Andrew Tockman

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EDUCATION

Massachusetts Institute of Technology (Cambridge, MA)   **2019 − present**

- Candidate for Bachelor of Science in Mathematics
- Candidate for Bachelor of Science in Computer Science and Engineering
- Minor in Linguistics
- Current GPA: 5.0

St. John's School (Houston, TX)   **2015 − 2019**

TEACHING EXPERIENCE

MIT 6.512 Formal Reasoning About Programs   **February 2023 − present**
Undergraduate Teaching Assistant   Cambridge, MA

- Held office hours to help students with formal verification and computer-assisted proofs
- Graded most submissions and gave personalized feedback on proof scripts for each problem set
- Tested newly written problem sets for the course

MIT 18.701 Algebra I   **October − December 2022**
Undergraduate Mentor   Cambridge, MA

- Met with mentees once a week to help with problem sets, proof writing skills, and conceptual understanding

MIT Educational Studies Program   **periodically since November 2019**
Teacher   Cambridge, MA

- Planned and taught mini-classes such as Complex Analysis, Weird Programming Languages, Code Golf, Cryptic Crosswords, Atomic Chess, Toki Pona, Math in Logic Puzzles, and Surreal Numbers and Games

WORK EXPERIENCE

Lunarch Studios   **Feburary 2021 − June 2022**
Developer (Full-Time summer 2021, Part-Time otherwise)   remote

- Worked on Sophia, massively multiplayer online puzzle video game
- Created puzzle-authoring interface used for writing thousands of handmade logic puzzles
- Designed internal puzzle database, interfacing with publisher's database for game content
- Implemented spectral-graph-theory-based approach for puzzle generation
- Set up continuous integration for nightly builds

TomoCredit   **summer 2020**
Software Engineering Intern   remote

- Redesigned and implemented new version of landing page (HTML/CSS/JS)
- Fixed bugs and added features in onboarding flow and customer dashboard (JavaScript/React)

Infuse Energy   **summer 2017 − 2018**
Programming Intern   Houston, TX

- Created web portal with pricing calculator, customer data queries, etc., consolidating and vastly improving speed of existing tools (Python, SQL, HTML/CSS/JS)
- Built mathematical model to predict future energy usage (Python)
- Improved visual appearance of customer email reports (HTML/CSS) including graphs (Python)
- Wrote detailed documentation of all of the above

Open source programming   **2011 − present**

- Contributed code to organizations such as Mozilla and Haiku
- Developed 100+ personal open source projects (`https://github.com/tckmn`, `https://tck.mn/portfolio`)

Research

Bedrock2   **Feburary – May 2021**

- Worked on the Bedrock2 programming language, a language embedded in Coq designed for formal verification
- Added timing information to program executions, allowing proofs about program runtimes

Theoretical Computer Science (various areas)   **August 2020 – present**

- Worked with Erik Demaine's research group on various problems such as dynamic optimality, computational origami, and formal verification of hardness reductions
- Coauthored *Complexity of Simple Folding Orthogonal Crease Patterns*, presented at TJCDCGGG 2020+1

Leadership

Epsilon Theta   **2019 – present**
Lieutenant Commander, etc.   Cambridge, MA

- Held various house positions at MIT independent living group Epsilon Theta
- Organized mealplan, oriented new members, planned events, managed chore distribution system, etc.

MIT Asymptones (a cappella group)   **June 2021 – December 2022**
Musical Director   Cambridge, MA

- Ran auditions and rehearsals, led the group and its musical decisions

Stack Exchange (online Q&A network)   **2014 – 2022**
Community Moderator

- Elected moderator on Code Golf Stack Exchange, appointed as moderator on Puzzling Stack Exchange
- Led community decision-making; prevented and resolved conflict between users

Awards

International Linguistics Olympiad   **2017 – 2019**
Contestant   Dublin, Prague, Yongin

- 2017: silver medalist
- 2018: gold medalist, 2nd place in team contest, best solution for problem #1
- 2019: gold medalist

Skills

Languages: English (native), Spanish (intermediate)
Programming languages:

proficient	C, Ruby, Python, Mathematica, HTML/CSS/JavaScript, Haskell, Coq
some experience	Rust, Java, C++, SQL
minimal experience	x86 assembly, Perl, Julia, R, OCaml

Tools: LaTeX, git, vim, bash/zsh, nix, basic GIMP/Inkscape (raster/vector graphics)

Hobbies

Music: piano, viola (MIT Symphony Orchestra, MIT Video Game Orchestra), a cappella (MIT Asymptones)
Puzzles: puzzle hunts, logic puzzles, cryptic crosswords