





Muhammad Abdullah

 Cambridge MA 02139
 617-955-2835
 abd880@mit.edu
 github.com/abdullah8a0
Preferred name: **Abdullah**

Education

Massachusetts Institute of Technology

Sep. 2020 - May 2024

- B.S. Computer Science and Engineering 2024
- B.S. Mathematics 2024
- Master of Engineering in Computer Science 2024

GPA: 4.7/5.0

Selected Coursework:

Graduate Advanced Algorithms,
Computer Systems Security,
Graduate Computer Architecture,
Software Construction,
Theory of Computation,
Multivariable Calculus,
Accelerated Differential Equations,
Accelerated Real Analysis, Algebra,
Topology

Awards

International Mathematical Olympiad
2020 (IMO) - Honorable Mention
International Mathematical Olympiad
2019 (IMO) - Team member
(Pakistan)

Skills

Languages: Proficient in Javascript,
Python, C, RISC-V Assembly, System
Verilog

Tools: sk-learn, Pytorch, scipy

Interests: Optimizing Algorithms,
Computer Architecture and Security,

Research and Work Experience

Rescale, Inc.

Jun. 2022 - Aug. 2022

PM/PMM Intern

- Deployed a Data Analysis pipeline in a High-Performance Computing context.
- Designed a Communicator Script that did dynamic process management in distributed systems using a Message Passing Interface.
- Provided feedback to company teams, reviewing the platform and suggesting improvements.

MIT CSAIL Arch-Sec Lab

Jan. 2022 - present

Morais and Rosenblum Undergraduate Research Scholar

- Researching an open-source implementation of Trusted Execution Environments (TEEs). TEE provides sub-OS/hardware level assurances to VMs on the Cloud about the cryptographic security of their data on untrusted 3rd party servers. The implementation is in C and assembly (RISC-V), along with hardware to support a sub-OS layer.

MIT Kavli Institute

Jun. 2021 - Jan. 2022

Undergraduate Researcher

- Designed an ML classification pipeline in Python to analyze and filter a large amount of astrophysical data from the TESS space telescope. [link](#)
 - Implemented an AI-guided discriminative ensemble of 3 Machine Learning models using clustering (HDBSCAN), anomaly detection (Isolation Forests), feature selection/design, and Dimensionality reduction (t-SNE). The leading ensemble was boosted by a generative model running in parallel.
 - Improved the human throughput by decreasing the data to a manageable 200 files, from 15,000 files, while maintaining an accuracy of 95%.
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Projects

Lisp-like Language Interpreter: Explored language design and implemented an interpreter of a Lisp dialect in Java. [link](#)

Implementations of Sweep line Algorithms: Designed and implemented an algorithm to remove data outliers using computational geometry. [link](#)

MIT 6.854 Final Project: Reviewed and simplified several recent keystone papers in Data structures and Algorithms. [link](#)