

RYUTARO TANNO

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Holds the indefinite leave to remain in the UK

RESEARCH INTERESTS

Machine Learning, Medical Image Analysis, Algorithmic Safety, Robustness and Interpretability

ACADEMIC HISTORY

University College London, UK (Oct 2015 - Present)

Centre for Medical Image Computing, Department of Computer Science

PhD in Machine Learning and Medical Imaging (Jointly supervised at the Microsoft Research)

- Supervised by [Daniel C. Alexander](#) & [Antonio Criminisi](#)
- Recipient of **Microsoft Scholarship** in machine learning.

University of Cambridge, UK (Oct 2014 - Oct 2015)

Computational and Biological Learning Lab, Department of Engineering

MPhil in Computational Neuroscience and Machine Learning

- Supervised by [Mate Lengyel](#)
- Recipient of **Newton Trust Award**
- *Thesis Title: 'Probabilistic Network Models of Auto-associative Memory with Bounded Metaplastic Synapses and MCMC-based Retrieval Mechanism'* ([link](#)).
- Achieved grade A* in all modules.

University of Cambridge, UK (Oct 2013 - July 2014)

Master of Advanced Study in Pure Mathematics

- Supervised by Philip Dawid
- *Thesis Title: 'Information Geometry and its Applications in Asymptotic Statistics'*.
- Achieved a Distinction grade

Imperial College, UK (Oct 2010 - June 2013)

BSc in Pure Mathematics

- Achieved First Class in all three years
- Recipient of **Winton Capital Prize** for the best penultimate year thesis.

PRIZES AND SCHOLARSHIPS

2019 - ICML Travel Award, Long Beach, CA, USA

2018 - MICCAI Travel Award (top 5% of all submissions), Granada, Spain

2017 - [Grants4Apps Grant](#), Bayer (ThinkSono selected as one of top 4 start-ups out of >450 applications)

2017 - MICCAI Young Scientist Award (best paper award for students), Québec, Canada

2017 - MICCAI Travel Award (top 5% of all submissions)

2015 - Microsoft Research Scholarship, Cambridge, UK

2014 - Newton Trust Award (awarded to top ranked MPhil students across all subjects), Cambridge, UK

2014 - PMC Scholarship, Dept. of Mathematics, Cambridge, UK

2012 - Imperial College UROP Studentship, London, UK

2012 - Winton Capital Prize (awarded to the best penultimate year thesis), Imperial College, London, UK

2012, 2013 - Invitation to Imperial College departmental meal (top 5% of 200+ students are invited)

ACTIVITIES

- **Reviewer:** MICCAI (2018, 2019), MIA (2019), MRM (2019), MIDL (2019), ICML (2019), NeurIPS (2019)
- **Supervision:** K. Lei, MSc (2019), P. Agawal, MBBS (2019), X. Wang, MSc (2017), A. Azhar, MSc (2017)
- **Lead organiser** of [UNSURE workshop](#) on Uncertainty and Safety in Medical Imaging at MICCAI 2019
- **Technical Advisor** at [Synthetic Gestalt](#), Tokyo, Japan (April 2019 - Present)

SKILLS

- Software: Python, Matlab, C, TensorFlow, PyTorch
- Languages: native in both Japanese and English

PROFESSIONAL EXPERIENCE

Butterfly Network, NY, USA (March 2018 - August 2018)

Research Internship in Deep Learning Team with Dr. Nathan Silberman

- Research topic: learning from labels from multiple annotators of varying skills levels and biases
- Published a **paper** in CVPR 2019 as the lead author.

Microsoft Research Cambridge, UK (Oct 2017 - March 2018)

Research Internship with Dr. Aditya Nori

- Research topic: synergise neural networks and decision trees for more effective architecture search.
- Published a **paper** in ICML 2019 as the lead author.
- Filed a **patent** (pending as of Aug 2019)

ThinkSono, London, UK (Dec 2016 - April 2018)

One of 4 initial members

- With Antonis Makropoulos (the present CSO), I developed the core deep learning algorithms for real-time diagnosis of deep-vein thrombosis (DVT) with a mobile ultra-sound scanner.
- Selected as one of the top 4 digital health start-ups by Bayer out of >450 applications across the globe
- Published a **paper** in MICCAI 2018 as the lead author.
- Obtained a **patent** as one of the inventors.

MRC Cognition and Brain Sciences Unit, Cambridge, UK (July 2014 - Sep 2014)

Research Intern

- Recipient of the **PMC scholarship** from Mathematics Dept., Cambridge University.

Biomathematics Group, Imperial College, London, UK (July 2012 - Oct 2012)

Undergraduate Research Intern

- 10 week project-based internship with Dr. Dorothy Buck on DNA topology.

SELECTED PUBLICATIONS

- **Ryutaro Tanno**, D. E. Worrall, E. Kaden, A. Ghosh, ..., A. Criminisi, and D. C. Alexander, "Uncertainty Quantification in Deep Learning for Safer Neuroimage Enhancement". **Neuroimage** 2019 (Under Submission)
- Felix J.S. Bragman*, **Ryutaro Tanno***, ..., M. Jorge Cardoso, "Stochastic Filter Groups for Multi-Task CNNs: Learning Specialist and Generalist Convolution Kernels". **Equal Contributions*, **ICCV** 2019 (**Oral top -4%**)
- **Ryutaro Tanno**, Ardavan Saheedi, Swami Sankaranarayanan, Daniel C. Alexander, Nathan Silberman, "Learning From Noisy Labels By Regularized Estimation Of Annotator Confusion". **CVPR** 2019
- **Ryutaro Tanno**, Kailash Arulkumaran, Antonio Criminisi and Aditya Nori, "Adaptive Neural Trees". **ICML** 2019.
- K. Kamnitsas, D. Castro, L. Folgoc, **Ryutaro Tanno**, Daniel Rueckert, Ben Glocker, Antonio Criminisi, Aditya Nori. "Semi-Supervised Learning via Compact Latent Space Clustering". **ICML** 2018. (**Long Oral top -5%**)
- **Ryutaro Tanno**, Antonio Makropoulos, ..., Bernard Kainz, Mattias Heinrich. "AutoDVT: Joint Real-time Classification for Vein Compressibility Analysis in Deep Vein Thrombosis Ultrasound Diagnostics", **MICCAI** 2018
- Felix J.S. Bragman, **Ryutaro Tanno**, ... , M. Jorge Cardoso, "Uncertainty in multitask learning: joint representations for probabilistic MR-only radiotherapy planning", **MICCAI** 2018 (**Spotlight top -5%**)
- Stefano B Blumberg, **Ryutaro Tanno**, Iasonas Kokkinos, Daniel C Alexander. "Deeper Image Quality Transfer: Training Low-Memory Neural Networks for 3D Images", **MICCAI** 2018
- **Ryutaro Tanno**, Daniel Worrall, Aurobrata Ghosh, Enrico Kaden, Stamatios N. Sotiropoulos, Antonio Criminisi and Daniel C. Alexander, . "Bayesian Image Quality Transfer with CNNs: Exploring Uncertainty in dMRI Super-Resolution", **MICCAI** 2017 (**Oral top -4% + Best Paper Award**)
- **Ryutaro Tanno**, Aurobrata Ghosh, Francesco Grussu, Enrico Kaden, Antonio Criminisi and Daniel C. Alexander. "Bayesian Image Quality Transfer". **MICCAI** 2016

PATENTS

- Aditya Nori, Antonio Criminisi, and **Ryutaro Tanno**, "Neural Trees", G.B. Microsoft Technology Licensing LLC. (2018). Patent No. GB201810736Do. (Filed in Aug 2018).
- Fouad Al Noor, Sven Mischkewitz, Antonios Makropoulos, **Ryutaro Tanno**, Bernhard Kainz, Ozan Oktay, "Blood vessel obstruction diagnosis method, apparatus & system" Patent No. WO2018162888A1. (Published in Sep 2018).