

Tamerlan Baimurat

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Education

Boston University, Boston, MA

Aug. 2024 – May 2027

B.S. Electrical Engineering, Minor in Computer Science

GPA: 3.98/4.00

Planning to pursue an M.S. in Electrical and Computer Engineering

Coursework: Deep Learning (graduate), Human Speech Processing and Recognition (graduate), Digital Signal Processing (graduate), Biomedical Signal Processing, Machine Learning, Probability and Statistics

Research Experience

Boston University

Dec. 2025 – Present

Research Assistant – Trustworthy AI for Medical Documentation

Boston, MA

- Earned **competitive UROP funding** for Spring and Summer 2026 to develop a validation layer for an AI-assisted clinical-documentation system.
- Building an end-to-end prototype integrating **automatic speech recognition**, transcript processing, medical-document generation, and mechanisms that flag potential errors or **unsupported outputs**.
- Designing a user study and data-collection workflow to evaluate human interaction and documentation impact; preparing the ongoing work for a research manuscript.

Experience

Boston University College of Engineering

Aug. 2025 – May 2026

Software Engineer

Boston, MA

- Independently architected **Python/FastAPI microservices** and **React/TypeScript** interfaces with Redux, partnering with IT leadership and project managers to deliver production automation tools.
- Cut critical **TimescaleDB query time by 80%**, achieved **6–7 ms cached responses**, and removed **1,000+ redundant DOM elements** to improve responsiveness.
- Built **Docker** and **GitHub Actions CI/CD** pipelines for **AWS EC2** microservices, reducing deployment time by **70%**.

AlmaEco LLP

May 2024 – Aug. 2024

Full-Stack Developer Intern

Astana, Kazakhstan

- Built a multilingual React/FastAPI platform serving **3,000+ monthly users in 40+ countries**.
- Reduced **API latency by approximately 65% to sub-200 ms** through asynchronous routing, payload optimization, caching, and Linux/Nginx deployment tuning.

Attire LLC

Jan. 2024 – May 2024

Software Engineer Intern

East Lansing, MI

- Built a FastAPI/Flutter application with Firebase, lowering **median API latency from 120 ms to 75 ms**; developed a **LangChain RAG** chatbot with **90% intent-match accuracy**.

Selected Projects

Attention-Based Speech Denoising | Python, PyTorch, STFT, Gated DeltaNet

Spring 2026

- Led a four-person team and drove implementation of an encoder-decoder combining residual convolutions, Gated DeltaNet temporal modeling, frequency attention, and a learned noise gate.
- Trained on **23,075 clean/noisy audio pairs**; outperformed MetricGAN+ on **PESQ, CSIG, CBAK, and COVL across three test datasets** and ran controlled ablations.

Greenlight RAG | Python, Qdrant, FastAPI, Vue 3, Docker

2025 – Present

- Built a tested local document-search platform with vector retrieval, CLI and web interfaces, automated setup, and **sub-100 ms semantic-search performance**.

FPGA ASCII-to-Morse Encoder | Verilog, Vivado, Artix-7 FPGA

- Designed and verified modular RTL supporting **62 ASCII inputs**, with lookup/decoder logic, clock enables, debouncing, display multiplexing, an FSM testbench, and physical board validation.

Technical Skills

Languages: Python, TypeScript/JavaScript, C/C++, SQL, Java, Verilog

AI/DSP: PyTorch, TensorFlow, OpenCV, speech enhancement, STFT, attention, NLP, LLMs/RAG, NumPy/SciPy

Systems/Hardware: FastAPI, React, PostgreSQL/TimescaleDB, AWS, Docker, GitHub Actions, Linux, Qdrant, Vivado, RTL