Elchin Hasanov

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Education

Georgia Institute of Technology — Atlanta, GA
Bachelor of Science in Computer Science — *Graduation date: May **2027***

- **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 — Jun 2025 – Aug 2025
Software Engineering Intern — *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 — Jun 2023 – Aug 2023
Software Engineering Intern — *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 — May 2025 – Present
Georgia Institute of Technology — *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 — Jul 2025 – Present
Georgia Institute of Technology — *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**%.

GamePulse — Live Microbetting Platform | *Honorable Mention @ HackGT**12** (PrizePicks Award)*

- Developed a real-time sports microbetting app in React Native generating prediction prompts from live play-by-play transcripts with under **1** s latency, supporting **1K**+ concurrent users.
- Integrated GPT-4 for natural-language bet prompts and explanations; optimized Supabase/PostgreSQL auth and wallet services to handle **1K+** concurrent users with sub-**200 ms** API latency.
- Optimized scalable state management and leaderboards, handling **50**+ active lobbies and reducing response time by **35**%.

Skills

Tech Stack: Python, Django, React Native, Next.js, TypeScript, Tailwind, TensorFlow, Firebase, PostgreSQL, Git, Docker, AWS
Languages: English, Russian, Turkish, Azerbaijani