

Oguzhan Gungordu

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EDUCATION

Georgia Institute of Technology, Atlanta, GA 2024 - Present
Ph.D. in Machine Learning (expected May 2029) GPA: 4.00/4.00
Graduate Research Assistant; Advisor: Prof. Faramarz Fekri

Koç University, Istanbul, Turkey 2019 - 2023
B.Sc. in Electrical and Electronics Engineering Major GPA: 3.99/4.00
Thesis: Saliency-Aware End-to-End Learned Variable-Bitrate 360° Image Compression
B.Sc. in Physics Major GPA: 4.00/4.00
Thesis: Physics-Informed Deep Learning Solutions of Schrödinger Equation and Kronig-Penney Model

RESEARCH INTERESTS

Research interests lie in building LLM agents that can reason and improve from experience. I study **LLM-Driven Algorithm and Scientific Discovery** (evolutionary methods for automated heuristic and algorithm discovery in complex optimization and scientific problems), **Self-Improving LLM Agents** (skill evolution for agentic systems through experience-driven self-improvement), and **LLM Reasoning** (planning, tool use, and evidence-based reasoning with retrieval-augmented generation).

PUBLICATIONS

Conference Papers

S. Xiong, **O. Gungordu**, J. C. Kerce, and F. Fekri, “Adaptive Information Control for Search-Augmented LLM Reasoning,” *Findings of the Association for Computational Linguistics: EMNLP*, 2026. [📄](#)

O. Gungordu, S. Xiong, and F. Fekri, “PathWise: Planning through World Model for Automated Heuristic Design via Self-Evolving LLMs,” *Proceedings of the 43rd International Conference on Machine Learning (ICML)*, 2026. [📄](#)

O. Gungordu and A. M. Tekalp, “Saliency-Aware End-to-End Learned Variable-Bitrate 360-Degree Image Compression,” *IEEE International Conference on Image Processing (ICIP)*, 2024. [📄](#)

Workshop Papers

S. Xiong, **O. Gungordu**, B. Johnson, J. C. Kerce, and F. Fekri, “Scaling Search-Augmented LLM Reasoning via Adaptive Information Control,” *Workshop on Scaling Post-training for LLMs (SPOT), ICLR*, 2026. [📄](#)

PREPRINTS

O. Gungordu, A. Tursucular, S. Xiong, and F. Fekri, “EPOCH: Coverage-Aware Evolution with Experiential Preference Optimization for LLM-based Automated Heuristic Design,” *Under review*, 2026. [📄](#)

O. Gungordu, S. Xiong, and F. Fekri, “MOSAIC: Adversarial Co-evolution of Specialist Heuristics and Problem Instances for LLM-based Automated Heuristic Design,” *Under review*, 2026. [📄](#)

S. Xiong, A. Payani, **O. Gungordu**, and F. Fekri, “DIVE: Unlocking Self-Improvement in Frozen Language Models Through Diversity-Driven Skill Evolution,” *Under review*, 2026. [📄](#)

S. Xiong, **O. Gungordu**, B. Johnson, M. Okamoto, J. C. Kerce, and F. Fekri, “Deep-Verify: Evidence-Based Expert-Level Scientific Claim Verification,” 2026. [📄](#)

H. Hu, **O. Gungordu**, S. Xiong, and F. Fekri, “Evaluator-in-the-Loop Monte Carlo Tree Search via LLM Agents for Motif Scaffolding in Protein Design,” *In prep.*, 2026.

RESEARCH EXPERIENCE

Graduate Research Assistant, Georgia Tech Aug. 2024 - Present
• Developed LLM-driven evolutionary frameworks for automated heuristic design that plan through a world model (PathWise, ICML 2026), learn from experiential preferences with coverage-aware search (EPOCH), and co-evolve heuristics with adversarial problem instances (MOSAIC).

- Contributed to diversity-driven skill evolution for self-improving frozen LLMs (DIVE), and currently extending skill evolution to scientific reasoning.
- Worked on search-augmented reasoning with adaptive information control (EMNLP 2026) and evidence-based scientific claim verification (DeepVerify).

Research Assistant, Koç University

Jun. 2022 - Jun. 2024

Advised by Prof. A. Murat Tekalp for Bachelor Thesis

- Developed the first saliency-aware, end-to-end learned variable-bitrate 360° image codec together with a 360° saliency prediction network, allocating bits by the predicted saliency map to cut VR bandwidth while preserving perceptually important regions (IEEE ICIP 2024).

Research Assistant, Koç University

Jan. 2023 - Jul. 2023

Advised by Assoc. Prof. Menderes Işkın for Bachelor Thesis

- Solved physical models using computer vision techniques by building physics-informed CNNs that predict ground-state energies of the 2D Schrödinger equation and energy bands of Kronig-Penney potentials from potential grids. 

WORK EXPERIENCE

MLOps Engineer, CareX AI

Oct. 2021 - Aug. 2024

Palo Alto, CA (Remote)

- Developed heart rate, blood pressure, and blood sugar estimation from face and fingertip videos for a camera-based remote patient monitoring platform, using face recognition and denoising autoencoders.
- Implemented transformer-based video motion magnification with optical flow to track respiration rate from chest motion, and designed a lightweight model for real-time processing on edge devices.
- Optimized the data acquisition and CI/CD deployment pipeline for PPG extraction from face and fingertip videos using Docker and AWS.

Access Network Engineer Intern, Turkcell

Aug. 2021 - Sep. 2021

Istanbul, Turkey

- Created the topology of microwave radio links and fiber lines to prevent local signal interference and optimized the network map of routers and switches.

Software Engineering Intern, Türkiye İşbank

Jun. 2021 - Jul. 2021

Istanbul, Turkey

- Worked on the bank's AI platform, contributing to the management of model storage accessibility.

AWARDS & HONORS

Georgia Tech ECE Departmental Fellowship

2024

Valedictorian of the Department of Physics

2023

College of Science Top Ranked Student (3rd Place)

2023

Summa Cum Laude, B.Sc. in EE and Physics

2023

TUBITAK Undergraduate Scholarship

2020 - 2023

- This scholarship is given to students who sustain academic excellence by The Scientific and Technological Research Council of Turkey (TUBITAK).

Vehbi Koç Academic Honor Award

2019 - 2023

Full Merit Undergraduate Scholarship

2019 - 2023

- Ranked 115th among approximately 2.4 million candidates in the nationwide university entrance exam.

TEACHING

Graduate Teaching Assistant, *Introduction to Signal Processing*

ECE 2026, Georgia Institute of Technology

Fall'24, Spring'25

Hosted office hours, graded homework assignments, and conducted lab sessions.

Undergraduate Teaching Assistant, *Differential Equations*

MATH 204, Koç University

Spring'22

Held office hours and provided support for the course.

Learning and Teaching Center Tutor, *General Physics II*

PHYS 102, Koç University

Fall'20

Served as a tutor, assisting students in improving their understanding.

**ACADEMIC
SERVICE**

Reviewer: AAAI, ICML, NeurIPS, IEEE Transactions on Image Processing, IEEE Communications Letters

COURSEWORK

Graduate

• Mathematical Foundations of Machine Learning (ECE7750) • Random Processes (ECE6601) • Deep Learning (CS7643) • Convex Optimization (ECE6270) • Graphical ML (ECE7751) • Computational Data Analysis (CSE6740) • Generative and Geometric Deep Learning (ECE8803) • Introduction to Uncertainty Quantification (CSE8803)

Undergraduate

• Introduction to ML • Introduction to AI • Digital Signal Processing • Digital Image & Video Processing • Digital Speech & Audio Processing • Biomedical Signal Processing • Communication Networks • Analog & Digital Communication Laboratory

SKILLS

Languages: English (Fluent), Turkish (Native)

Programming: Python (PyTorch, TensorFlow, OpenCV), AWS, Docker, SQL

LLM Frameworks: TRL, verl, OpenRLHF, Unsloth, vLLM, SGLang, Ollama, LangChain, LangGraph, DSPy

**VOLUNTEER
EXPERIENCE**

Global Volunteer, AIESEC

2019

- Volunteered for eight weeks at an orphanage in Cairo, Egypt, teaching basic computer skills to underprivileged children as part of the Social Project in Egyptian Society for Integrated Development.

Student Mentor, Newcomer Advising Center, Koç University

2020 - 2022

- Assisted newcomer students with their social and academic adaptation.