Akila Saravanan

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Passionate and self-motivated problem-solver with experience developing software for air & spacecraft systems. A Senior at MIT on track to graduate in Jan 2023 with B.S (dual) degrees in Aerospace & Computer Science and minor in Writing.

Education

Massachusetts Institute of Technology

Class of 2023 — *Candidate for Bachelors of Science degrees in Aerospace Engineering and Computer Science [double major], Minor in Science Writing & Communication*

- Professional development with the Gordon Engineering Leadership Program, focused on being an effective leader in engineering contexts to complement technical experience

Work Experience

Software Engineering Intern

May '22 – Present — *Venturi Astrolab*

- Researched and integrated new message passing protocols to communicate between ground control and on-board computers
- Tracked fiducials for pose estimation and localization to plan travel trajectories for the rover

Investment Analyst Intern

May '21 – Sep '22 — *Meru Capital Group*

- Analyzed companies and industries in telecom, entertainment, technology and crypto to make private and public equity investment decisions
- Followed macroeconomic data and market trends to understand the investing climate

Software Engineering Intern

May '21 – Present — *Princeton Satellite Systems*

- Developed software for moon lander guidance, navigation & control with NASA SBIR funding
- Implemented convolutional & recurrent neural nets (CNN/RNNs), ResNets, and algorithmic image upsampling to simulate trajectories from orbit to ground
- Worked independently on the module while documenting the design rationale and methodology for seamless integration with the overall control system

Camp Counselor and Research Mentor

May – July '20 & June – July '21 — *NJ Governor's School of Engineering and Technology (Rutgers University)*

- Worked in a team to swiftly transition the four-week intensive STEM program for exceptional high school students online, due to the pandemic
- Maintained continuous communication with students, mentors and staff to create an enriching and novel program in an evolving environment
- Taught ML classes and mentored groups on related research projects

Academic Experience

Undergraduate Student Researcher

Oct '19 – Present — *MIT Dynamics, Infrastructure Networks and Mobility Lab (DINaMo)*

- Developed a coupled optimal location finder (clustering) and scheduler (multi-integer linear program) to facilitate drone swarm planning while enforcing continuity in data collection
- Used robustness testing to identify gaps in algorithms, and implemented improvements

Aug '20 – Present — *NJIT I-Corps*

- Constructed a robotic crawler, gathered and pre-processed culvert data from 360-degree cameras. Paper published in ASCE's Journal of Pipelines Systems Engineering Feb 2019
- Currently automating the defect identification process using ML for an end-to-end commercial solution with support from NSF I-Corps for entrepreneurial training

Sept – Dec '19 *MIT Beaver Works and Lincoln Labs*

- Applied data science methods for space situational awareness to estimate satellite orbits and identify unexpected behavior to prevent collisions
- Collaborated with a multidisciplinary team to brainstorm approaches to analyze data

June – Oct '18 *NJ Governor's School of Engineering and Technology (Rutgers University)*

- Developed CAD models of ornithopter wings and control surfaces, integrated printed parts with an Arduino for control and navigation, programmed wind-correction with sensor input
- Team presented research paper at MIT IEEE Undergraduate Research Technology Conference

Relevant Coursework

Automatic and Feedback Control, Autonomy and Decision Making, Robotics, Algorithms, Machine Learning, Computer Vision, Probability, Linear Algebra, Differential Equations, Aerospace Design

Skills, Awards & Leadership

Software

- Python, TensorFlow, PyTorch, OpenCV - Advanced
- Java, MATLAB - Intermediate
- Arduino/C++ - Basic

Licenses Private Pilot and Remote (Drone) Pilot

Publications & Presentations

- "Drone Sensing and Intelligence: Path Planning for Continuous Data Collection on Mobile Drone Platforms": MIT Advanced Undergraduate Research Symposium
- "Neural Space Navigator: Autonomous Guidance of a Moon Lander for Orbit-to-Ground Descent": 202114th Annual Wernher von Braun Memorial Symposium Student Poster Competition
- "Using Fused Neural Networks for a Multi-sensory Approach to Human Emotion Classification Video": Mentor: 2021 Governor's School of Engineering & Technology Research Journals
- "Electronic Ornithopter Systems: Manual Navigation and Autonomous Hovering in Micro Air Vehicles": Governor's School Scholar: 2018 Governor's School of Engineering & Technology Research Journals
- "Adapting 360-Degree Cameras for Culvert Inspection: Case Study: High School Student Research": ASCE Journal of Pipelines Systems Engineering & Practice Vol. 10 Issue 1 - Feb '19

Leadership

MIT Flying Club Sep '19 – Present: Webmaster Sep '19 – Jun '20, President June '20 – Present

MIT Sport Taekwondo Sep'19 – Present: Tournament Coordinator Jan – Jun'20; VP Jul'20 – Present

Tech Flight Corp - A 501(c)(3) that owns and operates a Cessna 150 aircraft for student flight training in the Boston region, Jun '20 – Present: Board Member & Webmaster responsible for developing and managing the website, accounts, and outreach

Sustainability Initiatives Sep'17 – Present:

- West Windsor Township, NJ - Community organizer for single-use plastic bag ban
- MIT Waste Watchers - Food waste reduction campaign volunteer
- MIT Trash-to-Treasure – Volunteer

Extra Curriculars Civil Air Patrol, Piano, Carnatic (Indian Classical) Violin, Acapella, Taekwondo, Golf

Languages English, Spanish, Sanskrit, Hindi, Tamil

Awards

- Astronaut Scholar (ASF) '22
- Andrew J. Morsa Prize '22 from MIT AeroAstro for the design and development of a drone-based platform for continuous aerial sensing
- Certificate in Advanced Undergrad Research in AeroAstro presented by Dean of Engineering '22
- Academic Excellence Award '22 for Degree in Computation and Cognition
- Boeing Undergraduate Research and Innovation Scholar 2021-22
- Brooke Owens Fellow Class of '21
- Meredith Toms Memorial SWE Scholarship recipient '21
- Chevron SWE Scholarship recipient '19