Joe Watson

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Education

Technische Universität Darmstadt *Darmstadt, Germany* **2018 - Present**

Computer Science Ph.D.

Researching Robotics & Machine Learning at the Intelligent Autonomous Systems Lab, supervised by Prof. Jan Peters

Peterhouse, University of Cambridge *Cambridge, UK* **2012 - 2016**

Information & Computer Engineering MEng, BA (Hons) Distinction, First Class

Modules include: Robotics, Computer Vision, Statistical Pattern Processing, Digital Filters & Spectrum Estimation, Nonlinear Systems & Control

Honours
- Jack Weinstock Prize for Electrical and Information Sciences (2016, 2017)
- Peterhouse Engineering College Prize (2015, 2016, 2017)
- Charles Babbage Senior Scholarship of Peterhouse (2015-2017)
- 2^{nd} Year Integrated Design Project Prize (2014)
- Engineering Professors' Council Essay Prize, Highly Commended (2013)
- 1^{st} Year Computing Prize (2013)

Experience

Software Engineer, CMR Surgical **Cambridge, UK** **Autumn 2016 - Winter 2018**

- Worked on developing Verisus, a novel robotic system designed to revolutionize laparoscopic surgery through, to CE Mark accreditation
- Focused on the Control and Signal Processing algorithms for the manipulators, through research, experimentation and software development using C and Python
- Implemented software features for microcontroller subsystems of the product from requirements to tests
- Contributed towards the technical documentation of the microcontroller subsystem, included the technical specification, test specifications and risk analysis

Deep Learning for Robotic Grasping **University of Cambridge** **2015-2016**

- Self-motivated 4th Year research project supervised by Dr. Fumiya Iida and assessed by Prof. Roberto Cipolla
- Trained a Convolutional Neural Network for real-time grasp prediction and implemented it on a robotic system
- Used Rethink Robotics' Baxter robot, Microsoft Kinect, ROS and Caffe. Graded First Class and published as a conference article

The Technology Partnership (TTP Meteor) **Cambridge, UK** **10 weeks, Summer 2015**

- Undertook an internal research project the industrial printing division of a technology consultancy
- Research involved developing and investigating the use of system identification and machine learning algorithms in their products

Publications

Conference articles

Watson, J., Hughes, J., Iida F. (2017) Real-World, Real-Time Robotic Grasping with Convolutional Neural Networks.
In *18th Towards Autonomous Robotic Systems (TAROS) Conference* `link.springer.com/chapter/10.1007/978-3-319-64107-2_50`

Skills

Programming Languages
C, Python, Matlab, C++

Software Packages
ROS, Pytorch, TensorFlow, OpenCV, Simulink

Platforms
Windows, Linux

Version Control
git, svn

General
LaTeX, Graphic Design (Adobe Photoshop, Illustrator, Indesign, Premier Pro), Fine Art

Interests

Academic
Model-based Reinforcement Learning, Optimal Control Theory, Approximate Bayesian Methods, Generative Models

General
Silkscreen printing, graphic design, socioeconomic impact of automation, epistemology of information technology, algorithmic art

References available on request