Aaron Gurovich

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Education

Texas Tech University — Lubbock, TX, USA
Computer Science B.S. / Minor in Mathematics — Graduation Date: May 2026
GPA: 3.76

Relevant Coursework: Object-Oriented Programming (Java), Data Structures (C), Programming Principles (C), Computer Architecture, Linear Algebra, Calculus I-III, Mathematical Statistics for Engineers, Modern Digital System Design

Achievements/Awards: President's List, Dean's List, Presidential Transfer Scholarship, Competitive Chess Scholarship

Experience

Texas Tech University | Research Assistant — Lubbock, TX, USA | October 2024 – Present

- Developed **MalScape**, a full-stack interactive network visualization tool using **Cytoscape.js, Flask, and Pandas**, enabling cybersecurity analysts to upload **CSV** data for visualizing and analyzing network activity.
- Designed advanced **filtering**, **clustering**, and **protocol-based grouping** features to help cybersecurity analysts efficiently detect and investigate anomalies.
- Optimized and personally developed the backend data processing system using the **High Performance Computing Center** at my university, utilizing **vectorized operations**, **IP classification**, and **Union-Find clustering** to significantly improve performance when handling large-scale datasets.
- Contributed to a **50–80% reduction** in incident response times by automating key investigative tasks and providing intuitive data visualization.

ProofPerks | Software Developer Intern — Remote | August 2024 – December 2024

- Deployed **biometric verification models** using **Python**, improving model accuracy.
- Optimized complex **PostgreSQL queries** by implementing strategic indexing, query refactoring, and performance tuning, achieving a **35% reduction** in execution times and substantially boosting database performance.
- Implemented a robust **Redis caching** layer to offload frequent query loads, resulting in a **50% reduction** in response times under high-concurrency conditions.
- Refactored and streamlined backend logic for deployment on **Google Cloud Server** infrastructure, reducing latency and enhancing overall request handling efficiency.
- Developed and integrated **high-performance data pipelines** for **real-time processing** of **biometric data**, ensuring **scalable ingestion** and **processing capabilities** to support future system growth.

Skills

- **Programming Languages:** Python, Java, JavaScript, C, SQL.
- **Libraries/Frameworks:** Node.js, Express.js, D3.js, React.js.
- **Tools / Platforms:** Git, VS Code, GitHub, Docker, Linux, Cloudflare, AWS/GCP.
- **Databases:** PostgreSQL, Redis.

Projects

Banking Management System

- Engineered a comprehensive **banking simulation system** featuring robust **account management, transaction processing, and financial reporting** functionalities using **Python**.
- Leveraged efficient data structures, including **arrays/lists** for optimal account storage, **queues/stacks** for streamlined transaction handling, and implemented **binary search** for rapid account retrieval.
- Developed high-performance **financial reporting** tools by integrating advanced algorithms such as **merge sort and quicksort** to accurately rank accounts by balance, significantly enhancing data retrieval efficiency.
- Guaranteed **data integrity and security** through rigorous **input validation, error handling**, and enforcing **hierarchical access control** via tree and graph-based structures.

Real Estate Property Search

- Architected an innovative **spatial property search system** leveraging **R-tree indexing** to efficiently store and query multidimensional real estate datasets.
- Integrated sophisticated **range queries, nearest neighbor searches**, and **multi-criteria filtering** mechanisms to optimize property retrieval based on location, price, and features.
- Deployed advanced sorting algorithms (**merge sort and quicksort**) in conjunction with **priority queues** for swift and accurate ranking of property listings.
- Enhanced overall system performance by optimizing **database operations and indexing** strategies, significantly boosting search efficiency and elevating real estate market analysis.

Activities

- **Chess Team Member**
  Represented Texas Tech in national tournaments, refining strategic thinking and decision-making under pressure. Volunteered at local tournaments to support chess outreach in the community. **USCF: 1907.**
- **Hillel Member**
  Engaged in Hillel's cultural and community programs, fostering connections among Jewish students through discussions, events, and leadership opportunities.