

**Alek Westover**  
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## Education

**Massachusetts Institute of Technology**, Cambridge, MA 2022-2026  
Candidate for Bachelor's Degree in Mathematics with Computer Science (intended)

### **Relevant coursework:**

Advanced Algorithms (graduate level), Complexity Theory  
Self studied texts covering standard undergraduate CS curriculum, e.g. "Algorithms" by Jeff Erickson  
Linear Algebra + Abstract Algebra + Multivariable Calculus  
Real Analysis + Functional Analysis

## Skills

Data science (Python, Julia); Full-stack web development & creating video games (javascript, Flask / Node.js); C++  
English (native), Mandarin (fluent)

## Experiences

**Theoretical Computer Science Research Internship (MIT CSAIL)** 2020, 2022-present  
Conduct research on scheduling algorithms for parallelizable tasks; develop and analyze algorithms

**Private Tutor (self-employed)** 2017-present  
Teach math (e.g. calculus), programming (e.g. python) to high schoolers and adults.

**Theoretical Computer Science Research (MIT PRIMES, Mentor: William Kuszmaul)** 2019-2020  
Designed and implemented a cache optimal algorithm for the fundamental parallel partition problem. Gained experience with parallel computing and understanding of the role of memory hierarchy in efficient computing

**Software Engineer Intern at Beacon Biosignals (Healthcare AI startup)** 2019-2020  
Worked in Julia to prepare large datasets for use in machine learning models, and performed data compression

**Teaching Assistant**, Harvard University 2019-2020  
Graded, held office hours, co-led sections. (Linear Algebra, Real Analysis, Multivariable Calculus, R)

**Canada/USA Mathcamp** 2019

**Research Assistant at Massachusetts General Hospital Sleep Laboratory** 2018

## Awards

**Regeneron Science Talent Search** 2020  
National science fair for high school students, 7th place in USA, \$70,000.

Project: "Cache-Efficient Parallel-Partition Algorithms using Exclusive-Read-and-Write Memory"

**Massachusetts Science Engineering Fair: Second Place Award** 2020

**Yau Science Award for Computer Science: Bronze Medal** 2019

## Publications

> William Kuszmaul and Alek Westover. The Variable-Processor Cup Game. In 12th Innovations in *Theoretical Computer Science Conference (ITCS)*, 2021. [10.4230/LIPIcs.ITCS.2021.16](https://doi.org/10.4230/LIPIcs.ITCS.2021.16)

> William Kuszmaul and Alek Westover. Brief Announcement: Cache-Efficient Parallel-Partition Algorithms using Exclusive-Read-and-Write Memory. In *32nd ACM Symposium on Parallelism in Algorithms and Architectures (SPAA)*, 551-553, 2020.

Full paper: [arXiv:2004.12532](https://arxiv.org/abs/2004.12532), Code: [github.com/awestover/Parallel-Partition](https://github.com/awestover/Parallel-Partition), Visualization: [parallelp.partition.surge.sh/](https://parallelp.partition.surge.sh/)

> Alek Westover, David Shapiro, M. Brandon Westover, Matt T. Bianchi. Rule of 100: A Litmus Test for Informationless Diagnostic Tests. *Postgraduate Medical Journal*. 2018 Jun; 94(1112):364-366. PMID: PMC6771257.