

# Claudio Zito

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## EDUCATION

### PHD IN AI & ROBOTICS

2016 | School of Computer Science,  
University of Birmingham (UK)

Dissertation title:

Planning Simultaneous Perception  
and Manipulation

Advisors: J. L. Wyatt, R. Stolkin

Committee: M. Mistry, N. Lepora,  
P. Hancox (Chair).

### MPHIL IN COMPUTER SCIENCE

Full Marks | 2010

School of Computer Science,  
University of Pisa (IT)

Dissertation title:

Development of a Italian voice for  
corpus-based Text-To-Speech with  
forced-alignment and statistical  
context-dependent boundary  
correction

Advisors: Giuseppe Attardi, Piero Cosi.

### BA IN MATHEMATICS AND COMPUTER SCIENCE

Full Marks | 2006

School of Mathematics and Computer  
Science, University of Siena (IT)

Dissertation title:

Development of a new algorithm to  
solve the crosswords problem to  
improve the state-of-the-art  
MinConflicts algorithm

Advisor: Marco Gori

## EXPERTISE

Artificial Intelligence • Robotics

• Machine Learning • Computational

Vision

## PROGRAMMING SKILLS

Over 10,000 lines:

C++ • Matlab • Java

Over 1,000 lines:

C • Python • LISP • SCHEME • PHP

Physics simulators

NVIDIA PhysX • Bullet • XVR

Revision control systems

GitHub • CVS • SVN

IDEs

Visual Studio • Eclipse • SLIME

Others

ROS • Latex • Photoshop • MySQL

## PERSONAL PROFILE

My main research interest is in **mapping perception into actions to model intelligent behaviours** for next-gen AI systems. I am a trained scientist in AI, robotics, ML and computational vision. **Proficient experience in leading and supervise high-quality research** (FP7 PaCMan) and **science communicator**.

## GRANTS AND AWARDS

2017 JSPS Research Fellowship , **£30.000** (in review)

2017 H2020-ICT-25 Research Grant (EMPOWER), **£3.5m** (in review)

2013 University of Birmingham, "Phd-led seminar funding", £1.000

2013 Guarantor of Brain, "Support for short meetings & conferences", £2.000

2012 Guarantor of Brain, "Support for short meetings & conferences", £1.000

2012 UK Research Council, "Roberts Skills Training Fund", £1.000

2007 EU-Japan Centre for Industrial Cooperation, "Vulcanus in Japan", **€15.000**

## RESEARCH EXPERIENCE

### RESEARCH FELLOW POSITIONS HELD

Apr 2017 – Current | School of metallurgy & Materials, UoB (UK)

- Lead and coordinate a team of robotics researchers to design, model and develop an intelligent mobile-manipulator robot for applications in hazardous environments.
- Funded by EPSRC. Coordinator: Dr. R. Stolkin.

Feb 2016 – Apr 2017 | School of Computer Science, UoB (UK)

- Design, modelling, and development of intelligent robotic systems for industries in manufacturing.
- Integration of in-the-house grasping algorithms for the human-like Pisa-IIT SoftHand.
- Funded by European Robotic Challenge, MTC-LU-UoB-Airbus Team.

Aug 2015 – Feb 2016 | School of Computer Science, UoB (UK)

- Design and development of a tactile exploration strategy for dexterous robots to learn novel objects by integrating visual and tactile clues.
- "Active perception" work-package leader.
- Funded by FP7 PaCMan, reviewed as Excellent (best mark). Coordinators: Prof J. L. Wyatt, Dr. Ing. M. Gabiccini.

Jan 2012 – June 2012 | School of Computer Science, UoB (UK)

- Interdisciplinary research on modelling human's grasping strategies under object-pose uncertainty.
- Development of probabilistic models to explain how humans compensate for spatial uncertainty during grasp attempts.
- Funded by EPSRC. Coordinators: Prof J. L. Wyatt, Dr. M. Di Luca.

Jan 2008 – Aug 2008 | Hitachi Centre Research Lab (JP)

- Application of machine learning techniques to improve training and performances of Hitachi's multi-language Text-To-Speech systems.
- Development of ML algorithms to correct the systematic error perpetuated by the Hidden Markov Chains for boundary alignments for corpus-based Text-to-Speech systems.
- Advisor: Dr. N. Nukaga

## COMMUNICATION

### SKILLS

Easy to adapt to multicultural environments gained through my work experience abroad.

Good communication skills and management of a group of people gained through working as a teacher (>150 students).

Science communicator.

### MANAGERIAL SKILLS

Ability and confidence to succeed in any chosen environment, particularly time management and how to prioritise effectively.

Good ability to learn and use systems with minimal training where time is the essence.

## COURSEWORK

### GRADUATE

Advanced Machine Learning  
Open Source Software Engineering  
Advanced Interactive Graphics  
Compilers + Practicum  
Parallel & Distributed Systems  
Robotics & virtual reality

### UNDERGRADUATE

Advance Math  
Advance Algebra and Logic  
Probability Theory  
Operational Research  
Information Retrieval  
Operating Systems + Practicum  
Artificial Intelligence + Practicum  
Functional Programming + Practicum  
Computer Graphics + Practicum

### LINKS

GitHub:// [memnone](#)  
LinkedIn:// [claudiozito](#)  
YouTube:// [memnone](#)

## DOCTORAL RESEARCH FELLOW

Mar 2013 – Aug 2015 | School of Computer Science, UoB (UK)

- Development of an innovative approach for planning reach-to-grasp trajectories in the face of object-pose uncertainty.
- Development of a robust probabilistic reasoning on object locations under non-Gaussian 6D uncertainty.
- Development of an efficient planning algorithm for high-dimensional spaces.
- Funded by Fp7 PaCMan, reviewed as Excellent (best mark). Coordinators: Prof J. L. Wyatt, Dr. Ing. M. Gabiccini.

Sep 2010 – Feb 2013 | School of Computer Science, UoB (UK)

- Development of new methods to cope with novelty in manipulation tasks for humanoid robots.
- Development of a planning algorithm which is capable of manipulate (through push operations) complex objects that are free to i.e slide, rotate, or top over.
- Exploring the benefits of physics simulators for predicting objects behaviours under push operations.
- Funded by FP7 GeRT, reviewed as Excellent (best mark). Coordinator: Dr. C. Borst (German Aerospace Agency, DLR, DE).

## TEACHING EXPERIENCE

### LECTURER IN AI

Jan 2017 – Current | School of Computer Science, UoB (UK)

- MSc/ICY Intro to AI (>150 students, 20 credits).
- Supervision of MSc summer projects.
- Administration of MSc Robotics admissions.
- AVD and Open Days.

### TEACHING ASSISTANCE/DEMONSTRATOR

2011 - 2016 | School of Computer Science, UoB (UK)

- Intelligent Robotic, Intro to AI, Robot Programming, Computational Vision, Network and Distributed Systems, C++ coding seminars, Java for distributed systems.
- Marking, lecturing, tutoring single students and teams, managing labs.
- Organisation and management of labs and extension classes.

## INVITED SPEAKER / SEMINARS / DISSEMINATION

- 2016 Interviewed by TV show Presa Diretta, Il pianeta dei robot (min 13.40) RAI (IT).
- 2014 Planning under Uncertainty, Vision Leads to Action Workshop University of Birmingham (UK).
- 2014 Reinforcement Learning seminar, Centro Piaggio, University of Pisa (IT).
- 2013 Simultaneous Perception and Manipulation, Waseda University (JP).
- 2013 Simultaneous Perception and Manipulation, Nara Institute of Science and Technology (NAIST) (JP).
- 2013 Simultaneous Perception and Manipulation, Cyberdyne Inc. (JP)
- 2013 Re-planning Reach-To-Grasp Trajectory under Object-Pose Uncertainty, IEEE/RSJ Int'l Conference on Intelligent Robots and Systems, (IROS) (JP).
- 2012 Two-level RRT Planner for Robotic Push Manipulation, IEEE/RSJ Int'l Conference on Intelligent Robots and Systems, (IROS) (PT).

## ORGANISED EVENTS

- 2013 World Inside the Brain (WIB2013), 2-day Workshop (>100 attendees). Keynote speaker: Prof Daniel Wolpert (University of Cambridge, UK)
- 2012 Multi-Sensory Integration (MSI2012) Workshop (>80 attendees). Keynote speaker: Prof. Charles Spence (University of Oxford, UK)

## LANGUAGES

Italian: Native.

English: Proficient.

French: Basic.

Japanese: Basic.

## MEMBERSHIPS

IEEE Member • IEEE-RAS Member •

## REVIEWER

Autonomous Robot • Taros • JIST •  
ICRA • IROS • Humanoids • CASE

## REFEREES

**Prof. Jeremy L. Wyatt**

School of Computer Science  
University of Birmingham, UK  
Web: [www.cs.bham.ac.uk/jlw/](http://www.cs.bham.ac.uk/jlw/)  
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**Dr. Michael Mistry**

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University of Edinburgh, UK  
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**Dr. Massimiliano Di Luca**

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**Dr. Rustam Stolkin**

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University of Birmingham, UK  
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**Prof. Ales Leonardis**

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## LIST OF PUBLICATIONS

### IN PREPARATION

1. C. Zito, M. Kopicki and J. L. Wyatt. *Beyond Pick and Place: Unified Framework to Learn How to Pick, Passing from Hand-to-Hand, and Place Kitchen Objects into a Dishwasher Rack.*
2. C. Zito, A. Masoud, M. Kopicki and R. Stolkin. *Dynamic Grasping for Mobile Robot Manipulators.*
3. M. Di Luca, T. E. Vivian-Griffiths, J. L. Wyatt and C. Zito. *A Computational Model for Human Grasping with Uncertain Location.*
4. C. Zito, S. Somlor, A. Leonardis, J. L. Wyatt and T. Ogata. *Deep Neural Network Learning of Multi-modal Predictor/Controller Pairs for Dexterous Robot Assembly.*
5. J. Stüber and C. Zito. *Two-Level Push-MDP: Learning Policies for Autonomous Mobile Robots.*
6. T. Brereton, E. Davis, M. Ghazanfar and C. Zito. *Mastering Match-3 Puzzle with Deep Learning.*

### ARTICLES IN JOURNALS (IN REVIEW)

1. C. Zito, V. Ortienzi, M. Adjigble, M. S. Kopicki, R. Stolkin and J. L. Wyatt. *Active Touch for Dexterous Grasp Planning.* Autonomous Robots. S.l.: Active Perception.
2. C. J. Rosales, F. Spinelli, C. Zito, M. Gabiccini and J. L. Wyatt. *GPatlasRRT: A tactile exploration strategy for novel object shape modeling.*

### REFEREED CONFERENCE PUBLICATIONS

3. C. Zito, M. S. Kopicki, R. Stolkin, C. Borst, F. Schmidt, M. A. Roa and J. L. Wyatt. *Sequential Trajectory Re-planning with Tactile Information Gain for Dexterous Grasping under Object-Pose Uncertainty.* Proceedings of IEEE/RSJ Int'l Conf. on Intelligent Robots and Systems, pp. 2013-2040. 2013.
4. C. Zito, R. Stolkin, M. Kopicki, J. L. Wyatt. *Two-level RRT Planner for Robotic Push Manipulation.* Proceedings of IEEE/RSJ Int'l Conf. on Intelligent Robots and Systems. 2012.
5. C. Zito, F. Tesser, M. Nicolao, P. Cosi. *Statistical Context-Dependent Units Boundary Correction for Corpus-Based Unit-Selection Text-To-Speech.* Proceedings of the 7th Conf. of Associazione Italiana di Scienze della Voce (AISV), 2011.

### REFEREED WORKSHOP PUBLICATIONS

6. C. Zito, M. S. Kopicki, R. Stolkin, C. Borst, F. Schmidt, M. A. Roa and J. L. Wyatt. *Sequential Re-planning for Dexterous Grasping under Object-Pose Uncertainty.* Workshop on Manipulation with Uncertain Models, Robotics: Science and Systems, 2013.
7. C. Zito, R. Stolkin, M. Kopicki, M. Di Luca, J. L. Wyatt. *Exploratory Reach-to-Grasp Trajectories for Uncertain Object Poses.* Workshop of Beyond Robot Grasping, IEEE/RSJ Int'l Conf. on Intelligent Robots and Systems. 2012
8. M. Di Luca, T. E. Vivian-Griffiths, J. L. Wyatt and C. Zito. *Grasping a Shape with Uncertain Location.* Perception, 41, pp. 253, 2012.