Federico Nardi

Curriculum Vitae

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Education and Work Experience

2019–now **Senior Autonomous Navigation Engineer**, Pal Robotics, Barcelona.
Role: C++ Developer of Navigation Algorithms (Visual Navigation, 2D Localization, Odometry Calibration). Project Technical Lead of Robots for Intra-Logistics.

2014–2019 **Ph.D. in Engineering in Computer Science**, Sapienza University of Rome,
Research topics: Surface Reconstruction, SLAM, Semantic Mapping.

2011–2014 **Master of Science in Artificial Intelligence and Robotics**, Sapienza University of Rome, 109/110.
Thesis: Evaluation of the most suitable representation for geometric differential operators
Advisor: Prof Fiora Pirri.

2006–2011 **Bachelor's Degree in Computer Engineering**, University of Naples Federico II, 107/110.
Thesis: Ricostruzione tridimensionale di scene e oggetti raster
Advisor: Prof Antonio Picariello.

2011 **Work Intern**, Associazione Culturale Campi Flegrei, Naples.
Position: Tutor of Computer Science Fundamentals for motivated adult people, Computer Technician and Informatic Consultant.

2008 **Research Intern**, Institut für Technische Informatik, Stüttgart.
Topics: C++ practice for electronic devices simulation, Linux fundamentals and Bash scripting.

PhD Thesis

Title *High-Level Environment Representations for Mobile Robots.*

Supervisors Prof Giorgio Grisetti & Prof Daniele Nardi

Description The thesis focuses on the problem of building high-level representations of the environment that allow mobile robots to autonomously complete complex tasks.

Skills and Practical Experience

Computing and Robotics

- Professional knowledge of programming languages: C, C++, Matlab/Octave, Java, Python, Bash.
- Professional knowledge of Robotics libraries and tools: ROS, Eigen, OpenCV, PCL, Gazebo, OpenGL, CUDA.
- Daily use of Control Version Software: Git.
- Proved experience with IDEs and productivity applications: QtCreator, Netbeans, LaTeX, Microsoft Office, LibreOffice.

University Projects

Computer Graphics — Development of an OpneGL+GLUT app to animate a digital hand through the P5-Glove.

Machine Learning — C++ integration of a 3D Object Recognition method based on Correspondence Grouping with the 3D Generalized Hough Transform.

Autonomous & Mobile Robotics — Implementation in ROS of a Velocity Estimation method based on the Continuous Homography for UAVs.

Computer Vision — C++ implementation of the Level-Set method for Implicit Surface Reconstruction.

International Events

2019 **International Conference on Robotics And Automation**, *IEEE RAS*, Montreal.
Description: Poster Presentation.

2017 **European Robotic League Service Robots (ERL)**, *Rockin@Home*, Peccioli (PI).
Task: 2D Navigation.

International Projects

2015 **European Project, TRADR**, *Long-term human-robot teaming for robot assisted disaster response*, EU FP7 ICT 609763.
Task: Surface Reconstruction.

Summer Schools

2015 **TRADR Summer School on Autonomous Micro Aerial Vehicles**, *Fraunhofer IAIS*, Bonn.
Topics: Autonomous Navigation for Drones.

Languages

Italian **Mothertongue**

English **C1**

Spanish **B2**

Teaching

2017 **Lecturer**, Fourth Lucia PhD School on "Artificial Intelligence and Robotics", *Instituto Superior Tecnico*, Lisbon.

2016 **Teaching Assistant**, "Artificial Intelligence I", *Sapienza University of Rome*.

2016 **Tutor**, "Seminars in AI", *Sapienza University of Rome*.

References

Prof Giorgio Grisetti

Department of Computer, Control & Management Engineering -
Sapienza University of Rome
Via Ariosto 25
00185 Rome, Italy
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Prof Daniele Nardi

Department of Computer, Control & Management Engineering -
Sapienza University of Rome
Via Ariosto 25
00185 Rome, Italy
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Publications

[2019] Irvin Aloise, Bartolomeo Della Corte, Federico Nardi and Giorgio Grisetti. "Systematic Handling of Heterogeneous Geometric Primitives in Graph-SLAM Optimization". *IEEE Robotics and Automation Letters* (RA- L).

[2019] Federico Nardi, Bartolomeo Della Corte and Giorgio Grisetti. "Unified Representation and Registration of Heterogeneous Sets of Geometric Primitives". *IEEE Robotics and Automation Letters* (RA- L).

[2018] Federico Nardi, Maria T Lazaro, Luca Iocchi and Giorgio Grisetti. "Generation of laser-quality 2D navigation maps from RGB-D sensors". *RoboCup Symposium*.

[2018] Federico Nardi, Bartolomeo Della Corte and Giorgio Grisetti. "Unified Representation of Heterogeneous Sets of Geometric Primitives". *International Conference on Robotics And Automation (ICRA) Workshop on Perception, Inference, and Learning for Joint Semantic, Geometric, and Physical Understanding*.

[2016] Mario Gianni, Federico Nardi, Federico Ferri, Filippo Cantucci, Manuel A. Ruiz Garcia, Kartik Pushparaj and Fiora Pirri. "MIOM:A MIxed-Initiative Operational Model in Urban Search and Rescue". *International Conference on Control, Automation and Robotics* (ICCAR).

[2015] Valsamis Ntouskos, Marta Sanzari, Bruno Cafaro, Federico Nardi, Fabrizio Natola, Fiora Pirri and Manuel Ruiz. "Component-Wise Modeling of Articulated Objects". *International Conference on Computer Vision* (ICCV).

[2015] Marta Sanzari, Fabrizio Natola, Federico Nardi, Valsamis Ntouskos, Mahmoud Qudseya and Fiora Pirri. "Rigid tool affordance matching points of regard". *International Conference on Intelligent Robots and Systems (IROS) Workshop on "Learning object affordances: a fundamental step to allow prediction, planning and tool use?"*.