Aniketh Ramesh, Ph.D

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PROFILE

Human Multi-Robot Teaming PhD with 7+ years of experience building and deploying autonomous systems for defence and other highly constrained environments. Capable of architecting the full autonomy stack for UAVs and UGVs from interaction design to perception and control, with a proven ability to lead the development of edge-based visual-inertial targeting systems on low-SWaP hardware. Combines deep autonomy engineering with strong product instinct, aligning technical execution with product and business goals.

RELEVANT EXPERIENCE

CTO, OCCAM INDUSTRIES – MARCH 2025 - MARCH 2026

Def-tech startup backed by Antler (top 0.4% selection), building a hardware-agnostic retrofit AI pilot for partner hardware with low-SWaP compute.

- Architected a three-layer scalable, modular autonomy stack (Spine / Sense / Cortex) abstracting perception, guidance and control into platform-agnostic services, enabling OTA installation on partner UAVs in under 30 minutes regardless of airframe or flight controller.
- Led development of a lightweight visual-inertial navigation and targeting system integrating monocular depth estimation, optical flow and IMU fusion, including a quaternion-based attitude estimation algorithm to bound covariance growth during extended GNSS-denied flight.
- Built an edge-AI perception and targeting pipeline, fine-tuning, pruning and quantising YOLOv8 for sub-200 ms inference on Raspberry Pi Zero 2W and integrating optical-flow tracking for persistent target lock and detection-to-tracking handoff.
- Designed a multi-core micro-services runtime architecture parallelising guidance, navigation, localisation, targeting and logging across CPU cores, enabling real-time autonomy on severely compute-constrained platforms.
- Integrated the full autonomy stack with ArduPilot via MAVLink and validated the system in real flight conditions including wind disturbance and sensor degradation.
- Built and led a four-person autonomy engineering team spanning perception, guidance, GNSS-denied navigation and QA, aligning the technical roadmap with operational requirements, investor milestones and flight demonstrations.
- Raised €3M in venture funding from British, German and Czech investors through technical strategy, system demonstrations and customer validation.

CO-FOUNDER, SCIELDRON – JUL 2024 - FEB 2025

Co-founded Scieldron to build an autonomous anti-drone interceptor prototype for GPS-denied environments, from concept through testing.

- Designed an edge-deployed interception control stack targeting 200km/h intercepts with an NVIDIA Jetson and PX4 stack.

- Implemented and compared LQR and MPC-based guidance strategies through structured simulation, evaluating trade-offs between analytical tractability and constraint handling for high-speed terminal guidance
- Conducted structured user research with British, European and Ukrainian defence stakeholders to define operational requirements and system feasibility boundaries.
- Validated technical approach through London Defence Hackathon (2nd place), engaging early-stage defence investors and ecosystem partners.

PHD, EXTREME ROBOTICS LAB, UNI. OF BIRMINGHAM – APR 2020 - JAN 2025

Specialised in building multi-robot autonomy human-robot interaction for hybrid UAV-UGV teams, with applied work across defence and nuclear environments.

- Created the Robot Vitals framework, a first-of-its-kind runtime health monitoring system for autonomy stacks, giving operators real-time diagnostic oversight of robot state, sensor integrity and autonomy behaviour across heterogeneous platforms.
- Led cross-disciplinary teams across UK, Germany and Sweden, producing 8 peer-reviewed papers, 80+ citations and an H-index of 6.
- Developed mixed-initiative control strategies enabling dynamic reallocation of authority between human operators and autonomous agents based on real-time risk assessment for human multi-robot teaming.
- Designed and validated multi-robot autonomy frameworks on UGV platforms across 85 human participant experiments, evaluating task performance, cognitive workload and trust.
- Delivered 14 demos to government agencies and industry partners, helping secure collaborations and grant funding up to £1M.
- Built multi-modal data analysis pipelines to evaluate mixed-initiative control strategies for risk-aware human-robot teaming in extreme environments.
- Translated research into practice through applied work on classified defence and nuclear programmes, designing autonomy frameworks around real operational constraints.

TEAM LEAD, TURING DATA STUDY GROUP – SEPTEMBER 2021

- Led interdisciplinary team of 10 to automate vascular perfusion analysis using machine learning, reducing processing time from 4 hours to 3 seconds and enabling ~£200 cost savings per test.

EDUCATION

- PhD Robotics, Extreme Robotics Laboratory, University of Birmingham (Apr. 2020-Jan 2025) with H-Index of 6 and I-10 Index of 2
- MSc Robotics, University of Bristol, (Sept. 2018- Sep 2019), Graduated with Merit

TECHNICAL SKILLS

- Languages: C++, Python
- Frameworks: ROS1/2, PX4, Ardupilot, PyTorch
- Concepts**:** State Estimation, GPS denied navigation, Visual-Inertial Odometry, Control, Edge AI Deployment, Sensor Fusion, SLAM, Multi-Robot Systems, UAV and UGV missions, Multi-threading and Multi-processing

INTERESTS

Playing Live-Looping Music, Collecting Vintage Records and Cooking