R Praveen Kumar Jain

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Research Areas

Marine and Aerial Robotic Systems, Distributed Control and Estimation, Event and Self-triggered Control, Model Predictive Control, Nonlinear Control, Machine Learning.

Education

Feb 2016 - July 2019	Doctor of Philosophy, Electrical and Computer Engineering University of Porto, Faculty of Engineering, Portugal *PhD Thesis: Decentralized Cooperative Control Methods for Multiple Mobile Robotic Vehicles*
Sep 2013 - Aug 2015	Master of Science, Systems and Control Technical University of Delft, The Netherlands *MSc Thesis: Transportation of Cable Suspended Loads using Unmanned Aerial Vehicles: A Real-time Model Predictive Control Approach*
Aug 2006 - June 2010	Bachelor of Engineering, Electronics and Communication Nitte Meenakshi Institute of Technology, Bengaluru, India *BE Project: Forward and Inverse Kinematics, Trajectory Planning and Control of 5 DOF Articulated Robot for Pick and Place operation*

Professional Experience

Sep 2017 - Nov 2017	Visiting Researcher Centre for Autonomous Systems and Marine Operations Norwegian University of Science and Technology, Norway
Dec 2015 - Nov 2018	Marie Sklodowska-Curie Researcher Cyber-Physical Control Systems and Robotics Lab University of Porto, Faculty of Engineering, Portugal
July 2010 - June 2013	Research Associate and Team Leader Centre for Robotics Research Nitte Meenakshi Institute of Technology, Bengaluru, India

Publications

Journal Publications

1. R. Praveen Jain, A. Pedro Aguiar and João Borges de Sousa, *"Cooperative Moving Path Following using Dynamic Event-Triggered Communications",* Submitted to the IEEE Transactions on Control

Systems Technology.

2. R. Praveen Jain, A. Pedro Aguiar and João Borges de Sousa, *"Geometric Moving Path Following for Robotic Vehicles",* under preparation.

3. Matheus Reis, R. Praveen Jain, A. Pedro Aguiar and João Borges de Sousa, *"Robust Cooperative Moving Path Following for Marine Robotic Vehicles",* Submitted to the Frontiers in Robotics and AI (under review).

4. Matheus Reis, R. Praveen Jain, A. Pedro Aguiar and João Borges de Sousa, *"Robust Moving Path Following Control for Robotic Vehicles: Theory and Experiments",* IEEE Robotics and Automation Letters, Accepted.

5. R. Praveen Jain, A. Pedro Aguiar and João Borges de Sousa, *"Cooperative Path Following of Robotic Vehicles using an Event based Control and Communication Strategy",* IEEE Robotics and Automation Letters, vol. 3, no. 3, pp. 1941-1948, July 2018.

6. Jharna Majumdar, R. Praveen Jain, Venkatesh G. M. and Swaroop R, *"Intelligent Computer Vision System for Door Sensing Mobile Robot",* IAES International Journal of Robotics and Automation, vol. 1, (4), pp. 190, 2012.

Conference Publications

1. R. Praveen Jain, A. Pedro Aguiar, and João Borges de Sousa,"*Target Tracking using an Autonomous Underwater Vehicle: A Moving Path Following Approach*", 2018 IEEE OES Autonomous Underwater Vehicle Symposium, Porto, November 2018.

2. R. Praveen Jain, A. Zolich, E. Erstorp, Tor Arne Johansen, Jo Arve Alfredsen, A. Pedro Aguiar, Jakob Kuttenkeuler and João Borges de Sousa, "*Localization of an Acoustic Fish-Tag using the Time-of-Arrival Measurements: Preliminary results using eXogenous Kalman Filter*", IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Madrid, October 2018.

3. R. Praveen Jain, Andrea Alessandretti, A. Pedro Aguiar and João Borges de Sousa, "*Cooperative Moving Path Following using Event based Control and Communication*", 13th APCA International Conference on Automatic Control and Soft Computing, Azores, Portugal, June 2018.

4. R. Praveen Jain, Andrea Alessandretti, A. Pedro Aguiar and João Borges de Sousa, "*Moving Path Following of Constrained Underactuated Systems: A Nonlinear Model Predictive Control Approach*", 2018 AIAA Information Systems, AIAA SciTech Forum, Florida, January 2018.

5. R. Praveen Jain, Andrea Alessandretti, A. Pedro Aguiar and João Borges de Sousa, "*A Nonlinear Model Predictive Control for an AUV to Track and Estimate a Moving Target using Range Measurements*", ROBOT 2017 - Third Iberian Robotics Conference, Seville, Spain, November 2017.

6. Juan Braga, R. Praveen Jain, A. Pedro Aguiar and João Borges de Sousa, "*Self-triggered Time Coordinated Deployment Strategy for Multiple Relay UAVs to Work as a Point-To-Point Communication Bridge*", 2017 Workshop on Research, Education and Development of Unmanned Aerial Systems (RED-UAS), Linkoping, 2017.

7. R. Praveen Jain, A. Pedro Aguiar and João Borges de Sousa, "*Self-triggered Cooperative Path Following Control of Fixed Wing Unmanned Aerial Vehicles*", 2017 International Conference on Unmanned Aircraft Systems (ICUAS), Miami, FL, USA, 2017.

Technical Skills

Hardware	Digilent Nexys2 Spartan 3E and Atlys Spartan 6 FPGA development board, ATmega series and 8051 8-bit Microcontrollers, mBed kit with LPC1768 ARM Cortex M3
Software	
IDE and EDA Tools	Xilinx ISE Design Suite, CodeVisionAVR for ATmega microcontrollers, Eclipse CDT
Programming Skills	C, C++, Matlab, Python
Operating System	Linux, Windows
Others	DUNE AUV control software, Paparazzi UAV control software, Latex, Git

Professional Service

Technical Manuscript Reviewer

Automatica, IEEE Journal of Ocean Engineering, IEEE/ASME Transactions on Mechatronics, IEEE International Conference on Robotics and Automation, IEEE/RSJ International Conference on Intelligent Robots and Systems, IEEE International Conference on Decision and Control (CDC), International Conference on Unmanned Aircraft Systems, IEEE OES Autonomous Underwater Vehicle Symposium, Iberian Robotics Conference, Workshop on Research, Education and Development of Unmanned Aerial Systems (RED-UAS).

Program Committee

IEEE OES Autonomous Underwater Vehicle Symposium 2018.

Personal Skills and Competencies

Languages	English, Hindi, Kannada, Marathi
Social Skills	- Effective team player, experience working with student groups. - Good communication skills developed through presentations.
Organizational Skills	- Project and team management capabilities developed during execution of sponsored robotics projects as a Research Associate - Good understanding of Financial and Accounting aspects of a sponsored project