

# Elchin Hasanov

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## EDUCATION

### Georgia Institute of Technology

Bachelor of Science in Computer Science

Atlanta, GA

Graduation date: May 2028

- **GPA:** 4.0 / 4.0

- **Related Coursework:** Linear Algebra, Object-Oriented Programming (Java), Multivariable Calculus, Data Structures and Algorithms, Discrete Mathematics

## EXPERIENCE & RESEARCH

### Baku Stock Exchange

Software Engineering Intern

Jun 2025 – Aug 2025

Baku, Azerbaijan

- Built data infrastructure for real-time trading activity monitoring in Python/Django + PostgreSQL, streaming multi-GB order-book feeds via Redis through a reduced query latency from **90 s** to **4.7 s**
- Engineered Next.js + TypeScript dashboards with WebSocket channels, enabling visualization of liquidity, VPIN, and volatility metrics accessed by **15+** analysts daily.
- Orchestrated containerized microservices using Docker on AWS EC2, integrated GitHub Actions CI/CD, and automated anomaly detection + metric logging, reducing ops overhead by **40%** and increasing system uptime to **99.8%**.

### Agrarian Insurance Fund

Software Engineering Intern

Jun 2023 – Aug 2023

Baku, Azerbaijan

- Designed a geospatial ETL pipeline combining climate APIs, satellite imagery, and claims data in PostgreSQL/PostGIS, processing **100K+** data points across **12+** regions for polygon-level drought and soil-index analytics.
- Integrated asynchronous Django services with Celery and Firebase Cloud Messaging, sustaining under **2 s** P95 latency and handling **5×** higher throughput for actuarial risk scoring and policy updates.
- Launched a multi-model ensemble (XGBoost DART, ExtraTrees, Stacked Logistic Regression) for drought and claim-risk scoring; used SHAP for automated retraining via AWS Batch + Docker, reducing claim-resolution time by **85%**.

### Undergraduate Researcher — Hybrid Sequence Models

Georgia Institute of Technology

May 2025 – Present

Atlanta, GA

- Explored Mamba state-space models (SSMs) combined with Transformer attention; constructed custom TensorFlow blocks with gated routing and residual mixing, lowering FLOPs by **22%**.
- Benchmarked models on **64K**-token inputs using FlashAttention v2 and DeepSpeed/FSDP; achieved **1.6×** faster training and **18%** lower GPU memory usage.
- Conducted ablations on state size, convolution span, and skip connections; evaluated across **3+** large-scale datasets (WikiText, The Pile, financial filings).
- Results show **28%** lower inference cost vs. baseline Transformers; preparing a first-author submission to ICLR **2026**.

### Undergraduate Researcher — Conference Trend Mining

Georgia Institute of Technology

Jul 2025 – Present

Atlanta, GA

- Built a conference intelligence platform scraping **20K+** papers and event pages using Playwright + asyncio; parsed **5+** GB of metadata and stored structured data in PostgreSQL.
- Applied BERTopic with SentenceTransformers + HDBSCAN to detect **120+** topic clusters of emerging research; added FAISS-based merging to unify overlapping areas.
- Created a jargon-simplification pipeline: GPT-4 extracts key claims, expands acronyms, and RoBERTa-MNLI validates consistency, improving summary readability by **35%**.
- Designed a Streamlit dashboard with insights and interactive Plotly charts tracking trends across **10+** conferences since 2020.

## PROJECTS

### ExamZen — Educational AI Platform | 1,000+ users across 10+ countries, raised \$20K, partnered with multiple IB schools

- Built a platform for IB students, offering tailored study tools, auto-graded practice exams, and adaptive question banks.
- Architected backend services with Django REST, PostgreSQL, and Redis queues; containerized via Docker and launched on AWS EC2/S3, scaling to **50K+** question generations/day with under **2 s** response latency.
- Engineered a React/Next.js and TypeScript frontend with Tailwind CSS and Firebase Auth; fine-tuned GPT models for question generation, grading, and explanations, improving student performance by **30%** and reducing manual review time by **60%**.

### PathFindr — Multimodal Visual Navigation Assistant | AI ATL Hackathon Winner

- Built an iOS (Swift) assistant using ARKit + LiDAR to construct a live 3D map, detect obstacles within **0.3–10.2m**, and provide directional haptic + spatial audio cues.
- Developed a Flask middleware and Gemini ADK multi-agent backend to fuse depth, vision, and semantic context, achieving under **300ms** guidance latency and **92%** hazard detection precision.
- Implemented hands-free voice interaction with Apple Speech + TTS and Firebase-backed conversation memory supporting context-aware follow-up queries.

## SKILLS

Tech Stack: Python, Java, Django, Node.js, React.js, Swift, React Native, TensorFlow, Firebase, PostgreSQL, Git, Docker, AWS

Languages: English, Russian, Turkish, Azerbaijani