Athip Thirupathi Raj

PhD Candidate, Aerospace Systems Engineering

Hard-working Aerospace Engineer and NASA MIRO Scholar currently attending The University of Arizona, with 4+ years of work experience. Frequently praised as proactive by my peers, I aim to leverage a proven knowledge of computer-aided engineering, robotics, and process development skills to become a successful Aerospace Systems Engineer.

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WORK EXPERIENCE

Aerospace Systems Engineering Graduate Research Assistant

Space and Terrestrial Robotic Exploration (SpaceTREx) Laboratory, University of Arizona

02/2021 - Present *Tucson, AZ*

Achievements/Tasks

- Currently leading a student team of 8 Undergraduate Researchers as a Team Lead in the CubeSat Docking and Robotic Superstructures Project. **Mentored over 35 students overall**.
- Designed and Fabricated the SWORD (Spacecraft Workings and On-orbit Robotics using Drones) Facility, a Low-Earth Orbit and Deep-Space Lighting Environment Simulator for testing small satellite Proximity Operations, Optical Navigation, and Visible Light Communication.
- **Provisional Patents** in space robotics (0.5U CubeSat docking adapter and LED Active Lighting Cues for small satellite proximity operations) and **44 peer-reviewed conference publications**.
- Programmed a 6 Degree of Freedom Universal Robotics Robotic Arm using Robot Operating System (ROS) to simulate autonomous spacecraft docking operations, as well as pick-and-place operations of sandbag building blocks to build SuperAdobe structures as temporary habitats on the lunar surface.
- Two-time finalist selected for Stage 2 of NASA Flight Opportunities (2021, 2022) while working as a Systems Engineer in the (Asteroid Origins Satellite) AOSAT Project.

Contact : Prof. Jekan Thangavelautham - jekan@arizona.edu

Space Systems Engineer

Agnikul Cosmos Pvt. Ltd.

10/2018 - 08/2019 *Chennai, India*

India's first private Launch Vehicle company

Achievements/Tasks

- Team Lead for the Semi Cryogenic Thrust Stand 3kN Engine Test Fire Facility.
- Co-Authored and Edited the Small Agnibaan Rocket Configuration Document.
- Developed the framework for Requirements Management, Process Flow, Version Control, and Documentation.

Contact : Srinath Ravichandran - srinath@agnikul.in

EDUCATION

Ph.D., Aerospace Engineering

The University of Arizona

01/2021 - Present *Tucson, AZ - 3.9/4.0*

M.Eng., Space Engineering

University of Michigan Ann Arbor

08/2016 - 12/2017 *Ann Arbor, MI - 3.67/4.0*

SKILLS

Engineering Design | C++ | ROS | ANSYS | Thermal Desktop | Python | STK | 6 DoF Robotic Arms | Robotics | Computer Vision | Machine Learning | Metal Additive Manufacturing (DMLS, FFF)

PROJECTS

NASA XHAB Challenge 2016 (08/2016 - 04/2017)

- Science and Educational Outreach team lead for the AURA (Astronaut Urine Repurposing Apparatus) Project, which was selected as the NASA XHAB 2016 winner.
- A three-stage Urine Filtration device capable of working in microgravity was designed, fabricated, tested and showcased at Kennedy Space Center.

STOL Gyrocopter (Undergraduate Thesis) (01/2016 - 05/2016)

- Fabricated an RC Controlled Short Take-Off and Landing (STOL) Gyrocopter.
- Hindustan Aeronautics Limited (HAL) has taken up the project to add functionalities.

Construction Management (01/2020 - 05/2020)

- Designed, Modeled, and formulated a layout plan for a residential house in Chennai, India.

ACHIEVEMENTS

NASA MIRO Scholarship Certificate of Accomplishment (01/2021 - Present)

Certificate from NASA MIRO recognizing my mentorship activities as part of the ASTEROIDS Program. Contact: Naomi Torres (AFRC-112): naomi.torres@nasa.gov

NASA Space Tech Catalyst Award (03/2024)

Winner of the $25,000 NASA Space Tech Catalyst award recognizing STEM mentorship activities at The University of Arizona.

National Level Aquatics and Track and Field Medalist (01/2004 - 12/2020)

Secured over 100 medals in aquatics and track and field sports events.