

Alessandro Roncone, Ph.D.

ROBOTICS ENGINEER · COMPUTER SCIENTIST · INTERACTION DESIGNER

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PERSONAL SUMMARY

Energetic and resourceful Robotics Engineer with more than seven years' research experience and a proven publication track record. Motivated by intellectually challenging projects as well as personal achievements, I pride myself on possessing a very diverse set of skills. I am capable of pursuing individual research aimed at the development of novel applications, but I particularly love to be part of a team with bright people working toward ambitious ideas. I make robots work, and I hold a deep commitment to doing so while implementing scalable, robust, and elegant code.

RELEVANT EXPERIENCE

Post-Doc SOCIAL ROBOTICS LAB, COMPUTER SCIENCE DEPT., YALE UNIVERSITY *New Haven, CT, USA* 2015 - PRESENT

- I am focusing on the development of bidirectional, natural communication between the robot and the human in the context of human-robot collaborative tasks. I am working toward the implementation of a more natural and intuitive interaction, in order for it to be more efficient and effective, as well as less demanding for the human partner [1].

Post-Doc ICUB FACILITY, ITALIAN INSTITUTE OF TECHNOLOGY *Genoa, IT* 2015

- I continued the work started during my Ph.D. fellowship at the iCub Facility. Specifically, I was interested in the exploitation of the peripersonal space model I implemented during my Ph.D., by focusing toward two types of applications: i) *better, richer body representations* ; ii) *distributed motor control via whole-body awareness* .
- Furthermore, I extended the *gaze stabilization* framework developed during my Ph.D. [9] by integrating it with the existing iCub gaze controller [3]. I was also contributing to an HRI project aimed at developing *natural interactions* between the iCub humanoid robot and humans during verbal communication [2].

Robotics Engineer ICUB FACILITY, ITALIAN INSTITUTE OF TECHNOLOGY *Genoa, IT* 2010 - 2015

- Multiple positions: *Research Fellow* (2010-2011), *Ph.D. Student* (2012-2014).
- Involved in the **XPERIENCE FP7-ICT-270273** and **WYSIWYD FP7-ICT-61239** projects, funded by the European Union Seventh Framework Program with a funding of € 7.634.000 and € 4.583.016 respectively.

EDUCATION

Ph.D. in Robotics IIT - ITALIAN INSTITUTE OF TECHNOLOGY *Genoa, IT* 2012 - 2015

- Thesis title: "*Expanding sensorimotor capabilities of humanoid robots through multisensory integration. A study on the implementation of peripersonal space on the iCub*" [5].

M.sc. in NeuroEngineering (110/110 Summa cum Laude) UNIVERSITY OF GENOA *Genoa, IT* 2008 - 2011

- Thesis title: "*Visuo-Haptic Integration for Object Characterization in an Unstructured Environment*".

B.sc. in Biomedical Engineering (110/110 Summa cum Laude) UNIVERSITY OF GENOA *Genoa, IT* 2005 - 2008

- Thesis title: "*Support Vector Machine Analysis applied to a Manipulator in a Non-Structured Environment*".

Student (with scholarship) ISICT - INSTITUTE FOR ADVANCED STUDIES IN ICT *Genoa, IT* 2005 - 2008

- Successfully selected for scholarship, after thorough examination (only three positions available out of hundreds of candidates). Attended a number of supplementary courses (e.g. *Marketing, Management, Effective Communication*, and many more).

SKILLS

TECHNICAL SKILLS

- 5+ YEARS'** research experience in the development of one of the most advanced robotic platforms out there, i.e. the **ICUB**, a state-of-the-art, 53-DoF humanoid robot with a variety of sensors on board (camera, force sensors, tactile sensors). **2+ YEARS'** experience with the **BAXTER RESEARCH ROBOT**.
- Main focus on machine perception and intelligent systems. Interested in **KINEMATICS, MULTISENSORY INTEGRATION, CALIBRATION, TACTILE SENSING, MACHINE LEARNING, 2D AND 3D COMPUTER VISION, IMU PROCESSING AND HUMAN-ROBOT INTERACTION**. Considerable background in employing **OPTIMIZATION** techniques in real-world robotic applications. Some experience with **CONTROL THEORY**.
- Developer of dozens of software modules for the iCub project - some of them available at [GITHUB.COM/ALECIVE](https://github.com/Alecive) and [GITHUB.COM/ROBOTOLOGY](https://github.com/Alecive/RobotoLOGY). Familiar with the implementation and maintenance of **CROSS-PLATFORM SOFTWARE** for Linux, Windows, OSx (**CMAKE**).

Comfortable with various versioning systems (**CVS**, **SVN**, **GIT**).

- Extensive knowledge in **C++**, **MATLAB/R**, **IPOPT**, **OPENCV**, **BASH**, **HTML5**, **CSS**, **JAVA/ANDROID PROGRAMMING**.
- Extended competence in the usage of the **YARP** middleware. Growing experience with the **ROS** middleware.

PERSONAL AND SELF-MANAGEMENT SKILLS

- Strongly *self motivated*, i.e. able to be not only motivated by external rewards, but by an inner drive to accomplish and perform (at any level). This competence has been useful also in other fields, e.g. sport.
- Fast and avid *learner*, enthusiastic toward the development of technologically challenging projects in the Robotics/Artificial Intelligence/Computer Science fields.
- Able to carry out well-executed engineering projects with an eye to clean, scalable code and making things - really - work.
- *Pragmatic*: able to look at problems and solve them in the most logical way possible.

COMMUNICATION SKILLS

- *Strong presentation/communication skills* thanks to experience in giving both technical and non-technical talks to both small and big groups, tailoring to the audience. Presented to major international robotics conferences, as well as several outreach events, ranging from exhibitions and fairs, to live TV shows and various interviews.
- Confident in *writing technical reports as well as scientific papers*. Authored and co-authored numerous international peer-reviewed scientific articles and journals. Some experience with research grant writing.
- Experienced in carrying out well *balanced reports and presentations* thanks to significant background in graphic design.

INTERPERSONAL AND TEAMWORK SKILLS

- Proven ability to *manage multiple projects* and *supervise multiple people* while meeting challenging deadlines. Supervised and trained technicians, Ph.D. students, and postdoctoral researchers, adapting to various scientific levels and backgrounds.
- Able to *value input from others* even if it comes from people who are reporting to me. Able to understand what motivates the people I am working with, and to leverage on their strengths and weaknesses in order to optimally distribute the amount of work a complex project is composed of. Able to *delegate*: something assigned to everyone is assigned to no one.
- Demonstrated ability to work *both independently and in team settings*.

ADDITIONAL SKILLS

- Long-time **LINUX** user with deep knowledge of the Linux/UNIX OS, and active contributor of the Linux FOSS community.
- Experienced *graphic artist* and freelancer. Design is problem solving, no different from engineering: design skills are advantageous for many engineering-related situations.
- Developer of two well known iconsets (**AWOKEN** and **FLATWOKEN**), themes for the GNOME Desktop Environment, and a number of **WEBSITES**. Commissioned with various design projects from a number of companies.
- Semi-professional *runner*: strengthened self-reliance and self-motivation, as well as ability to push until a project is done. Captain of a local water polo team during high school: developed teamwork and communication skills.
- Languages: **ITALIAN** (native proficiency), **ENGLISH** (full professional proficiency), **FRENCH** (elementary proficiency).

SELECTED PUBLICATIONS

- [1] **A. Roncone**, O. Mangin, and B. Scassellati. **TRANSPARENT ROLE ASSIGNMENT AND TASK ALLOCATION IN HUMAN ROBOT COLLABORATION**. In: *Robotics and Automation (ICRA), IEEE International Conference on* (2017).
- [2] H. Lehmann, **A. Roncone**, U. Pattacini, and G. Metta. **PHYSIOLOGICALLY INSPIRED BLINKING BEHAVIOR FOR A HUMANOID ROBOT**. In: *8th International Conference on Social Robotics (ICSR)* (2016), pp. 83–93.
- [3] **A. Roncone**, U. Pattacini, G. Metta, and L. Natale. **A CARTESIAN 6-DOF GAZE CONTROLLER FOR HUMANOID ROBOTS**. In: *Proceedings of Robotics: Science and Systems* (2016).
- [4] **A. Roncone**, M. Hoffmann, U. Pattacini, L. Fadiga, and G. Metta. **PERIPERSONAL SPACE AND MARGIN OF SAFETY AROUND THE BODY: LEARNING VISUO-TACTILE ASSOCIATIONS IN A HUMANOID ROBOT WITH ARTIFICIAL SKIN**. In: *PLOS ONE* 11.10 (2016).
- [5] **A. Roncone**. **EXPANDING SENSORIMOTOR CAPABILITIES OF HUMANOID ROBOTS THROUGH MULTISENSORY INTEGRATION – A STUDY ON THE IMPLEMENTATION OF PERIPERSONAL SPACE ON THE ICUB**. PhD Dissertation. University of Genoa and Italian Institute of Technology, 2015.
- [6] **A. Roncone**, M. Hoffmann, U. Pattacini, and G. Metta. **LEARNING PERIPERSONAL SPACE REPRESENTATION THROUGH ARTIFICIAL SKIN FOR AVOIDANCE AND REACHING WITH WHOLE BODY SURFACE**. In: *2015 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)* (2015), pp. 3366–3373.
- [7] S. R. Fanello, U. Pattacini, I. Gori, V. Tikhonoff, M. Randazzo, **A. Roncone**, F. Odone, and G. Metta. **3D STEREO ESTIMATION AND FULLY AUTOMATED LEARNING OF EYE-HAND COORDINATION IN HUMANOID ROBOTS**. In: *2014 IEEE-RAS International Conference on Humanoid Robots* (2014), pp. 1028–1035.
- [8] **A. Roncone**, M. Hoffmann, U. Pattacini, and G. Metta. **AUTOMATIC KINEMATIC CHAIN CALIBRATION USING ARTIFICIAL SKIN: SELF-TOUCH IN THE ICUB HUMANOID ROBOT**. In: *2014 IEEE International Conference on Robotics and Automation (ICRA)* (2014).
- [9] **A. Roncone**, U. Pattacini, G. Metta, and L. Natale. **GAZE STABILIZATION FOR HUMANOID ROBOTS: A COMPREHENSIVE FRAMEWORK**. In: *2014 IEEE-RAS International Conference on Humanoid Robots* (2014), pp. 259–264.