MAHATHI BHARGAVAPURI

CONTROL AND NAVIGATION RESEARCHER

CONTACT

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EDUCATION

2014 - 2020
Doctor of Philosophy
IIT Kanpur, India

2010 - 2014
Bachelor Of Engineering
SJCE Mysore, India

LANGUAGES

English - Professional Proficiency

Kannada - Native Proficiency

German - A2 Level

OTHER INTERESTS

Performing as a Indian classical musician (vocal and violin) for 20+ years.

Played basketball as part of school and institute teams for 15+ years.

WORK EXPERIENCE

Postdoctoral Researcher **2021 - Present**
Universität der Bundeswehr, Munich

- Working as a senior research associate (E-14 category) with project management responsibilities.
- Research focuses on formal verification of drone safety using reachability analysis and its validation using Gazebo and ROS.

Control Systems - Team Lead **2020 - 2021**
ZMotion Autonomous Systems, Bengaluru

- Designed autopilots for commercial drones from the ground up including sensor selection, evaluation, and testing of control and estimation algorithms on proprietary hardware.
- Headed an interdisciplinary team of engineers responsible for autopilot design & development.

Doctoral Candidate **2014 - 2020**
Topic: Control and Navigation of UAVs
Indian Institute of Technology, Kanpur

- Thesis on control, navigation, and autonomous landing of rotorcraft drones. Nominated for the best thesis award.
- Designed nonlinear adaptive and robust controllers for different types of drones.
- Implementation of vision-based navigation using only onboard electronics and ROS packages.

MY SKILLS & EXPERTISE

- Mathematical modeling of Physical Systems.
- Loop-shaping control design.
- Nonlinear Lyapunov-stability analysis.
- Robust and adaptive control.
- Formal verification and control synthesis.
- Sensor fusion of cameras, IMUs, and Lidars.
- Optimal control design, MPC, Trajectory generation.
- ROS, Gazebo, OpenCV.
- Matlab, Python, C++, C.
- LaTeX, MS Powerpoint, MS Word.

SELECTED PUBLICATIONS

Bhargavapuri, M., Shastry, A. K., Sinha, H., Sahoo, S. R., Kothari, M., ``Vision-based autonomous tracking and landing of a fully-actuated rotorcraft", *Control Engineering Practice 89*, 2019.

Bhargavapuri, M., Sahoo, S. R., Kothari, M., ``Robust nonlinear control of a variable-pitch quadrotor with the flip maneuver", *Control Engineering Practice 87*, 2019.

Bhargavapuri, M., Sahoo, S. R., Kothari, M., Abhishek, ``Robust Attitude Tracking in the Presence of Parameter Uncertainty for a Variable-Pitch Quadrotor", *2018 Annual American Control Conference (ACC)*, Milwaukee, WI, USA, 2018, pp. 3454-3459.