

JAKOB MCPHERSON

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EDUCATION

The University of Texas at Austin, Austin, TX

May 2026

Bachelor of Science, Computer Science (Turing Honors)

Bachelor of Science, Mathematics

- GPA: 4.00
- Relevant Coursework: Honors Artificial Intelligence, Honors Operating Systems, Honors Computer Architecture, and Honors Data Structures

EXPERIENCE

Sabre Corporation, Southlake, TX

May 2024 – August 2024

Site Reliability Engineering (SRE) Intern

- Reduced detection time for incorrectly blocked human traffic by 88% across 8 websites through Python script that alerts SRE team to traffic anomalies
- Automated deployment of this script to GCP virtual machines using Jenkins and Terraform
- Collaborated with Sabre and Imperva security teams to establish firewall best practices for 63 websites

UTOPIA Research Group, Austin, TX

January 2024 – May 2024

Formal Verification Researcher

- Improved accuracy of Mediator, a database program equivalence verifier, by 9% by identifying a critical flaw in its logic
- Evaluated advantages and limitations of logical representations of SQL queries and relational databases

PROJECTS

- Tetris AI – Python
 - Utilized TensorFlow and Keras to train Deep Q-learning network to play Tetris
 - Reduced state-space complexity through feature extraction techniques
 - Achieved high score of over 30000 lines cleared, demonstrating the model's effectiveness
- [Search Engine](#) – Java
 - Designed search engine to locate words and phrases across 600 websites
 - Pre-indexed pages to ensure queries are processed in milliseconds
 - Employed parse tree to process complex queries 52% faster than with Shunting Yard Algorithm
- [Tree Visualizer](#) – TypeScript
 - Created interactive web application to visualize Binary Search Trees, AVL Trees, and Heaps
 - Leveraged custom asynchronous function framework to facilitate animation of tree operations
- Multithreaded Coroutines – C, x86_64 Assembly
 - Implemented coroutines from scratch to enable concurrent asynchronous operations
 - Integrated pool of POSIX threads to execute tasks simultaneously, resulting in 438% speed increase

RELEVANT SKILLS

- **Languages**
 - Fluent in Python, JavaScript/TypeScript, Java, C, SQL, and Swift
 - Familiar with C++, Bash, and HTML/CSS, Assembly (ARM and x86_64), Verilog, and R
- **Tools:** REST APIs, Linux, AWS, GCP, TensorFlow, Keras, Pandas, NumPy, Git, Docker, Word, and Excel

HONORS AND AWARDS

- **United States of America Math Olympiad (USAMO) Qualifier:** Top 300 out of 95,000 test-takers
- American Mathematics Competition (AMC 12): Score of 120 (98th percentile)
- Texas UIL Number Sense Champion
- SAT: Scored 1590
- Ranked 12th of 1627 in Allen High School, GPA of 4.71