

# Shyam A. Tailor

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## Education

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### University of Cambridge

#### PhD in Computer Science

October 2019 – Summer 2022 (Expected)

- Third year student in the Machine Learning Systems group; supervised by Dr Nicholas Lane.
- Interested in techniques for **efficient on-device machine learning applications operating on non-uniformly structured data**. Particular interest in graph neural networks (GNNs), including applications to problems such as computer vision and code analysis.
- **Papers at HotMobile and ICLR; workshop papers at MLSys, ICML, ICLR and ICCV**. Awarded **best paper** at ICCV 2021 workshop. Two papers at ICLR 2022 with high acceptance probability.

**Skills:** Machine Learning Graph Neural Networks Edge Compute Computer Vision Python C++ PyTorch

### University of Cambridge

#### MEng Computer Science

October 2018 – June 2019

- **Distinction (rank 2/16, 87%)**. Specialised in cyber-physical systems and machine learning.
- Dissertation: *“Continuous Auscultation in the Wild”*. Supervised by Prof Cecilia Mascolo; investigated wearable devices that listen to the body in real-time for health applications. Awarded **best paper** at WellComp workshop at UbiComp 2020.

**Skills:** Machine Learning Cyber-Physical Systems Wearable Devices Audio Analysis Python C++

### University of Cambridge

#### BA Computer Science

October 2015 – June 2018

- **1st class honours (rank 3/98, 84%)**. 1st class achieved every year of degree.
- Dissertation: *“Anonymous Proximity Beacons from Smartphones”*. Supervised by Dr Robert Harle.
- Investigated anonymous proximity detection using Bluetooth-enabled smartphones. **Similar approaches used for COVID-19 contact tracing**. Results **published at PerCom 2018**.

**Skills:** Mobile Systems Android Bluetooth Java SQL Bash Git Unix Tools

## Work Experience

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### Arm ML Research Lab

#### Research Intern

May 2021 – August 2021

- Achieved **4.5× reductions in inference latency** for models operating on point cloud data, without accuracy degradation. First author paper awarded **best paper** at the Deep Learning for Geometric Computing ICCV Workshop. Currently preparing follow-up works for submission.
- Worked with Partha Maji and Tiago Azevedo in the Cambridge, UK team.

**Skills:** PyTorch TensorFlow Lite Point Clouds Computer Vision Edge Compute Graph Neural Networks

### Facebook

#### Software Engineering Intern

June 2018 – September 2018

- Interned on Workplace team in London. Designed and deployed to production REST APIs and bot features that are widely advertised as part of the core product offering.
- Worked primarily with Hack (Facebook’s fork of PHP) on backend infrastructure.

**Skills:** Hack PHP REST Backend API Design

### Ensoft

#### Software Engineering Intern

July 2017 – September 2017

- Wrote an automated regression testing tool to verify that a system re-implementation matched the original system over billions of possible inputs.
- Written in Python and utilised an SMT solver to generate test cases.

**Skills:** Python Automated Testing SMT Solvers Infrastructure Linux Docker

## Selected Publications

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- [Preprint 21] Milad Alizadeh, **Shyam A. Taylor**, Luisa M Zintgraf, Joost van Amersfoort, Sebastian Farquhar, Nicholas Donald Lane, and Yarin Gal. *Prospect Pruning: Finding Trainable Weights at Initialization using Meta-Gradients*. Under Review at ICLR 2022.
- [ICCVW 21] **Shyam A. Taylor**, René de Jong, Tiago Azevedo, Matthew Mattina, and Partha Maji. “Towards Efficient Point Cloud Graph Neural Networks Through Architectural Simplification”. In: *Deep Learning for Geometric Computing Workshop, ICCV 2021*. **Best Paper**.
- [ICLRW 21] **Shyam A. Taylor**, Felix L. Opolka, Pietro Liò, and Nicholas D. Lane. “Adaptive Filters and Aggregator Fusion for Efficient Graph Convolutions”. In: *GNNSys Workshop, MLSys 2021 and Hardware-Aware Efficient Training Workshop, ICLR 2021*.
- [ICLR 21] **Shyam A. Taylor\***, Javier Fernandez-Marques\*, and Nicholas D. Lane. “Degree-Quant: Quantization Aware Training for Graph Neural Networks”. In: *International Conference on Learning Representations (ICLR) 2021*.
- [UbiCompW 20] **Shyam A. Taylor**, Jagmohan Chauhan, and Cecilia Mascolo. “A first step towards on-device monitoring of body sounds in the wild”. In: *WellComp Workshop, UbiComp 2020*. **Best Paper**.
- [HotMobile 20] Catherine Tong, **Shyam A. Taylor**, and Nicholas D. Lane. “Are Accelerometers for Activity Recognition a Dead-end?” In: *HotMobile 2020*.
- [PerCom 18] Augustin Zidek, **Shyam Taylor**, and Robert Harle. “Bellrock: Anonymous proximity beacons from personal devices”. In: *International Conference on Pervasive Computing and Communications (PerCom)*. 2018.

## Talks

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|--------------------|---|
| 24th November 2021 | Brave Research  |
| 11th October 2021  | Deep Learning for Geometric Computing Workshop, ICCV 2021     |
| 5th July 2021      | UK Mobile, Wearable and Ubiquitous Systems Research Symposium |
| 22nd April 2021    | Valence AI Graph Journal Club                                 |
| 9th April 2021     | On-Device Intelligence Workshop, MLSys 2021                   |

## Leadership

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### Clare Hall, University of Cambridge

#### External Events Officer for Graduate Student Body

October 2020 – Present

- Oversee the organisation of social events in collaboration with other colleges in the university.
- Typically organize 1 event per week for the 200 post-graduate students in the college.

### Hack Cambridge

#### Sponsorship Team

July 2017 – October 2018

- Cambridge’s main annual student hackathon with approximately 400 attendees per year.
- Personally negotiated over £12,000 worth of sponsorship deals for the 2018 event.

## Awards and Honours

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- Best Paper – Deep Learning for Geometric Computing Workshop, ICCV 2021
- Best Paper – WellComp Workshop, UbiComp / ISWC 2020
- John Maheswaran Prize for Highly Commended Part III (MEng) Project – Department of Computer Science and Technology, University of Cambridge (June 2019)
- Foundation Scholarship – Downing College, University of Cambridge (June 2019)
- Huawei Studentship – University of Cambridge (May 2019, declined)
- EPSRC Excellence Award – University of Oxford (March 2019)
- EPSRC Doctoral Training Partnership Scholarship – University of Oxford (March 2019, withdrawn in favor of more prestigious EPSRC Excellence Award)
- Alcan Prize for most successful undergraduate in their penultimate year (physical and applied sciences) – Downing College, University of Cambridge (June 2018)
- Scholarship – Downing College, University of Cambridge (June 2016, 2017 and 2018)