

Ahmet Erdem Pamuk

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Positions

2026–present	Member of Technical Staff , Freya (YC S25). Low-resource speech modeling (training + data curation + evaluation); first-authored <i>FreyaTTS-small</i> , the first open-weight Turkish TTS model trained from scratch; led R&D for Adam & Eve, an English TTS model ranked #1 on Design Arena’s AudioRealismBench.
2026–present	Student Researcher , National Magnetic Resonance Research Center (UMRAM), Bilkent University, Ankara, Türkiye. Research under Prof. Tolga Çukur on mask-conditioned colonoscopy video generation and world models; built sparse video+mask generation and downstream evaluation, finding synthetic scaling improved LDPolypVideo mAP50 but reduced performance on REAL-Colon.
2025–2026	Research Engineer , MotionShark. Led end-to-end full-stack development; built a personalized SAT/ACT/PSAT AI Tutor agent using Pipecat; partnered with leading U.S. exam prep company, Prep Expert (Mark Cuban + Shark Tank).
2025	Research Engineer Intern , MotionShark. Developed an AI-powered study planner, SAT Math and English diagnostics, adaptive tutoring workflows, structured prompting and tool orchestration, and reliability mechanisms including structured outputs, retries, OCR-assisted reference detection, and fallback planning.
2025	Co-Founder & Tech Lead , Piyonist. Developed a state-of-the-art chess engine and personalized AI chess coaching platform for Turkish users; implemented advanced algorithms, including Monte Carlo Tree Search and Minimax with a large-scale dataset; supported by the Turkish Chess Federation.
2024	Software Engineer Intern , Sobuman Software. Developed Partogo, an all-in-one e-commerce integration platform for cargo tracking and invoicing; designed UI from scratch using C# Windows Forms; refactored codebase for maintainability.

Awards

2026	Member, Team Türkiye, European Olympiad in Artificial Intelligence.
2026	Silver Medalist, Kaggle AI Mathematical Olympiad; rank 54/4138 (top 2%).
2026	1st Place, Istinye University × Evideep DataMedX Hackathon 2; TRY 100K award.
2026	1st Place (Kaggle Stage) and 3rd Place (Overall), Trendyol Group × TEKNOFEST E-Commerce Hackathon; TRY 100K award.
2025	Rank 54/3365 (top 2%), Kaggle Bank Classification Competition.
2025	Rank 95/3310 (top 3%), Kaggle Predict Podcast Listening Time Competition.
2025	Rank 30/355 (top 8%), Elucidata Global AI Hackathon.
2025	2nd Place, Istinye University × Türk Telekom × Evideep DataMedX Hackathon; TRY 30K award.
2025	Finalist (top 3%), Trendyol Group × TEKNOFEST E-Commerce Hackathon.
2025	Finalist (top 1%), TÜBİTAK × TEKNOFEST AI in Aviation Competition.
2025	Finalist (top 1%), TÜSEB × TEKNOFEST AI in Healthcare Competition.
2024	Finalist (top 8%), Trendyol Group × TEKNOFEST E-Commerce Hackathon.
2023–2026	Academic Honors, Grades 9–11; High Honors in Grade 9.

Publications & preprints

1. **A. E. Pamuk**, *A Ceiling on Query-Independent Data Attribution*. Accepted to the Third NeurIPS Workshop on Attributing Model Behavior at Scale: Data Attribution and Provenance (ATTRIB), 2026. [OpenReview]
2. **A. E. Pamuk**, *When Does Cache-Aware Context Assembly Pay? A Latency and Quality Frontier for Agent Memory Ordering*. Accepted as a poster at *AgenticOS: Co-designing Systems and ML Foundations of an OS Layer for Agentic AI*, NeurIPS 2026. [OpenReview]

3. H. T. Güzeller and **A. E. Pamuk**, *Beyond Grid Artifacts: Periphery Targeted Landmarks for ALT Search*. Accepted as a full paper at the 38th International Conference on Tools with Artificial Intelligence (ICTAI 2026).
4. **A. E. Pamuk**, Ö. Yentür, A. T. Bayrak, Y. A. S. Öztürk, and M. Yavuz, *FreyaTTS: A Compact Tokenizer-Free Non-Autoregressive Flow-Matching Model for Turkish Speech Synthesis*. arXiv:2607.09530, 2026. [arXiv]
5. **A. E. Pamuk** and E. Yurtseven, *ansatzu: Automated Variational Quantum Circuit Design and Optimization with Shot-Aware Hyperparameter Search*. Accepted to the IEEE International Conference on Quantum Computing & Engineering, 4th International Workshop on Quantum Machine Learning: From Research to Practice, 2026.
6. **A. E. Pamuk**, *QDPO: Quantum-Decoupled Policy Optimization for Stable Multi-Reward Reinforcement Learning*. Accepted to the IEEE World Congress on Computational Intelligence, QNRL: Advances in Quantum Neural and Reinforcement Learning Workshop, 2026.
7. **A. E. Pamuk**, E. K. Özdemir, and Ş. T. Kocabay, *Superpositional Gradient Descent: Harnessing Quantum Principles for Model Training*. Accepted to the IEEE International Conference on Quantum Artificial Intelligence, 2025. [arXiv]
8. **A. E. Pamuk**, Ş. T. Kocabay, and E. K. Özdemir, *EchoLLaMA: 3D-to-Speech with Multimodal AI*. Preprints.org, 2025. [Preprint]

Research projects

Polyp Segmentation from Colonoscopy Images. Developed a DeepLabV3+ pipeline with EfficientNet-B3 achieving 97.98% IoU and 1.11% Dice Loss on 1,612 images from CVC-ClinicDB and Kvasir-SEG; benchmarked DeepLabV3+, SegFormer, U-Net, and Swin Transformer architectures.

Cardiomegaly Detection & Cardiothoracic Ratio Estimation. Implemented DeepLabV3+ with EfficientNet-B4 achieving 95.13% IoU and 3.01% 1-SMAPE; external validation on more than 150 images achieved an F1 score of 0.8889.

Academic service

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| 2026 | Reviewer , Third NeurIPS Workshop on Attributing Model Behavior at Scale: Data Attribution and Provenance (ATTRIB), NeurIPS 2026. |
| 2026 | Reviewer , Foundations of Deep Generative Models (FoGen) Workshop, ICML 2026. |
| 2026 | Reviewer , Deep Generative Model in Machine Learning: Theory, Principle and Efficacy (DeLTa) Workshop, ICLR 2026. |

Service & outreach

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| 2025 | Board Member , Kaggle Türkiye Community. Helped manage a 2,000+ member AI/ML community. |
| 2024–2025 | School Representative , GençTek Peer Learning & Youth IT Ecosystem. Participated in organizational meetings and supported the First GençTek Summit 2025, connecting 500+ high school students with technology-sector professionals and the Minister of National Education of Türkiye, Yusuf Tekin, in Ankara. |

Research interests

Natural Language Processing; Voice AI; Agentic Large Language Models; Multi-Agent Systems; Quantum Machine Learning (exploratory).

Education

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| 2025–present | Mustafa Hakan Güvencer Science High School , Ankara, Türkiye. Science High School Program. |
| 2023–2025 | Teknopark Ankara İvedik OSB Vocational and Technical Anatolian High School , Ankara, Türkiye. Anatolian Technical Program (ATP), Information Technologies Field, Software Development Branch. |
| 2026 | Koç University Summer Research Program (KUSRP) , Koç University, İstanbul, Türkiye. Quantum Algorithms under Assoc. Prof. Mehmet Cengiz Onbaşlı. |
| 2024 | Deneyap Technology Studios Summer School , Ankara, Türkiye. Design & Production; Robotics & Coding. |

Languages

Turkish (native); English (fluent).