Aniketh Ramesh

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Doctoral student specialising in experimental design for human multi-robot teaming. Skilled in developing collaborative, cross-disciplinary research opportunities that require a combination of insights from fields like robotics, machine learning, UX design, theory of mind, and psychology.

Academic History

April 2020 – Now PhD in Robotics and Artificial Intelligence at Extreme Robotics Laboratory (ERL), University of Birmingham. Developed the 'Robot Vitals and Robot Health' framework to quantify robot performance degradation. Applied this framework to develop an AI agent that can assist remote tele-operator's multi-robot missions. Supervisor: Prof: Rustam Stolkin

Sept 2018 – Sept 2019 M.Sc. Robotics at University of Bristol. Thesis: Mapping hazardous environments using a swarm of robots. Graduated with Merit.

July 2012 – July 2016 BTech in Electrical Engineering at Amrita School of Engineering, Bangalore, India. Graduated with Distinction.

Academic Collaborations

May 2022 Data Study Group, Alan Turing Institute – Performed data wrangling and exploratory analysis on electric train brake time series data to predict brake failures. Used Pandas, NumPy and Seaborn for programming, presented research findings, experimental results, and methodology in a final report.

September 2021 Data Study Group, Alan Turing Institute – Facilitated an interdisciplinary research group to develop a machine learning model to automate dark field microscopy (DFM) based vascular perfusion index calculation. Used OpenCV and Pytorch for developing a DFM scan quality assessment tool. Presented research findings, experimental results, and methodology in a final report.

June 2021 Showcase Planner, UK RAS Robotics Festival – Mobilised the team, planned, and organised the ERL showcase for the festival.

Academic Training

July 2022 Cambridge Ellis Machine Learning Summer School, University of Cambridge – Topics: Causal Inference, Gaussian Processes, Graphical Neural Networks, Bayesian Networks, Neural Controlled Differential Equations etc.

September 2020 Multi-Robot Systems Summer School, CTU Prague – Topics: Latest advancements in multi-robot systems research, localisation, mapping, swarm optimisation algorithms, search and rescue missions, data visualisation etc.

Academic Service

Conference Reviewing AAMAS 2023, IROS 2022, HRI 2021

Technical Skills

Platforms	ROS, ROS2, Unity
Languages	Python, C, C++, Unity C#
ML Libraries	Pytorch, Keras, Scikit-Learn, Seaborn, Numpy, Pandas

Relevant Work Experience

June 2019 to July 2019	Curriculum Design for Robotics Workshop, Firetech Camp London – Designed a curriculum which simplified important robotics concepts like sensing, actuating, algorithms for children aged 9-12 based on the Lego EV3 Kit and Microsoft MakeCode.
Sep 2016 to Dec 2017	Network Engineer for Ericsson India Global Services, Mumbai, India – Developed a data ingestion pipeline for customer internet and call usage analysis using Pandas.

Publications

- Ramesh, A., Stolkin, R. and Chiou, M., 2022. Robot Vitals and Robot Health: Towards Systematically Quantifying Runtime Performance Degradation in Robots Under Adverse Conditions. IEEE Robotics and Automation Letters, 7(4), pp.10729-10736. (Journal)
- Data Study Group team. (2022). Data Study Group Final Report: University of Birmingham. Zenodo. https://doi.org/10.5281/zenodo.6799096. (Journal)
- Ramesh, A., Chiou, M. and Stolkin, R., 2021, March. Robot vitals and robot health: An intuitive approach to quantifying and communicating predicted robot performance degradation in human-robot teams. (Conference)
- Panagopoulos, D., Petousakis, G., Ramesh, A., Ruan, T., Nikolaou, G., Stolkin, R. and Chiou, M., 2022. A Hierarchical Variable Autonomy Mixed-Initiative Framework for Human-Robot Teaming in Mobile Robotics. arXiv preprint arXiv:2211.14095. (Conference)
- *(Under Review)* Ramesh, A. and Bremner, P, "Swarm Intelligence Based Repeated Area Coverage" (Conference)

Interests/Hobbies

- Playing the Piano, Melodica, Guitar and Darbuka
- Classical and contemporary philosophy

References available on request