Joe Watson

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Education

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

Computer Science Ph.D.

Researching robotics & machine learning with the Intelligent Autonomous Systems group, 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)
- 2nd Year Integrated Design Project Prize (2014)
- Engineering Professors' Council Essay Prize, Highly Commended (2013)
- 1st Year Computing Prize (2013)

Experience

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

- Worked on Verisus, a novel robotic system designed to revolutionize laparoscopic surgery, through to CE Mark accreditation
- Focused on the robot 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

Publications

Conference articles

Stochastic Optimal Control as Approximate Input Inference Watson, J., Abdulsamad, H., Peters J. (2019)
3rd Conference on Robot Learning (CoRL)

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

workshop papers

A Differentiable Newton Euler Algorithm for Multi-body Model Learning M. Lutter, J. Silberbauer, J. Watson, J Peters (2020)
Structured Approaches to Robot Learning Workshop, RSS

Academic Supervision

Msc. L. Williamson, J. Silberbauer, A. Imohiosen
Bsc. F. Damken
Misc. C. Voelcker, J. Lin

Skills

Programming Languages Python, C, C++ Matlab
Software Packages ROS, Pytorch, TensorFlow, OpenCV, Simulink
Platforms Linux, Windows
Version Control git, svn
General LaTeX, Graphic Design (Adobe Photoshop, Illustrator, Indesign, Premier Pro), Fine Art

Academic Interests

robotics, stochastic optimal control, Bayesian machine learning, system identification, visuomotor learning

References available on request