

Roberto Capobianco

Curriculum Vitae

Date of birth: September 5th, 1989
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🌐 GitHub: <http://github.com/webrot9>

Work Experience

- Mar 2017–
Today **Post-doc Researcher**, *Sapienza University of Rome*, Rome, Italy.
Research fields: Robotics, Reinforcement Learning, Robot Learning, Deep Learning
- Nov 2016–
Today **Research Scientist**, *Cogitai, Inc.*, A distributed company.
Continual Learning, Reinforcement Learning, Deep Learning, Robotics

Education and Qualifications

- Nov 2013–
Feb 2017 **Ph.D. in Engineering in Computer Science**, *Sapienza University of Rome*, Rome, Italy.
Research fields: Robotics, Robot Learning, Artificial Intelligence in Robotics; Advisor: Prof. Daniele Nardi.
- Aug 2015–
March 2016 **Research Scholar**, *Robotics Institute, Carnegie Mellon University*, Pittsburgh, PA, USA.
Host: Prof. J. Andrew (Drew) Bagnell, Robotics Institute.
- 2013 **First Örebro Winter School on Artificial Intelligence & Robotics**, *Örebro University*, Örebro, Sweden.
- 2011–2013 **Master of Science in Artificial Intelligence & Robotics**, *Sapienza University of Rome*, Rome, Italy, 110/110 summa cum laude.
- 2008–2011 **Bachelor's Degree in Computer Engineering**, *University of Pisa*, Pisa, Italy, 109/110.
- 2003–2008 **High School (Humanistic) Diploma**, *Liceo Classico "Vitruvio Pollione"*, Formia (LT), Italy, 100/100.

Skills and Experience

Computing and Robotics

- Strong C, C++ and Python coding experience (examples on GitHub: ICP based laser scan matcher, control simulators with Python interface, Gaussian Mixture Models);
- Hands-on and theoretical machine learning and reinforcement learning experience;
- Daily experience using deep learning frameworks: MXNet, Tensorflow;
- Developed and tested software on Videre Erratic, KUKA YouBot, Segway RMP and NAO robots;
- Good knowledge of MATLAB, Java, Assembly, OpenGL, SQL, Bash;
- Good knowledge of robotics and computer vision libraries and tools: ROS, Gazebo, OpenCV, PCL;
- Daily use of version control software: Git and SVN;
- Experience in logic programming and ontology modeling: Prolog, OWL, Protégé;
- Knowledge of web programming languages: HTML, CSS, Javascript, PHP;
- Daily use of Unix/Linux, Windows and Robotics embedded Operating Systems;
- Good experience with Emacs, Eclipse, \LaTeX , Microsoft Office, LibreOffice.

Communication

- Presented research results and projects at conferences and international events;
- Teaching experience as assistant and tutor for Artificial Intelligence & Robotics courses;
- Good ability to write project and funding proposals (e.g., awarded research starting grant);

Teamwork

- Member of the SPQR team during RoCKIn@Work robotics competitions;
- Member of research laboratories (Ro.Co.Co, LAIRLab) and volunteer member of cultural associations;
- Good ability to adapt to multicultural environments and to live in different countries;

Organizing

- Good experience with agile working practices;
- Organizing Committee (e.g., RoCKIn) or volunteer (e.g., RSS) for local and international events;
- Regularly met research and teaching deadlines as a Ph.D. student;

Languages

Italian Mother tongue
English C2
French A2

Certifications: FCE (B2)

Teaching

- Spring 2015 **Teaching Assistant, *Artificial Intelligence II***, Sapienza University of Rome, Italy.
Fall 2014 **Teaching Assistant, *Robot Programming***, Sapienza University of Rome, Italy.
Spring 2014 **Teaching Assistant, *Artificial Intelligence II***, Sapienza University of Rome, Italy.
Spring 2014 **Tutor, *Seminars on Artificial Intelligence and Robotics***, Sapienza University of Rome, Italy.

Scientific Activities

Research Interests Robot Learning, Learning by Imitation, Mobile Robotics, Robot Control, Computer Vision.

Publications

- [1] Luca Iocchi, Gerhard K. Kraetzschmar, Daniele Nardi, Pedro U Lima, Pedro Miraldo, Emanuele Bastianelli, and Roberto Capobianco. Rockin@home: Domestic robots challenge. In *RoCKIn - Benchmarking Through Robot Competitions*, chapter 03. InTech, Rijeka, 2017.
- [2] Francesco Riccio, Roberto Capobianco, and Daniele Nardi. Learning human-robot handovers through π -STAM: Policy improvement with spatio-temporal affordance maps. In *IEEE-RAS International Conference on Humanoid Robots (HUMANOIDS-2016)*, 2016.
- [3] Arun Venkatraman, Roberto Capobianco, Lerrel Pinto, Martial Hebert, Daniele Nardi, and James A. Bagnell. Improved learning of dynamics models for control. In *The 15th International Symposium on Experimental Robotics (ISER-2016)*, 2016.
- [4] Wen Sun, Roberto Capobianco, Geoff J. Gordon, James A. Bagnell, and Byron Boots. Learning to smooth with bidirectional predictive state inference machines. In *Proceedings of the 32nd Conference on Uncertainty in Artificial Intelligence (UAI-2016)*, 2016.
- [5] Francesco Riccio, Roberto Capobianco, and Daniele Nardi. Using monte carlo search with data aggregation to improve robot soccer policies. In *Proceedings of the 20th International RoboCup Symposium*, 2016.
- [6] Francesco Riccio, Roberto Capobianco, and Daniele Nardi. Using spatio-temporal affordances to represent robot action semantics. In *Workshop on Machine Learning Methods for High-Level Cognitive Capabilities in Robotics at IROS 2016*, 2016.
- [7] Francesco Riccio, Roberto Capobianco, Marc Hanheide, and Daniele Nardi. STAM: A framework for spatio-temporal affordance maps. In *Proceedings of the 2016 Modelling and Simulation for Autonomous Systems (MESAS'16) Workshop*, 2016.
- [8] Guglielmo Gemignani, Roberto Capobianco, Emanuele Bastianelli, Domenico Bloisi, Luca Iocchi, and Daniele Nardi. Living with robots: Interactive environmental knowledge acquisition. *Robotics and Autonomous Systems (RAS)*, 78:1–16, 2016.
- [9] Roberto Capobianco, Guglielmo Gemignani, Luca Iocchi, Daniele Nardi, Francesco Riccio, and Andrea Vanzo. Contexts for symbiotic autonomy: Semantic mapping, task teaching and social robotics. In *AAAI Symbiotic Cognitive Systems Workshop*, 2016.
- [10] Roberto Capobianco, Jacopo Serafin, Johann Dichtl, Giorgio Grisetti, Luca Iocchi, and Daniele Nardi. A proposal for semantic map representation and evaluation. In *Mobile Robots (ECMR), 2015 European Conference on*, pages 1–6. IEEE, 2015.
- [11] Guglielmo Gemignani, Roberto Capobianco, and Daniele Nardi. Approaching qualitative spatial reasoning about distances and directions in robotics. In *AI*IA 2015 Advances in Artificial Intelligence*, pages 452–464. Springer International Publishing, 2015.
- [12] Roberto Capobianco, Guglielmo Gemignani, Domenico Bloisi, Daniele Nardi, and Luca Iocchi. Automatic extraction of structural representations of environments. In *Intelligent Autonomous Systems 13*, pages 721–733. Springer International Publishing, 2014.
- [13] Roberto Capobianco. Robust and incremental robot learning by imitation. In *Second Doctoral Workshop in Artificial Intelligence*, volume 1334, pages 82–91, 2014.
- [14] Roberto Capobianco, Guglielmo Gemignani, Daniele Nardi, Domenico Bloisi, and Luca Iocchi. Knowledge-based reasoning on semantic maps. In *Knowledge Representation and Reasoning in Robotics, AAAI Spring Symposium 2014*, 2014.

- [15] Guglielmo Gemignani, Daniele Nardi, Domenico Bloisi, Roberto Capobianco, and Luca Iocchi. Interactive semantic mapping: Experimental evaluation. In *Experimental Robotics - The 14th International Symposium on Experimental Robotics (ISER-2014)*, pages 339–355. Springer International Publishing, 2014.
- [16] Emanuele Bastianelli, Domenico Bloisi, Roberto Capobianco, Fabrizio Cossu, Guglielmo Gemignani, Luca Iocchi, and Daniele Nardi. On-line semantic mapping. In *Advanced Robotics (ICAR), 2013 16th International Conference on*, pages 1–6. IEEE, 2013.
- [17] Emanuele Bastianelli, Domenico Bloisi, Roberto Capobianco, Guglielmo Gemignani, Luca Iocchi, and Daniele Nardi. Knowledge representation for robots through human-robot interaction. In *Knowledge Representation and Reasoning in Robotics Workshop at ICLP 2013*, 2013.

International Events

- 2017 **Teacher**, *The 4th Lucia PhD School on "Artificial Intelligence and Robotics"*, Lisbon, Portugal.
- 2016 **Presenter**, *2016 IEEE-RAS Int. Conf. on Humanoid Robots, Humanoids 2016*, Cancun, Mexico.
- 2016 **Presenter**, *15th International Symposium on Experimental Robotics, ISER 2016*, Tokyo, Japan.
- 2016 **Presenter**, *AAAI Robotics Fellowship, AAAI 2016*, Phoenix, AZ, USA.
- 2016 **Presenter**, *AAAI Workshop on Symbiotic Cognitive Systems, AAAI 2016*, Phoenix, AZ, USA.
- 2015 **Invited Speaker**, *Digital Signal Processing Day*, Mexico City, Mexico.
- 2015 **Invited Speaker**, *RoCKIn Workshop*, Mexico City, Mexico.
- 2015 **Volunteer**, *2015 Robotics: Science and Systems Conference, RSS 2015*, Rome, Italy.
- 2015 **Local Committee**, *RoCKIn Camp 2015, RoCKIn@Work Challenge*, Peccioli, Italy.
- 2014 **Presenter**, *AI*IA Doctoral Consortium 2014, XIII AI*IA Symposium on AI*, Pisa, Italy.
- 2014 **Organizing Committee**, *RoCKIn 2014, RoCKIn@Work Challenge*, Toulouse, France.
- 2014 **Participant**, *RoCKIn 2014, RoCKIn@Work Challenge*, Toulouse, France.
- 2014 **Presenter**, *IAS-13, 13th International Conference on Intelligent Autonomous Systems*, Padua, Italy.
- 2014 **Participant**, *RoCKIn Camp 2014, RoCKIn@Work Challenge*, Rome, Italy.

Reviewer

Journals RAS (Special Issue).

Conferences AAAI, ICRA, IROS, ECMR, RO-MAN.

Grants, Awards and Fellowships

- 2016 **AAAI Robotics Fellowship**, AAAI, Phoenix, AZ, USA.
- 2015 **Research Starting Grant**, *Sapienza University of Rome*, Italy.
- 2014 **Excellence Award**, *Sapienza University of Rome*, Italy.
Top 2% Graduate Students in Academic Year 2012/2013
- 2014 **First Place, Computer Vision track**, *RoCKIn Camp 2014, RoCKIn@Work Challenge*, Rome, Italy.
- 2013 **Three Years Ph.D. Fellowship**, *Sapienza University of Rome*, Italy.
- 2012–2013 **Excellence Program**, *Sapienza University of Rome*, Italy.

References

Daniele Nardi

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Control and Management
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