ORTA DOĞU TEKNİK ÜNİVERSİTESİ
MIDDLE EAST TECHNICAL UNIVERSITY

Who we are?

Prof. Dr. Ömer Delialioğlu
Head of CoDE
Rector Advisory
Prof at CEIT

Dr. Funda Alptekin
Instructor at CoDE

AI and METU

METU’s mission is to attain excellence in research, education and public service for society, humanity and nature, in an environment nurturing creative and critical thinking, innovation, leadership, and universal values.

A leading international university that transforms its region and the world.

Türkiye's premier state research university

Research Potential

METU Teknokent
1.4 billion USD export
17 billion TL national technology sale
415 companies
10.000 employees

Laboratories
40 research centers
430 research and training laboratories

Library
Over 1.000.000 resources
266.000 electronic books
43.100 electronic journals
Seating capacity of 1.350 people

IPA (Instrument for Pre-accession Assistance) Projects

ECITE - Emergence of Creative Industries and Transformation of Economy through Innovative Technologies

Games, Wearables and New Generation Film-Making

FINANCIAL SOURCE: The Ministry of Industry and Technology / EU Competitive Sectors Programme

TARGET SECTORS: Gaming, Wearable Technology, Film

PROJECT BUDGET: **5M€**

With the project, it was aimed to support the competitiveness and sustainability of entrepreneurs, micro SMEs and SMEs in the fields of gaming, wearable technologies and new generation film production and to increase their place in the global market by creating a creative center.

Digital Innovation Center

FINANCIAL SOURCE:

The Ministry of Industry and Technology / EU Competitive Sectors Programme

TARGET SECTORS:

Machine manufacturers and automotive

PARTNERS:

MAKFED (Turkish Machinery Federation) and ODTÜ TEKNOKENT

PROJECT BUDGET: **8M€**

With the project, it is aimed to establish a digital innovation center to provide R&D training and mentoring services in the digital transformation of the manufacturing industry, and to have this center play an important role in the ecosystem to be formed by participating in national and international networks in the field of digital transformation.

ODTÜ·TEKNOKENT

- Yeni Fikirler Yeni İşler (YFYİ) Acceleration Program
- 19 years of success with more than 1000 employment, 250+ startups established

- Animation Technologies and Digital Gaming (ATOM) Pre-Incubation and Incubation Center
- 15+ years of success with more than 2000+ developers supported, 700+ games developed, 50+ startups established and 20+ Million USD exports realized employment, 250+ startups established

INCUBATION CENTERS

- Incubation Centers focusing on education Technologies, serious gaming, impact, space and aviation and academic entrepreneurship

- One of the first technology transfer offices in Turkey established in 2007
- 2000+ joint R&D projects between university and technopark companies, 700+ different academics matched with the industry, 3000+ contracts between university and technopark companies

GROWTH CIRCUIT
Investor & Accelerator

INVEST 101

GROWTH CIRCUIT
CoZone

ODTÜ- Research Park

- **Seating Area: 10.800 m²**
- **Total usable area : 28.150 m²**

Funded by Republic of Türkiye
Presidency Office
Directorate of Strategy & Budget

October 2023

- Directorate of Research Coordination
- Directorate of Scientific Research Projects
- Center for Robotics and Artificial Intelligence (ROMER)
- Energy Materials and Storage Devices Research Center
- Center of Excellence in Biomaterials & Tissue Engineering
- ODTÜ Center for Solar Energy Research & Applications
- Climate Change and Sustainable Development Application & Research Center.

June 2024

- ODTÜ-Central Lab.- R&D Center for Molecular Biology and Biotechnology
- Cancer System Biology Lab.
- Ecosystem Implementation and Research Center
- The Research and Application Center for Space and Accelerator Technologies

AI Courses Offered:

Department	Course	Course Content
Computer Engineering	Artificial Intelligence	Problem solving and search strategies. Game playing. Knowledge Representation. Expert systems and rule chaining. Vision. Natural language processing. Machine translation. Machine learning. Neural networks.
Computer Engineering	Artificial Intelligence	Basic LISP programming; picture analysis WALTZ algorithm; game playing, game trees, the mini-max rule, alpha-beta pruning technique; nature language understanding, transformation of grammar, ATN grammars, techniques used in semantics.
Cognitive Sciences	Cognition and Machine Learning	Machine learning and its applications as a research methodology at the intersection between natural cognitive systems and artificial cognitive systems. Supervised learning, Bayesian decision theory, decision trees, multilayer perceptrons. Applications in subdomains of cognitive science, including natural language processing, vision and models of human learnin
Cognitive Sciences	Artificial Intelligence for Cognitive Science	Fundamental Techniques of Artificial Intelligence and Their Applications in Cognitive Science: Search, Planning, Game Playing, Knowledge Representation and Inference, Uncertainty and Probabilistic Reasoning. Decision Making. Learning. Philosophical Implications of Artificial Intelligence and its relation to Cognitive Science.

AI Courses Offered:

Department	Course	Course Content
Mathematics	Artificial Intelligence and Applications	Basic problem-solving strategies. A heuristic search principle. Problem reduction and AND/OR graphs. Expert systems and knowledge representation. An expert system shell. Planning. Language processing with grammar rules. Machine learning. Game playing. Logic and uncertainty. Meta programming
Electrical Engineering	Computational Intelligence	Intruduction to various aspecets of modeling and transformation of information and knowledge in computers, computational intelligence paradigms: neural networks, evolutionary algorithms, fuzzy systems, Bayesian networks, machine learning, intelligent algorithms, biologically inspired computation
Electrical Engineering	Artificial Intelligence	Exploiting natural constraints. Problem solving; Description matching and goal reduction, finding solution paths, games. Logic. Knowledge representation. Natural Language understanding. Applications of AI
Computer Education and Instructional Technology	Artificial Intelligence: Applications in Education	Intelligence and features; difference between Artificial Intelligence (AI) and human intelligence; Artificial Intelligence: Current status and application areas; the history of artificial intelligence; expert systems: components, properties: expert systems: design, applications and technology; use of expert systems in education; intelligent learning systems; big data in education; learning analytics; educational agent; adaptive learning and adaptive testing; using logical programming languages.

AI and METU

Student Clubs:

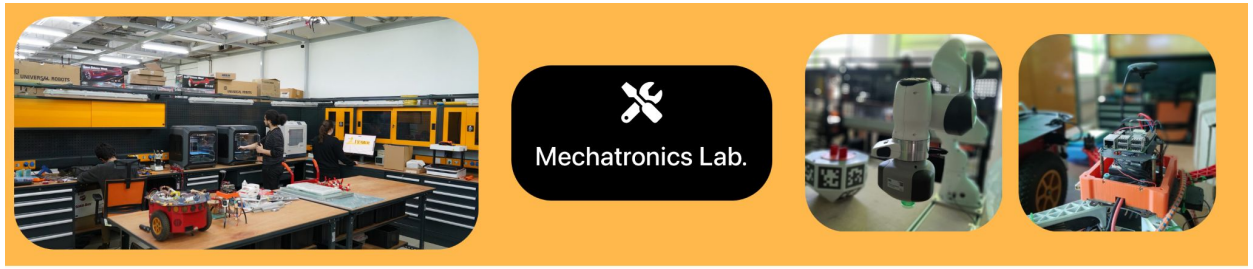
METU Artificial Intelligence Student Club

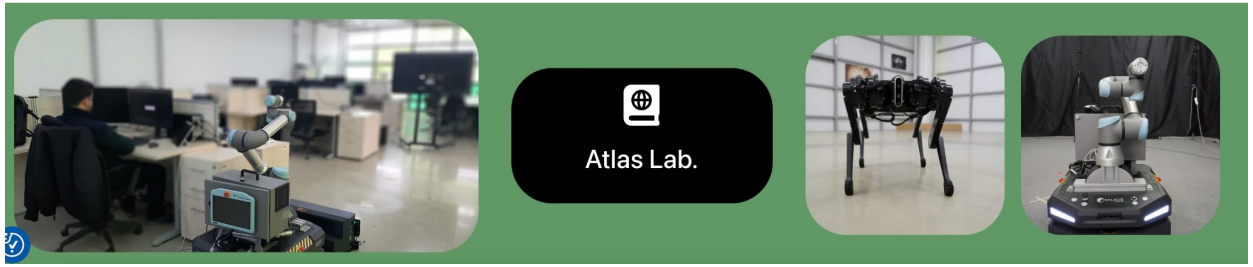
https://odtuyzt.github.io/projelerimiz.html

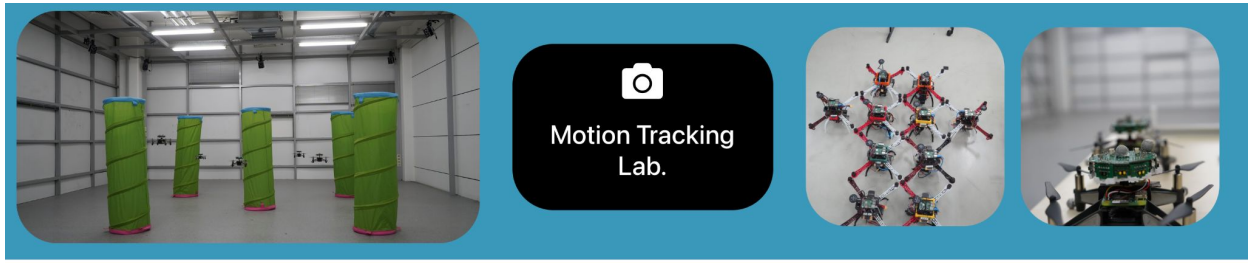
AI and METU

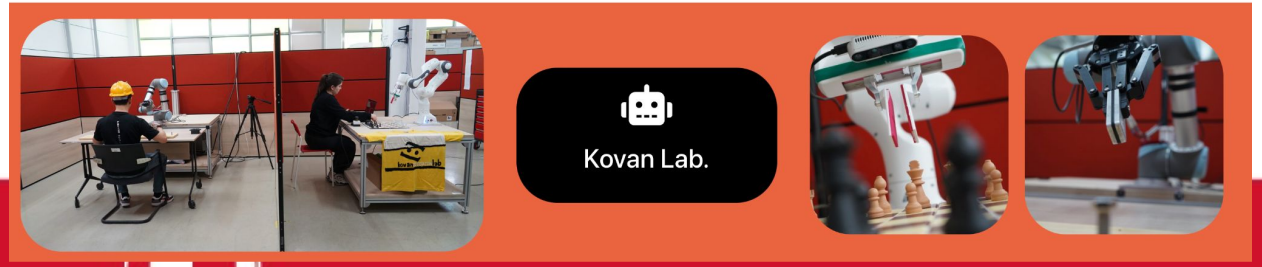
Research Centers

ROMER
Center for Robotics and Artificial Intelligence









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Research Centers

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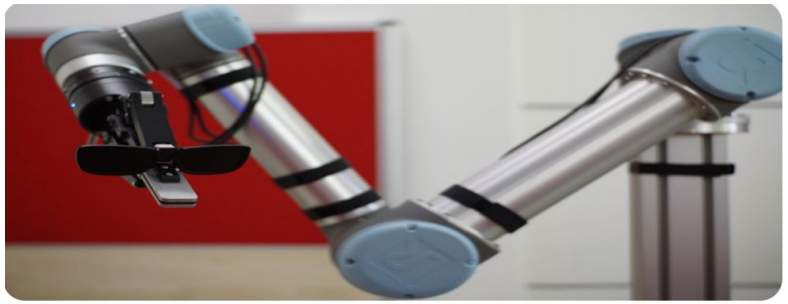
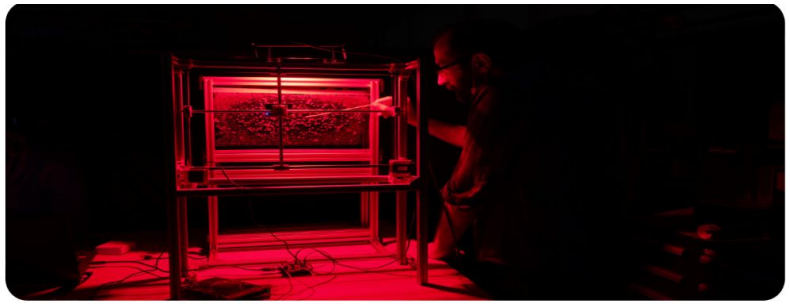
Center for Robotics and Artificial Intelligence



KALFA

The KALFA project aims to develop artificial intelligence methods that will facilitate the use of Cobots in assembly scenarios, and human-robot interaction (IRE) capabilities that will support these robots to work in harmony and efficiently with workers.

Project Page



ROBOROYALE

The Roboroyale project aims to develop and combine micro-robotic, biological, and machine-learning technologies into a system that can support the well-being of the honeybee queen, which is responsible for the reproductive success and efficiency of a colony.

Project Page

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UP2030

URBAN PLANNING

UP2030 aims to guide cities through the socio-technical transformation required to meet their ambitions for climate neutrality. UP2030 proposes that cities should themselves be at the center of the innovation approach to drive transformative change.

Project Page

LEGOFIT

LEGOFIT

The LEGOFIT project aims to design, implement and validate an advanced and dynamic integrative approach to accomplish EPH based on smart and innovative solutions with a high scalability and replicability for building construction and renovation.

Project Page

Research Centers

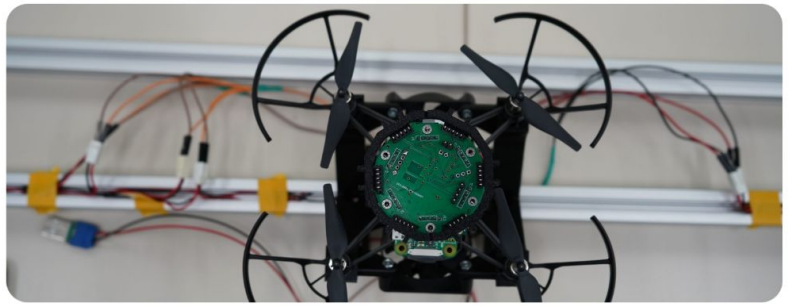
ROMER
Center for Robotics and Artificial Intelligence

SnapEarth

SNAPEARTH

SnapEarth is an H2020-funded project that aims to facilitate access to Earth Observation data from the general public thanks to EO data labeling, indexation innovations, and access from the Qwant search engine.

Project Page



SWARM

Our research track in swarm robotics, funded by multiple EU/National projects, has been a pioneer in developing indoor and outdoor UAV/UGV swarm tracks.

Project Page

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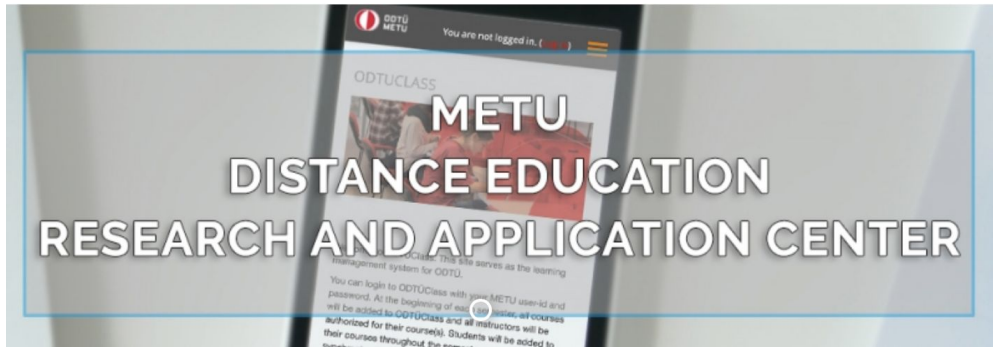
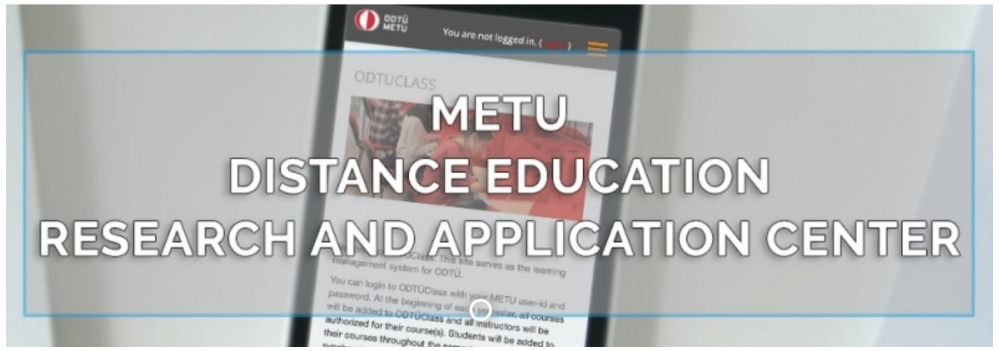

METU
DISTANCE EDUCATION
RESEARCH AND APPLICATION CENTER


ICETOL
4TH INTERNATIONAL CONFERENCE ON
EDUCATIONAL TECHNOLOGY AND ONLINE LEARNING
WORKSHOP
Prof. Dr. Ömer Delialioğlu
Middle East Technical University (METU)
Dr. Funda Alptekin
Middle East Technical University (METU)
Rafet Çevik
Middle East Technical University (METU)
Dr. Ersin Kara
Middle East Technical University (METU)
Dr. Şenol Bakay
Middle East Technical University (METU)
DEVELOPING DIGITAL EDUCATIONAL MATERIALS USING AI TOOLS
DURATION
SESSION
DESCRIPTION

AI and METU



Developing Digital Educational Materials Using AI Tools

METU Distance Education Application and Research Center

AI and Educational Goals

Effect of Support of Political and Regulatory Frameworks in the use of AI for education:

At National Level:

- R&D Investments
- Data Sharing Policies Education
- Technology Investments Skill
- Development Programs

At International Level:

- International Collaboration
- International Standards
- International Data Sharing Agreements

At EU Level:

- EU AI Strategy
- EU General Data Protection Regulation (GDPR):
- EU Horizon 2020 and Horizon Europe Programs:

AI and Education

AI Literacy

- **Empowering Educators with AI Expertise:**
  - AI Literacy as the Foundation
  - Overcoming Resistance to Technology Integration
  - Staying Ahead of the Curve with AI Tools
- **Nurturing AI Awareness and Skills in Students**
  - Ethical AI for Young Minds
  - Age-Appropriate AI Applications Workshops
- **Expanding AI Literacy Beyond METU:**
  - AI Training for all Educators
  - Promoting Effective and Ethical AI Usage

By prioritizing AI literacy and training for educators and students, we aim to foster a generation of AI-literate individuals who can harness the power of AI for positive change and contribute to a responsible and ethical digital future.

AI: Max. Benefits , Min Risks

- **Educate Students on Proper AI Usage**
  - Skills to utilize AI tools appropriately and ethically
  - Capabilities and limitations of AI tools,
  - How to cite and reference sources when using AI,
  - The alignment of AI with academic integrity principles, and more
- **Establish Ethical Guidelines for AI Use in Higher Education**
  - The scope of AI tool applications,
  - Permission requirements,
  - The distinction between student-generated and AI-generated outputs
  - Practices that uphold academic integrity principles.
- **Develop Methods for AI-Supported Learning**
- **Revisit the Role of AI in Higher Education**
  - **Employ AI tools to**
    - Enhance analytical thinking, problem-solving, and synthesis abilities
    - Support fundamental competencies like creativity, critical thinking, and independent learning

AI and Ethics: Courses

- **Introduction Courses:**
  - Foundational courses on AI, which include modules on ethical considerations.
  - Cover the basics of AI, its applications, and the potential ethical dilemmas that arise.
- **Interdisciplinary Approach**:
  - Not only in computer science or engineering courses but also in social sciences, humanities, and other fields
  - To ensure a holistic understanding
- **Specialized Ethics Courses**:
  - Exploring case studies,
  - Regulatory frameworks,
  - Current debates in the field.

AI and Ethics: Research and Application

- **Research Ethics:**
  - Training on ethical research practices involving AI, data privacy, bias, and the societal impact of their work.
- **Project-Based Learning:**
  - To apply ethical considerations in real-world AI applications.
  - To understand the implications of their work.
- **Ethical Audits:**
  - Incorporating ethical audits as part of project assessments

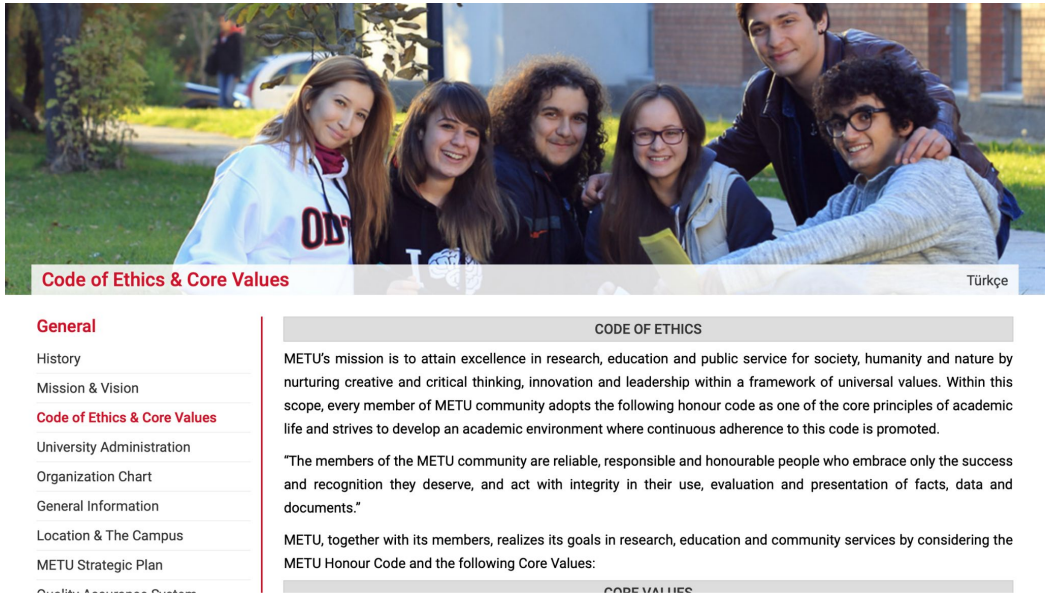
AI and Ethics: Other Sources

- **Workshops and Seminars**
- **Online Resources**
- **Promoting Ethical Culture**

This comprehensive approach ensures that our graduates are not only proficient in AI technologies but also conscientious and responsible in their application.

AI and Ethics: METU

https://conference-ueam.metu.edu.tr/



https://www.metu.edu.tr/code-ethics-core-values

AI and Ethics: METU

Department of Applied Ethics

Course Code	Course Name
AET581	RESEARCH METH.IN APP.ETHICS
AET582	ETHICS AND VALUE I:THEORETICAL
AET583	ETHICS AND VALUE II:APPLIED
AET584	ETHICS OF ARGUMENT AND PERSUASION
AET585	ETHICS AND DECISION MAKING
AET586	ETHICS AND COMPUTER TECHNOLOGY
AET587	ETHICS OF DISCOURSE
AET588	ENVIRONMENTAL ETHICS
AET589	TERM PROJECT
AET590	ETHICS AND SELF-AWARENESS
AET591	MEDIA ETHICS I:THEORETICAL
AET593	MEDIA ETHICS III:RESEARCH ON CASE STUDI
AET594	ETHICS IN ORGANIZATIONS I:THEORETICAL

AI and Critical Thinking

- **Scaffolding the Writing Process:**
  - Provide students with clear assignment guidelines and rubrics that emphasize critical analysis and independent thought.
- **Pre-writing Activities:**
  - Brainstorming, outlining, and summarizing source materials.
- **Emphasizing Paraphrasing and Synthesis**:
- **Active Feedback Mechanisms:**
  - Regular and detailed feedback on writing throughout the writing process.
- **Oral Presentations and Discussions:**
  - To articulate their ideas verbally, further clarifying and solidifying understanding before translating it into written work.
- **Promoting Intellectual Curiosity:**
- **Technology Integration for Scaffolding:**
  - Mind-mapping software or concept mapping platforms
- **Detection and Prevention of Plagiarism:**

AI and Critical Thinking

AI and Critical Thinking

Main Courses Offered by METU

- PHIL320 CRITICAL THINKING
- TEFL173 CRITICAL READING AND THINKING
- TEFL174 CRITICAL READING AND THINKING II
- EDUS338 CRITICAL AND ANALYTICAL THINKING
- EDS234 STUDY AND THINKING SKILLS

AI and Human Engagement in Classrooms

- Technology as a Tool, Not a Replacement
- Blended Learning and Flipped Classrooms
- Active Learning Techniques
- Gamification and Interactive Learning
- Utilizing Technology for Collaborative Learning
- Fostering a Discussion-Based Environment
- Encouraging Active Participation through Technology
- Guest Lectures and Industry Experts
- Utilizing Technology for Enhanced Learning Resources
- Student-Led Activities and Presentations

AI and Youth

- **Student Representatives and Forums:**
  - To share their views and participate in the decision-making processes.
- **Student Clubs and Organizations:**
  - Discussions and events through various student clubs and organizations.
- **Surveys and Feedback:**
  - Collect expectations and suggestions regular surveys and feedback.
- **Open Seminars and Conferences:**
  - Organize open seminars and conferences

In this way, young people can learn about the potential benefits and risks of AI and share their ideas for the responsible use of this technology.

AI and Youth

Artificial Intelligence Days

https://eee.metu.edu.tr/tr/node/1366

Etkinlik Akışı

Saat	Konuşmacı Şirket	Konuşmacı
09.00-09.45	KAYIT VE AÇILIŞ	-
10.00-10.40	Google	**Emrah Mete** -Cloud Customer Engineer
11.00-11.40	TÜRKHAVACILIK UZAYSANAYİİ	**Emre Akyılmaz** -Yapay Zeka ve Büyük Veri Müdürü
12.00-12.40	softtech	**Serkan Turhal** -Veri Analitiği ve Yapay Zeka Departmanı Direktörü
12.40-14.00	ARA	-
14.00-14.40	VESTEL	**Özlem Yazıharman** -Kıdemli Yazılım Uzmanı
15.00-15.40	ENERJİSA ÜRETİM	**Ege Akyol** -Bilgi Teknolojileri Deneyim Tasarımcısı
16.00-16.40	ASISGUARD	**Ömer Bulut** -Yazılım Tasarım Müdürü

AI and Life Long Learning

- Personalized Learning Journeys:
- Learning Analytics:
- Interactive Learning Tools and Simulations:
- Comprehensive Resource Access:
- AI-Powered Guidance and Counseling:

Addressing Potential Challenges:

- Bias in AI algorithms:
- Overreliance on AI:
- Accessibility and equity

Together we can change the world!

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