

Catherine Tong

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Education

DPhil in Computer Science, University of Oxford

2017 – Present

- Supervisor: Dr. Nicholas D. Lane
- Thesis: Leveraging Videos for Human Activity Recognition on Wearable Inertial Sensors
- Research Interests: activity recognition, ubiquitous sensing, multi-modal learning, ML for health
- Google Generation Scholar 2021

Masters of Physics, University of Oxford

2013 – 2017

First Class Honours

- Focus: Theoretical Physics and Atmospheric Physics
- Thesis: [Diffusing Workers in a Multiplex World](#)

Journal and Conference Papers

- 2021 **Catherine Tong***, Jinchen Ge* and Nicholas D. Lane. [Zero-Shot Learning for IMU-Based Activity Recognition Using Video Embeddings](#). *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT) Vol. 5 (4)*.
- 2020 Hyeokhyen Kwon*, **Catherine Tong***, Harish Haresamudram, Yan Gao, Gregory D. Abowd, Nicholas D. Lane, and Thomas Plötz. [IMUTube: Automatic Extraction of Virtual on-body Accelerometry from Video for Human Activity Recognition](#). In *IMWUT Vol. 4 (3)*.
- 2020 Christian Schroeder de Witt*, **Catherine Tong***, Valentina Zantedeschi, Daniele De Martini, Alfredo Kalaitzis, Matthew Chantry, Duncan Watson-Parris and Piotr Biliski. [RainBench: Towards Data-Driven Global Precipitation Forecasting from Satellite Imagery](#). In *AAAI '21 Vol. 35 (17)*.
- 2019 **Catherine Tong**, Matthew Craner, Matthieu Vegreville, and Nicholas D. Lane. [Tracking Fatigue and Health State in Multiple Sclerosis Patients Using Connected Wellness Devices](#). In *IMWUT Vol. 3 (3)*.
- 2018 Valentin Radu, **Catherine Tong**, Sourav Bhattacharya, Nicholas D. Lane, Cecilia Mascolo, Mahesh K. Marina, and Fahim Kawsar. [Multimodal Deep Learning for Activity and Context Recognition](#). In *IMWUT Vol. 1 (4)*.
- 2018 Vincent WS. Tseng, Sourav Bhattacharya, Javier Fernández Marqués, Milad Alizadeh, **Catherine Tong**, and Nicholas D. Lane. [Deterministic Binary Filters for Convolutional Neural Networks](#). In *IJCAI '18*.

*Equal Contributions

Workshop Papers, Posters and Magazine Articles

- 2021 Hyeokhyen Kwon*, **Catherine Tong***, Harish Haresamudram, Yan Gao, Gregory D. Abowd, Nicholas D. Lane, and Thomas Plötz. [Can You See It? Good, So We Can Sense It!](#) In *GetMobile Vol. 25 (2)*.
- 2021 **Catherine Tong***, Emma Rocheteau*, Petar Veličković, Nicholas D. Lane and Pietro Liò. [Predicting Patient Outcomes with Graph Representation Learning](#). In *International Workshop on Health Intelligence (W3PHIAI '21), held with AAAI '21. Best Short Paper Runner-up Award*.
- 2020 Valentina Zantedeschi, Daniele De Martini, **Catherine Tong**, Christian Schroeder de Witt, Alfredo Kalaitzis, Matthew Chantry, Duncan Watson-Parris and Piotr Biliski. [Towards Data-Driven Physics-Informed Global Precipitation Forecasting from Satellite Imagery](#). In *AI for Earth Sciences Workshop, held with NeurIPS '20*.
- 2020 **Catherine Tong**, Shyam A. Tailor, and Nicholas D. Lane. [Are Accelerometers for Activity Recognition a Dead-end?](#) In *HotMobile '20*.
- 2018 **Catherine Tong**, Gabriella M. Harrari, Angela Chieh, Otmane Bellahsen, Matthieu Vegreville, Eva Roitmann and Nicholas D. Lane. [Poster: Inference of Big-Five Personality Using Large-scale Networked Mobile and Appliance Data](#). In *MobiSys '18*.

Patent

2021 Method And System For Automatic Extraction Of Virtual On-Body Inertial Measurement Units. Filed: September 2021. Patent Application: 17/464,488.

Book Chapter

2021 (In Preparation) **Catherine Tong** and Nicholas D. Lane. [Beyond the Smartphone: The Internet of Things as Sensors of Psychology and Human Behaviours](#). To appear in *Mobile Sensing in Psychology: Methods and Applications*.

Industry Experience

Frontier Development Lab

Jun – Aug 2020

Machine Learning Researcher, Digital Twin Earth Team

Remote

- Focus: Enabling global medium-range precipitation forecasts from satellite imagery.
- We developed a novel multi-modal system which incorporates physical understanding into a deep learning approach for skillful forecasts across the globe.

Microsoft Research

Jun – Sep 2019

Research Intern, Manager: Dr. Danielle Belgrave

Cambridge, UK

- Focus: Understanding behaviours of mental health patients on an online Cognitive Behavioural Therapy platform.
- I was part of Project Talia in the Healthcare Intelligence group. We developed a deep learning framework to analyze and predict health outcomes (as measured by depression scores) by modelling patients' browsing trajectories and relevant site content.

Nokia Bell Labs

Jun – Sep 2017

Research Intern, Manager: Dr. Nic Lane

Cambridge, UK

- Focus: Analyzing multi-modal deep learning models for activity and context recognition.
- We compared the performance of different multi-modal setups. We also trained machine learning models to analyze health-related data collected by smart appliances in the *Withings* range.

Centre for Agent-Based Dynamic Networks, University of Oxford

May – Jul 2017

Research Assistant, Manager: Dr. Omar Guerrero

Oxford, UK

- Focus: Modelling the labour economy using methods from Statistical Physics.
- We formulated and solved an agent-based Markov model on multiplex networks to describe the movement of labour across the economy. We analyzed the approach on UK labour survey data.

Other Experience

Co-Founder, GirlsWhoML

Since March 2020

- I co-founded GirlsWhoML to improve gender diversity in the field of machine learning and AI. GirlsWhoML have so far delivered online Machine Learning introductory workshops to 100+ university and high-school students.
- My role includes long-term planning for the organization, designing workshop content and liaising with volunteers and industry partners.

President, Oxford Women in Computer Science

Aug 2020 – 2021

- I oversee the workings of the society – I work with the committee to organize outreach, academic and industry events, liaise with University departments and external sponsors, and represent the society in general.

Teaching

2020-21 Master Thesis Project Supervision, University of Cambridge

2019-20 Teaching Assistant, Fundamentals of Sensing, University of Oxford

Other Services

- 2021 Session Co-Chair, MobiUK '21
- 2019-21 Membership Co-Chair, N2Women Board
- 2017-21 Committee, Oxford Women in Computer Science
- 2014-17 Undergraduate Mentor, Oxford Women in Physics
- 2014-15 Volunteer Home-Visit Tutor, Jacari Oxford

Awards

- 2021 Google Generation Scholarship
- 2021 Best Short Paper Runner-Up, W3PHIAI '21
- 2020 Best Presentation, Judges Award Nominations, UbiComp '20
- 2020 ACM Student Travel Award, HotMobile '20
- 2018 ACM Student Travel Award, UbiComp '18
- 2017 EPSRC DPhil (PhD) Scholarship
- 2016 Examiners' Commendation for Best Practical Work in Physics
- 2013-17 College Scholarship for Outstanding Performance in Physics Exams