Emircan Tepe

Computer Engineer | Istanbul, Turkey

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Education

Koç University *Istanbul, Turkey*

MSc Artificial Intelligence *09/2026 - Present*

- Pursuing a thesis-based MSc in Artificial Intelligence, specializing in optical computing.
- Graduate researcher at the Laboratory of Photonic Technologies (LPT) under the supervision of Dr. Uğur Teğin.

Dokuz Eylül University *Izmir, Turkey*

Computer Engineering *09/2020 - 10/2024*

- Graduated with a GPA of **3.18/4.0**
- Graduation/Senior project completed in collaboration with Inbestme and **funded by the TUBITAK 2209 grant**.
- Click **here** for the list of courses. Select the Course Unit Code on the linked webpage to access its syllabus.

Research Experience

Koç University *İstanbul, Turkey*

Graduate Researcher *09/2026 - Present*

- Conducting interdisciplinary research in optical computing under the supervision of Dr. Uğur Teğin at the Laboratory of Photonic Technologies (LPT).
- Investigating task-aware digital-to-optical encoding strategies for AI applications, focusing on information representation, spatial allocation, and efficient utilization of optical hardware.

Turkey

Undergraduate Researcher *10/2021 - 11/2023*

- **Optical Computing – Koç University (2023):** Conducted research at the Laboratory of Photonic Technologies under Dr. Uğur Teğin, developing and evaluating computational methods involving genetic algorithms and cellular automata.
- **Machine Learning for Manufacturing – Koç University (2022):** Participated in the Koç University Summer Research Program (KUSRP) under Prof. Dr. Barış Tan and Dr. Siamak Khayyati, applying supervised learning methods to manufacturing system performance evaluation.
- **Animal Activity Recognition – Dokuz Eylül University (2021–2022):** Conducted machine learning research under Prof. Dr. Derya Birant, contributing to the publication *"Classifying horse activities with big data using machine learning"* in the Kuwait Journal of Science. GitHub.

Work Experience

Orion Innovation *Istanbul, Turkey (Remote)*

Software Engineer *01/2026 – 09/2026*

- Contributed to the development of a **ReAct-based AI agent** for international telecom clients using **Python, LangGraph, and Chainlit**. Received a **recognition award** for contributions.
- Designed and implemented end-to-end features, including **persistent conversations**, **human-in-the-loop workflows**, and authentication and authorization using **Keycloak**.
- Developed data ingestion pipelines and background processing workflows using **Celery**, and supported containerized deployments with **Docker and Nginx**.
- Owned tasks throughout the software development lifecycle, from requirements analysis to implementation, documentation, and deployment support. Actively participated in **code reviews** and technical discussions.

Vitrosens Biotechnology Inc. *Istanbul, Turkey (Hybrid)*

Software Engineer *11/2024 – 01/2026*

- Awarded one patent as part of an ongoing R&D project. Designing and developing end-to-end product features using **FastAPI** for backend services and **Preact** for frontend interfaces, owning the full lifecycle from UI to API and data flow.
- Building scalable and testable backend systems in **Python**, with a strong focus on async programming, concurrency, and clean architecture for performance and reliability.
- Actively participating in **code reviews**, both giving and receiving feedback, and maintaining high code quality through collaborative **GitHub-based workflows**, including pull requests, reviews, and version control best practices.
- Applying strong software engineering fundamentals (SOLID, design patterns, clean code), with measurable impact such as a **77% reduction in execution time** (115.49s → 26s).
- Reporting technical progress and project status to executives, and contributing to hiring through technical interviews and candidate evaluations.

Innovile *İzmir, Turkey (Hybrid)*

Junior Software Developer *10/2023 - 07/2024*

- Received an offer after a successful internship of one month. Worked part-time as a junior software developer in final year at university in a software team operating with Scrum methodology, running 2-week sprints and managing tasks using Jira.
- Contributed to **feature development** and **bug fixing** in telecommunication domain, utilizing the **.NET** environment with **Oracle** and **PostgreSQL** databases.
- Also worked on a machine learning project aimed at automating the load balancing of base stations using python and libraries such as NumPy, scikit-learn, pandas.
- Following CRISPR-DM process, conducted data analysis, feature extraction, model creation and evaluation processes. Wrote detailed documents.

- **Inbestme (Software Engineering Intern, 07–10/2024):** Erasmus+ funded internship in Barcelona, Spain. Developed end-to-end features using **.NET (C#)**, **Vue.js**, **MongoDB**, and **Microsoft SQL Server**, including API development, third-party integrations, and frontend implementation. Participated in regular code reviews with senior engineers.
- **Arçelik (R&D Intern, 07–08/2023):** Worked on 3D measurement and hand-in-eye calibration; developed a communication program for machine vision cameras. [Blog]
- **Microsoft (Imaginer, 11/2022–06/2023):** Participated in a 6-month mentorship program; completed a sustainability-themed ML project in farming. [Blog]

Publications

Birant, D., Tepe E., 2022. Classifying horse activities with big data using machine learning, Kuwait Journal of Science, Special Issue on Machine Learning for Big Data

Şahin N., Tepe E., Birant, D, 2022. A K-Shot Learning Algorithm for Transportation Mode Identification, Journal of Artificial Intelligence and Data Science, Volume: 2 Issue: 2