

Haritha Jayasinghe

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OBJECTIVE

A 3rd year PhD student at the EPSRC FIBE2 CDT, researching 3D modelling of industrial facilities. I have a strong background in 3D computer vision and deep learning, and am passionate about conducting cutting edge research to contribute to the rapid transformation of our world through computer science. I am self-motivated and 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++

EDUCATION

PhD in Infrastructure 3D modelling 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 & Engineering) 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	Sri Lanka
• 'A' passes for Combined Mathematics, Physics and Chemistry	Jan 2013 – Aug 2015

CONFERENCE PUBLICATIONS

- **Towards a Density Preserving Objective Function for Learning on Point Sets**, *European Conference on Computer Vision (ECCV) 2024*
- **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*

PROFESSIONAL & TEACHING EXPERIENCE

Supervisor (Part-time)	University of Cambridge	UK	Oct 2023 - present
Debate coach - CEM course (part time)	University of Cambridge	UK	April 2022 - Present
Software Engineer (part-time)	Didimi (Cambridge spin-off startup)	UK	April 2024 – July 2024
Associate Data Scientist (Part-time)	Veracity AI	Sri Lanka	Feb 2020 – Sept 2021
Google Summer of Code Mentor	Point Cloud Library Organisation	Remote	Jun 2021 – Aug 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

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

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 Hackathon**, 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

Geometric Digital twinning of Industrial facilities – University of Cambridge (PhD project) 3D modelling of geometries from point cloud scans	Oct 2021 - Present
Automated Insurance Claim Estimation using <u>Computer Vision</u> / <u>Deep Learning</u> - Veracity AI Worked on Computer Vision based Pipelines for Automated Vehicle Damage Detection.	Sept 2020 – Sept 2021
Building Construction Monitoring Through <u>Point Cloud Processing</u> - Veracity AI 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.	Feb 2020 – Sep 2020
GPU Accelerated <u>OcTree Search Algorithms</u> for Point Cloud Search in PCL - Point Cloud Library 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	May 2020 – Aug 2020
Data-Driven Simulation of Sharing Economies <u>Using Deep Reinforcement Learning</u> - University of Moratuwa Worked on digital simulations of shared economies (specifically ride-hailing platforms) using deep Q-learning with TensorFlow & SimPy.	Mar 2020 – May 2021
Tile-based 360-degree <u>Video Streaming on Mobile Devices</u> - University of Sydney Research and development of novel video 360-degree video streaming methods utilizing variable quality options, using Android Studio and OpenGL.	Sep 2019 – Dec 2019
Privacy Leakage Detection through <u>Point Cloud Data in Mixed Reality Devices</u> - 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

- **Computing Officer** – Churchill College MCR 2023-2024
- **Committee Member** – Cambridge Existential Risks Initiative 2023
- **Debate Adjudicator** – Cambridge Union 2023
- **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