JAKOB MCPHERSON

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github.com/squaredcubed64

EDUCATION

The University of Texas at Austin — May 2026
Bachelor of Science, Computer Science (Turing Honors) + Math
- GPA: 4.00
- Relevant Coursework: Computer Architecture (Honors), Data Structures (Honors), Discrete Math (Honors), Number Theory, Applied Statistics, Linear Algebra, and Probability

EXPERIENCE

UTOPIA Research Group, *Austin, TX* — January 2024 - Present
Undergraduate Researcher
- Working to improve *Mediator*, a tool to verify that two database-backed programs are equivalent

PROJECTS

- Tree Visualizer – TypeScript — January 2024
  - Created interactive web application to visualize Binary Search trees and AVL trees
  - Leveraged asynchronous functions to facilitate animations of tree operations
- Search Engine – Java — December 2023
  - Designed search engine to find words and phrases across 600 websites
  - Pre-indexed pages to ensure queries are processed in milliseconds
  - Implemented a parse tree to handle queries with logical operators (e.g. "cats & dogs")
- Tetris AI – Java — October 2023
  - Developed a Tetris clone that can be played by a human or AI
  - Created Tetris AI employing four scoring metrics, achieving an average score of 2000 pieces placed.
- Critter Interpreter – Java — September 2023
  - Wrote an interpreter to simulate critters from command files, enabling complex behavior
  - Facilitated control flow to let critters respond to their environment
- Machine Translator – Python — April 2023
  - Employed TensorFlow and Keras libraries to develop English to Spanish machine translator
  - Developed tokenizer and Transformer network to encode and decode sentences

SKILLS

- **Languages**
  - Fluent in Python, Java, Swift, TypeScript
  - Familiar with C, C++, HTML/CSS/JavaScript, SQL, Bash, LaTeX, R
- **Technologies and Libraries:** TensorFlow, Keras, Pandas, REST APIs, JUnit, NumPy, Git, Docker, Excel

HONORS AND AWARDS

- **United States of America Math Olympiad (USAMO) Qualifier**
- 5x AIME Qualifier (10 on AIME)
- Regional UIL 6A Number Sense Winner (of 4 regions in Texas)
- Ranked 12th of 1627 in Allen High School, GPA of 4.71
- AP Scholar with Distinction (Score of 5 on all 16 AP Exams taken)
- Presidential Scholars Program - *Candidate* (1590 on SAT)
- National Merit Scholar – *Finalist*

ACTIVITIES

UTCS Directed Research Program — September 2023 – Present
UT Programming Club — September 2023 – Present