RICCARDO POLVARA

Name	Riccardo
Surname	Polvara
Address	PL4 6AN, Plymouth, Devon, UK
Website	http://pulver22.github.io
GitHub	https://github.com/pulver22
Date of birth	22 September 1991
Nationality	Italian
Sex	Male

Profile

Mobile roboticist specialised in path planning for autonomous system. A background in Computer Engineering, artificial intelligence and robotics. Experience working abroad in a multicultural environment. Strong motivation for developing intelligent systems. Basketball journalist in free time.

Education

2015-present PhD student in Mobile Robotics. Plymouth University, School of Marine Science and Engineering. Plymouth, United Kingdom.
In “An Intelligent Integrated Marine Observation System” a flying robot is used to increase the overall awareness of the environment in which an autonomous vessel is traversing.
Supervisors: Sanjay Sharma, Robert Sutton, Jian Wan, Andrew Manning

2013-2015 MEng in “Computer Engineering”. Politecnico di Milano. Milano, Italy.
Advanced preparation in: classic and cognitive robotics, reinforcement learning, soft computing, artificial intelligence, multi-agent systems.
Dissertation title: “A Next-Best-Smell Approach for Remote Gas Detection with a Mobile Robot”
Supervisors: Francesco Amigoni, Erik Schaffernicht

2010-2013 BEng in “Computer Engineering”. Politecnico di Milano. Milano, Italy.
Advanced preparation in: application development, databases, theoretical computer science, IT system architecture, electronics, telecommunication.
Dissertation title: HorseFever – Implementing in Java a card based game focusing on different design pattern and testing aspects.
Supervisor: Raffaela Mirandola

2005-2010 High School, “Liceo Scientifico, Piano Nazionale di Informatica” (Scientific Course, National Plan of Computer Science). Oggiono, Italy.
It gives entry to university. Main subjects: computer science, mathematics, physics, biology, English, Latin.

Work/Research Experience

2015	Placement, Centre for Applied Autonomous Sensor Systems, Örebro University, Sweden. I developed an on-line path planning algorithm for gas mapping with a mobile robot equipped with a remote gas sensor. The path is calculated by combining the utility values over a set of multiple criteria, exploiting the concepts of Multi Criteria Decision Making (MCDM) and Choquet Fuzzy Integral in order to generate a single global utility value for each candidate location, and thus selecting the best one. During this experience I faced real problem such as mapping, localization, navigation and data sensor integration. I learn how to use ROS (Robot Operating System) and the Gazebo simulator, and I had the opportunity to use two real platforms such as the Turtlebot and the Husky A200, both produced by Clearpath Robotics. https://www.oru.se/aass
2014-2015	Tutor, First Lego League. Monza, Italy. My duties involved supervising children in building a robot using the Mindstorm Lego platform and solving the challenges required by the competition. http://www.firstlegoleague.org
2013-2015	Reporter, Basketinside.com. Cantù, Italy. Responsible of writing articles about the basketball matches played by Pallacanestro Cantù in Serie A Beko and EuroCup championships. http://www.basketinside.com

Technical Skills

Robotics	- I developed libraries for the path planning of two mobile wheel-equipped robots (Clearpath Turtlebot and Husky A200) and the Parrot ARDrone unmanned aerial vehicle - Experience with some of the most important software tools for Robotics: ROS and Gazebo. - Hands-on experience with LIDAR and TDLAS gas sensor.
Computer Science	- Advanced knowledge of Unix OS (Shell, Bash scripting, SSH) and related tools (gcc, g++, make, vi, git, etc). - Proficiency in C/C++ - Familiarity with several programming languages (Java/Java EE, Python, HTML, JavaScript, XML, Assembly x86 and Latex) and tools for debug (gdb, valgrind), software design (UML) and documentation (Doxygen). - Familiarity with SQL for database management. - Familiarity with parallel computing (openMP, openMPI, CUDA, HADOOP). - Familiarity with the statistical software Matlab for data analysis.

Languages

Italian:	Mother tongue

English: Fluent
German: Beginner

Certifications

03-2016 Machine Learning by Stanford University on Coursera.
https://www.coursera.org/account/accomplishments/records/GPAU3NLRSEZN

04-2013 TOEIC (Test of English for International Communication): 720-990

06-2008 ECDL (European Computer Driving License)

06-2004 Goethe-Zertifikat A2: Start Deutsch 2

Awards, Fellowships and Scholarships

2015-present Scholarship, project "An Intelligent Integrated Marine System". Funded by School of Marine Science and Engineering, Plymouth University, England.

Publications

Journal papers

- **Polvara R**, Sharma S, Wan J, Manning A, Sutton R (under review). Obstacle Avoidance Approaches for Autonomous Navigation of Unmanned Surface Vehicles. *Journal of Navigation*.

- **Polvara R**, Sharma S, Wan J, Manning A, Sutton R (under review). An Augmented Reality based Controller for Unmanned Aerial Vehicle Ship's Deck Landing. *[Distributed Robots: From Fundamentals to Applications]. Autonomous Robots*.

- **Polvara R**, Trabattoni M, Kucner T, Schaffernicht E, Amigoni F, Lilienthal A (under review). A Next-Best-Smell Approach for Remote Gas Detection with a Mobile Robot. *Journal of Field Robotics*.

Conference Papers

- Abed W, **Polvara R**, Singh Y, Sharma S, Sutton R, Hatton D, Manning A, Wan Y (2016). Advanced feature extraction and dimensionality reduction for unmanned underwater vehicle fault diagnosis. *UKACC 11th International Conference on Control (CONTROL)*, Belfast, UK, pp. 1-6. doi: 10.1109/CONTROL.2016.7737596

- **Polvara R**, Sharma S, Sutton R, Wan J, Manning A (2016). Toward a Multi-agent system for Marine Observation. *Advances in Cooperative Robotics: Proceedings of the 19th International Conference on (CLAWAR)*, London, UK, pp. 225-232. doi: 10.1142/9789813149137_0028

- Singh Y, **Polvara R**, Sharma S, Hatton D, Wan J, Sutton R (2016). Design of a Variable Buoyancy Engine for Small Scale Underwater Vehicle. *International Conference on Advances in Subsea Engineering, Structures and Systems (ASESS-2016)*, Glasgow, UK.

- Terzakis G, **Polvara R**, Sharma S, Sutton R (uder review). Monocular Visual Odometry for an Unmanned Sea-Surface Vehicle. *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Vancouver, Canada.

Presentation

- **Polvara R**, Sharma S, Sutton R, Wan J, Manning A (2016). Toward an Air-Sea Cooperation System for Marine Observation. *UK Robotics Week*, Plymouth, UK.