Haritha Jayasinghe

PhD Student | Department of Engineering| University of Cambridge

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OBJECTIVE

A PhD student at the EPSRC Centre for Doctoral Training in Future Infrastructure and Built Environment, researching digitization of industrial facilities. I have a strong background in 3D data processing and deep learning and am passionate about conducting cutting edge research to understand the true impact of the rapid transformation of our world through computer science. I am a self-motivated individual capable of adapting to new domains and tackling complex challenges.

RESEARCH INTERESTS

- Computer Vision
- Digital twins
- 3D Data Processing
- Machine Learning / Deep Learning

TECHNICAL RESEARCH SKILLS

- Machine Learning / Deep Learning-Powered Applications for Computer Vision , 3D Point Cloud Processing, and Reinforcement Learning
- Experience in PyTorch, TensorFlow, Point Cloud Library (PCL), Python, C++, Javascript, CUDA Programming

EDUCATION

PhD in Automated Industrial facility Digital Twinning at the EPSRC Centre for Doctoral Training in Future Infrastructure and Built Environment (FIBE2 CDT), Department of Engineering, University of Cambridge	**United Kingdom** Sept 2022- Present
Master of Research at the EPSRC Centre for Doctoral Training in Future Infrastructure and Built Environment (FIBE2 CDT), Department of Engineering, University of Cambridge	**United Kingdom** Oct 2021 – Sept 2022
First Class, BSc (Hons) Engineering (Computer Science & Enginering) at the Department of Computer Science & Engineering, University of Moratuwa	**Sri Lanka** Oct 2016 – July 2021
CIMA Advanced Diploma in Management Accounting at Achievers Lanka Business School	**Sri Lanka** Oct 2015 – July 2017
GCE Advanced Level Examination at D.S. Senanayake College, Colombo 7 - 'A' passes for Combined Mathematics, Physics and Chemistry	**Sri Lanka** Jan 2013 – Aug 2015

COURSES

I have focused on building a multidisciplinary knowledge base, with a strong foundation of computer science, mathematics, machine learning, and deep learning, with courses such as;

- Machine Vision
- Machine Learning
- Data Mining and Information Retrieval
- Calculus for System Modelling
- Intelligent Systems
- Numerical methods for Computer Science
- Probabilistic Machine Learning
- Intelligent systems
- Linear algebra

PROFESSIONAL & TEACHING EXPERIENCE

Supervisor (Part-time)	University of Cambridge	**UK**	Oct 2023 - present
Associate Data Scientist (Part-time)	Veracity AI	**Sri Lanka**	Feb 2020 – Sept 2021
Google Summer of Code Intern	Point Cloud Library Organisation	**Remote**	Jun 2020 – Aug 2020
Teaching Assistant (part time)	University of Moratuwa	**Sri Lanka**	Jan 2020 – Present
Research Intern	University of Sydney / CSIRO Data61	**Australia**	Jun 2019 – Dec 2019
Internship in Advertising	Leo Burnett Solutions	**Sri Lanka**	May 2017 – July 2017

| **Student Development Lecturer (Part-time)** | Achievers Lanka Business School | **Sri Lanka** | Jun 2016- Oct 2017 |

CONFERENCE PUBLICATIONS

- **Learnable Geometry and Connectivity Modelling of BIM Objects,** Oral presentation, *British Machine Vision Conference (BMVC)* 2023
- **Topological Relationship Modelling for Industrial Facility Digitisation Using Graph Neural Networks,** International Conference on Construction Applications of Virtual Reality 2023
- **Data-Driven Simulation of Ride-Hailing Services using Imitation and Reinforcement Learning**, 33rd International Conference on Industrial, Engineering & Other Applications of Applied Intelligent Systems 2021

HONOURS AND AWARDS

- **1st Place – Conference on Everything 2023,** Organised by Churchill College, Cambridge, UK — 2023
- **1st Place – Cambridge Climate Hackathon,** Organised by Cambridge Climate Society Cambridge, UK — 2023
- **1st Place – CDBB Hacakthon,** Organized by the Center for Digitally Built Britain, UK — 2022
- **Most Innovative award, Cambridge Enterprise 2022,** Organised by Churchill College, Cambridge, UK — 2022
- **First Runners Up, Technology Infusion Grand** Challenge – organized by La Trobe University, Australia — 2021
- **1st Place - Code4Good 2019 -** Hackathon on promoting social welfare through ICT, Colombo, Sri Lanka — 2019
- **1st place – iHack 2018 -** Island-wide hackathon organized by University of Colombo, Sri Lanka — 2018
- **1st runner up - 4IR Hackathon 2018 -** Organized by SLASSCOM and Virtusa, Sri Lanka — 2018
- **1st runner up - Unilever Future Leaders League 2017 -** Global Business Case Study Competition, London, UK — 2017
- **1st Runners up, Hulftsdorp Inter-university Debating Competition** - Organized by Law College of Sri Lanka. — 2017
- **Dean's List Certificate Winner for all 8 Semesters -** Dean's List Certificate is the highest grade that an undergraduate can obtain for the excellence in academic studies in a semester**.** — 2016 – 2021

PROJECTS & RESEARCH EXPERIENCE

Automated Insurance Claim Estimation using Computer Vision / Deep Learning - Veracity AI — Sept 2020 – Sept 2021
Worked on Computer Vision based Pipelines for Automated Vehicle Damage Detection.

Building Construction Monitoring Through Point Cloud Processing - Veracity AI — Feb 2020 – Sep 2020
Designed algorithms for analysing change detection over time, vertical and horizontal surface analysis, with a focus on scalability across large point clouds, as part of a project for a US-based Civil engineering asset management company.

GPU Accelerated Octree Search Algorithms for Point Cloud Search in PCL - Point Cloud Library — May 2020 – Aug 2020
Implemented and modernised octree and other point cloud processing algorithms using C++ and CUDA. The work was supervised by a PhD student from the University of Lisbon. Article published on PCL website - pointclouds.org/gsoc-2020/gpu

Data-Driven Simulation of Sharing Economies Using Deep Reinforcement Learning - University of Moratuwa — Mar 2020 – May 2021
Worked on digital simulations of shared economies (specifically ride-hailing platforms) using deep Q-learning with TensorFlow & SimPy.

Tile-based 360-degree Video Streaming on Mobile Devices - University of Sydney — Sep 2019 – Dec 2019
Research and development of novel video 360-degree video streaming methods utilizing variable quality options, using Android Studio and OpenGL.

Privacy Leakage Detection through Point Cloud Data in Mixed Reality Devices - University of Sydney / CSIRO Data61 — Jun 2019 – Sep 2019
Investigated the impact of privacy leakage through point cloud data using Deep neural networks such as PointNet.

LEADERSHIP & SERVICE ACTIVITIES

- **Committee Member –** Cambridge Existential Risks Initiative — 2023

- **Debate Adjudicator –** Cambridge Union   2023
- **Google Summer of Code Mentor –** Point Cloud Library Organisation   2021
- **Captain –** University of Moratuwa Debate Team & DS Senanayake College Debate Team   2018-2021, 2013-2014
- **Debating Coach –** DS Senanayake College School Debate Team   2018 - 2021
- **Student Coordinator for Sri Lanka** – South Asia Students for Liberty   2017 - 2018
- **Organizer / Chair -** Sri Lanka Model United Nations Conference   2016