and apparent age differences—to be considered alongside visual and textual information about the surrounding scene. Graph neural networks process these information streams separately before transformer-based attention combines them for relationship classification. The architecture advances context-aware visual reasoning by modelling both person-level interaction and the wider setting in which that interaction occurs.

5- “The Effect of Neuromarketing Applications on Consumer Behavior on Purchasing Preferences”

Presented at the 9th International New York Academic Research Congress on Social, Humanities, Administrative and Educational Sciences (2024), B. Perker’s study explores the impact of neuromarketing applications on consumer purchasing behavior. By integrating scientific and technological innovations into marketing strategies, the research highlights how data-driven and neuroscience-based approaches can enhance decision-making, innovation capacity, and efficiency in business practices.



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Abstract

Determining the effect of neuromarketing practices on consumer purchasing preferences has a great value in today's marketing world. Consumers' purchasing decisions are influenced by a number of complex factors, and marketers continually strive to understand these factors and develop the right strategies. At this point, neuromarketing stands out as an approach that aims to understand the real thoughts and emotional reactions of consumers.

The main purpose of this study is to determine the effect of neuromarketing practices on consumer purchasing preferences. In this regard, the in-depth interview method, which is one of the qualitative research methods, was used. Neuromarketing is a field of research that aims to understand consumers' behavior through the study of brain activity, emotional responses and unconscious processes.

As a result, determining the effect of neuromarketing practices on consumer purchasing preferences is of great importance in terms of creating more effective strategies in the marketing world and better responding to the needs of consumers. As a conclusion of this study, it was seen that consumers are influenced by unconscious factors when making choices.

Keywords: Marketing, Neuromarketing, Neuroscience, Consumer Purchase Behavior

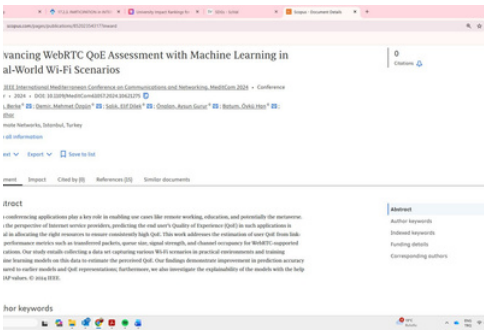


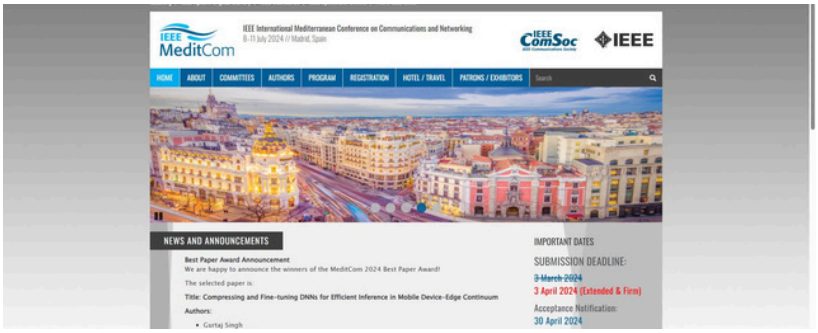
The study contributes to SDG 9 (Industry, Innovation, and Infrastructure) by emphasizing the role of technology and research in fostering innovation-driven industries and promoting sustainable, knowledge-based economic growth.

6- “Estimating User Quality of Experience in WebRTC Applications Using Machine Learning”

Presented at the 2024 IEEE International Mediterranean Conference on Communications and Networking (MeditCom 2024), the study by Bahçeşehir University Computer Engineering Scholar Ece Gelal Soyak and others explores the use of machine learning models to predict user Quality of Experience (QoE) in video conferencing applications. By analyzing link-layer performance metrics such as packet transfer, signal strength, and channel occupancy across various Wi-Fi scenarios, the research enhances the accuracy and explainability of QoE estimation models through the use of SHAP-based interpretability methods.

The study contributes to SDG 9 (Industry, Innovation, and Infrastructure) by advancing data-driven innovations in digital communication technologies, supporting the development of intelligent network infrastructures, and fostering more reliable, efficient, and inclusive connectivity solutions that strengthen industrial and educational digital transformation.



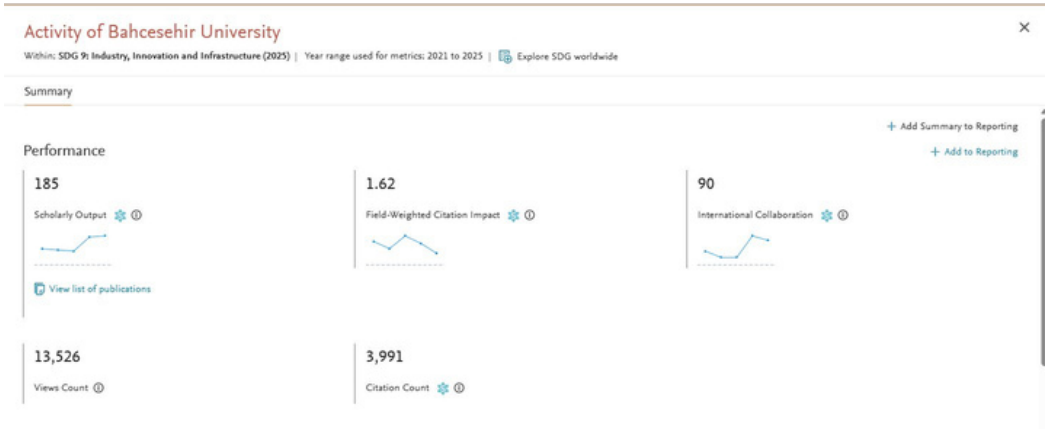


Bahçeşehir University's Research Performance in SDG 9: Industry, Innovation and Infrastructure (2021–2025)

According to SciVal data, Bahçeşehir University produced 185 publications classified under SDG 9: Industry, Innovation and Infrastructure during the 2021–2025 period. These publications achieved a Field-Weighted Citation Impact (FWCI) of 1.62, indicating citation performance 62% above the global average for comparable publications, adjusted for subject field, publication year and publication type.

The research output received 3,991 citations and recorded 13,526 views, reflecting its visibility and uptake within the academic community. These indicators highlight BAU's contribution to the scientific knowledge base relevant to industrial development, technological innovation and infrastructure, providing resources for further research and knowledge exchange.

The figure below presents SciVal's overview of Bahçeşehir University's research performance under SDG 9 for the 2021–2025 period, including scholarly output, citation impact, international collaboration and publication views.





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