

# Muktha Ramesh

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## Education

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**Massachusetts Institute of Technology (GPA: 5.0)**

**Cambridge, MA**

*Candidate for B.S. in Computer Science*

*May 2028*

- **Coursework:** Diffusion Models, Large Language Models, Intro to ML, Algorithms, Computation Structures, Probability, Linear Algebra
- **Languages:** Python, Java, TypeScript (Proficient); C, RISC-V, Julia (Intermediate)

## Awards

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- **HackMIT Finalist**, Top 15 out of 320+ teams (2025).
- **MIT Pokerbots Biggest Upset Winner**, Beat 72% of other bots, won \$500 (2025).
- **ARML (American Regional Mathematics Competition)**, Connecticut Representative, (2022, 2023).
- **AIME (American Invitational Mathematics Examination)**, top 5% nationally on AMC (2020, 2024).
- Advanced to **FIRST Robotics World Championship**, Top 25% of teams worldwide (2022)

## Projects

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**Machine Learning Projects — PyTorch, Python, NumPy, Pandas, TensorFlow**

**Jan 2024 – Present**

- Discuss recent ML research papers and real-world applications in the AI@MIT Reading Group weekly.
- Implemented linear regression, binary and multi-class classifiers, using GD/SGD, cross-entropy, and NLL loss from scratch (only Python).
- Tutored two students in 6.390 (Intro to Machine Learning) through HKN, covering core ML concepts.
- Trained neural networks in PyTorch and TensorFlow for handwritten digit and benchmark datasets.
- Implemented and trained GPT-2-style transformer architecture (~160M parameters) from scratch in PyTorch.
- Designed and trained an MLP controller for robotic pick-and-place manipulation tasks.
- Built and trained a PyTorch segmentation model for vehicle detection in images.
- Achieved 70% accuracy in the Titanic Kaggle competition through feature engineering and model tuning.

**Jane Street Academy of Math and Programming (AMP) - Python**

**June 2024 - Aug 2024**

- Completed a 5-week summer program in NYC focused on computer science and number theory.
- Developed and presented efficient algorithms for solving a series of mathematically-focused, applying data structures and object oriented programming.

## Hackathons/Competitions

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**HackMIT Finalist - TypeScript, Databases**

**Sep 2025**

- Built a flexible content engine to auto-generate domain-specific vocabulary sets (e.g., travel, food, technical).
- Integrated Anthropic API to power an adaptive AI tutor that personalized exercises and conversation practice based on learner progress.
- Drove project from concept to deployment in a fast-paced, team-based environment; selected as a top 15 finalist out of 320+ teams.

**MIT Pokerbots – RL, Python, Git**

**Jan 2025**

- Implemented Python classes for hand evaluation using combinatorics and Monte Carlo simulations.
- Built a fully functional Python poker environment for reinforcement learning agent training.
- Trained and tuned PPO, A2C (Stable-Baselines3), and a tabular Q-learning agent, defeating 72% of competitors and winning \$500 for the biggest upset.

**FIRST Robotics Team Captain - Java, GitHub, CAD**

**Sept 2021 - June 2024**

*Captain and Software Lead*

- Led a 30-member robotics team to the World Championship.
- Redesigned codebase with modular subsystems, integrating PID controllers and path planning.
- Served as Software Lead for two years.