MASSIMILIANO PATACCHIOLA

Name	Massimiliano
Surname	Patacchiola
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Date of birth	25 June 1985
Nationality	Italian
Sex	Male

Profile

Researcher specialised in computational modelling through machine learning and deep learning techniques. A wide background based on a combination of experience in both academia and industry. Interdisciplinary skills in robotics, artificial intelligence, neuroscience and experimental psychology. Strong motivation for developing intelligent systems.

Education

2015-present PhD student in “Cognitive Robotics and Computational Modelling”. Plymouth University, School of Computing, Electronics and Mathematics. United Kingdom.
Designing the social skills of three humanoid robots using approaches derived from Probabilistic Robotics and Machine Learning.
Supervisors: Angelo Cangelosi, Torbjorn Dahl, Giorgio Metta
www.thrive-project.org

2009-2011 MSc in “Cognitive Neuroscience”. La Sapienza University. Rome, Italy.
Advanced preparation in: neural networks processing, cognitive models, neurobiology, neurophysiology.
Dissertation title: Artificial neural networks for body perception in simulated robots.
Supervisors: Stefano Puglisi Allegra, Gianluca Baldassarre, Domenico Parisi

2006-2009 BSc in “Experimental Cognitive Psychology”. La Sapienza University. Rome, Italy.
Advanced preparation in: scientific methodology, analysis of cognitive processes, applied statistics, neurobiology and genetics.
Dissertation title: Effects of perceptual load on visual search and visuospatial memory tasks.
Supervisor: Marta Olivetti Belardinelli

1999-2004 Secondary School. Scientific Course: National Plan of Computer Science. Rieti,Italy.
It gives entry to university. Main subjects: computer science, mathematics (linear algebra, pre-calculus, calculus), physics, biology, English, French.

Work/Research Experience

2015-present	Teaching assistant and demonstrator. Plymouth University. United Kingdom. I realised the material for individual lessons on Deep Learning, Bayesian Networks and Robotics. I presented the material during class-lesson. Moreover I followed students during the practical sessions of the following courses: -AINT252 Artificial Intelligence and Computational Theory -SOFT354 Parallel Computation and Distributed Systems -ROCO050 Robotics and Electronics
2012-2015	Robotics Engineer. Eurolink Systems group. Rome. Italy. I was part of the software department and responsible of the internal repository. My duties involved creating algorithms and models for the control of UGV (Unmanned Ground Vehicle) and UAV (Unmanned Aerial Vehicle). I used ROS (Robotic Operating System) to implement SLAM (Simultaneous Localization And Mapping) in the Leopardo-Bee autonomous robot. I collaborated with the department of electronics and mechanics for designing the COBRA system, a micro tethered UAV which has been used by the Italian Army. www.eurolinksystems.com
2011-2012	Internship, LARAL (Laboratory of Artificial Life and Robotics). Institute of Cognitive Sciences and Technologies. Rome, Italy. My duties involved creating cognitive models for simulations in Evolutionary Robotics. During this period I developed libraries in C++ and Java for the implementation of Neural Networks and Genetic Algorithms. I used the iCub simulator and the Evorobot software. The results achieved during this internship were published in a journal [1]. http://laral.istc.cnr.it
2008-2009	Placement, ECONA (Research Centre for Cognitive Elaboration on Natural and Artificial Systems). La Sapienza University. Rome, Italy. Research project on visual perception and memory. My duties involved planning the project, submission of test to subjects, elaboration and interpretation of data. The result obtained was presented in the final dissertation of my Bachelor. https://web.uniroma1.it/econa

Technical Skills

Machine Learning	-Programming experience with TensorFlow for Deep Learning applications. -Experience with Artificial Neural Networks (Perceptron, Multilayer Perceptron, Convolutional Neural Networks, Self-Organizing Maps) and the most recent Deep Learning techniques (dropout, adaptive gradient methods). -Experience with supervised, unsupervised learning algorithms (support vector machine, linear and logistic regression, k-means clustering, anomaly detection, genetic algorithms) and reinforcement learning (Q-Learning, Deep RL) -Experience with probabilistic graphical models (Bayesian networks)

Robotics	-I developed libraries for the control of humanoid robots (Aldebaran NAO, iCub, Scitos G5). -Experience with the most important software tools for Robotics: ROS, YARP, NAOqi and Choregraphe. -Experience with the computer vision library OpenCV for object detection and tracking, pose estimation and basic stereo vision. -Experience in developing web interfaces (HTML, PHP and JavaScript) and graphical user interfaces (Qt, pyQt, Visual Studio) for remote control of robotic platforms and arms . -Experience in programming Atmel and Microchip microcontrollers. Experience in embedded programming (Raspberry Pi, Beagleboard, Pandaboard, Arduino, etc). -Hands-on experience with LIDAR, motor controllers, inertial units, encoders, accelerometer, GPS, sensors (ultrasonic, infrared, temperature, pressure, etc). -Hands-on experience in mechanical design (Solidworks), and rapid prototyping using 3D printers.
Computer Science	-Advanced knowledge of Unix OS (Shell, Bash scripting, SSH) and related tools (gcc, g++, make, vi, git, etc). -Proficiency in C/C++, especially optimization using C++11. -Proficiency in Python and related libraries (Numpy, SciPy, Matplotlib) -Familiarity with several programming languages (C#, Java, Visual Basic, HTML, PHP, JavaScript) and tools for debug (gdb, valgrind), software design (UML), source code management (GitHub) and documentation (Doxygen). -Familiarity with SQL and SQLite for basic database management. -Familiarity with the statistical software R and Matlab for data analysis.

Languages

Italian:	native speaker
English:	advanced
French:	intermediate

2014 TOEFL iBT English certification. Total Score: 88

Awards, Fellowships and Scholarships

03-2016	Academic Hardware Grant, NVIDIA corporation. I received a Tesla K40 GPU in support of a project on gaze detection through convolutional neural networks.
01-2016	Associate Fellowship, Marie Sklodowska-Curie programme. Project APRIL (Applications of Personal Robotics for Interaction and Learning).
2015-present	Scholarship, project THRIVE (Trust in Human Robot Interaction). Funded by AFOSR (Air Force Office of Scientific Research, USA).
2012-present	Member, Mensa International. Society for people with high intelligence quotient.
2006-2011	Scholarship, Laziodisu. Grant for students which every year offers a limited number of scholarships based on income and merit.

Talks, Conferences, Workshops

2015-present (Reviewer) I have been the reviewer for different conferences and journals: IROS (International Conference on Intelligent Robots and Systems), IEEE ICDL-Epirob, IEEE Transactions on Cognitive and Developmental systems.

20-11-2015 (Invited Speaker) How to use humanoid robots in Human-Robot Interaction Experiments. University of Messina, Messina, Italy.

08-2015 (Participant) 2nd Summer School on Social Human-Robot Interaction. Aland,Finland.

20-03-2014 (Invited Speaker) Introducing the ZEUS project, emergency management with unmanned robotic systems. AFCEA annual conference, Rome, Italy.

Publications

[1] Paglieri F., Parisi D., **Patacchiola M.**, Petrosino G., 2015, "Investigating intertemporal choice trough experimental evolutionary robotics", *Behavioural Processes*, vol. 115, pp. 1-18.

[2] **Patacchiola M.**, Cangelosi A., 2016, "A Developmental Bayesian Model of Trust in Artificial Cognitive Systems", *In Proceeding of the Sixth International Conference on Development and Learning on Epigenetic Robotics (ICDL-EpiRobt), Paris, France.*

[3] Zanatto D., **Patacchiola M.**, Goslin J., Cangelosi A., 2016, "Priming antropomorphism: Can the credibility of humanlike robots be transferred to non-humanlike robots?", *In Proceeding of the Eleventh Annual ACM/IEEE International Conference on Human Robot Interaction*, Christchurch, New Zeland, pp. 534-544