

SUMUDU HERATH MUDIYANSELAGE

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EDUCATION

University of Cambridge, UK Oct 2016 – Jun 2020
PhD in Civil Engineering – Thesis title *Multiscale modelling of woven and knitted fabric membranes*

University of Moratuwa, Sri Lanka Oct 2011 – Mar 2016
Bachelor of Science in Civil Engineering **First Class Honours Degree (GPA = 4.12/4.20)**

Royal College, Colombo 07, Sri Lanka Jan 2002 – Dec 2010
GCE Advanced Level examinations 2010 **Ranked Second in the country**

PROFESSIONAL QUALIFICATIONS/MEMBERSHIPS

Institute of Engineers Sri Lanka (**IESL**) – Associate Member 2016 – Present
Engineers Council Sri Lanka (**ECSL**) – Associate Member 2019 – Present
Association of Chartered Certified Accountants (**ACCA**) Final stage (13/15 modules completed)
Chartered Institute of Management Accountants (**CIMA**) CIMA Passed Finalist

AWARDS AND ACHIEVEMENTS

Cambridge Trust Scholarship – Full doctoral scholarship to study at the University of Cambridge.
Bypassed Masters degree due to exceptional performance in Bachelor's degree.

Gold Medal for Most outstanding graduand in both academic and extra-curricular activities of the Faculty of Engineering, University of Moratuwa. Received **11 awards** for all-round excellence.

Gold Medal for first rank in Civil Engineering. Achieved a **record-breaking GPA of 4.12(/4.20)** which remains **highest in department history**.

Dean's List for obtaining Grade Point Average (GPA) above 3.8 in all academic semesters

National Prize for Enterprise Strategy (E3) in May 2012 CIMA exams. **World rank 95**

National Prize for Corporate Reporting (P2) in June 2013 ACCA exams. **World rank 7**

Poh Scholarship recipient (out of 40,000 students) for the excellent performance in both academic and extra-curricular activities.

GCE Advanced Level Examinations 2010 – **Ranked Second** out of 40,000 students. Received **12 awards** and **6 scholarships** including a prestigious **Presidential award**.

EXPERIENCE

TEACHING

Department of Civil Engineering, University of Moratuwa, Sri Lanka Aug 2020 – Present
Lecturer in Civil Engineering for the degree **Bachelor of Science in Engineering (B.Sc.Eng)** – Course curriculum design, Lecture note preparation, Labwork management and assessment for modules Structural Mechanics 1, Mechanics of Materials, Design of Steel Structures (Second year); Structural Analysis 2 (Third year); Computational Mechanics (Fourth year), Research projects/dissertations (BSc, MSc, MPhil, PhD) co-supervision

Department of Engineering, University of Cambridge, UK *Oct 2016 – Jun 2020*
Undergraduate Supervision – One-to-one supervision for module Structural analysis and stability
Coursework Support and Demonstrating – Leading lab sessions for variety of modules: Structural analysis and stability; Finite element method; Mechanics of solids; Dynamics in civil engineering

RESEARCH

Department of Engineering, University of Cambridge, UK *Oct 2016 – Jun 2020*
Doctoral Candidate – PhD in Computational Structural Mechanics: Thesis title ‘*Multiscale modelling of woven and knitted fabric membranes*’

Peer Reviewer – Peer reviewer for Journal Engineering and Computational mechanics (ISSN 1755-0777), Institute of Civil Engineers, UK

EMPA, Dubendorf, Switzerland *Apr 2016 – Sep 2016*

Research Assistant – Robust implementation of a MATLAB-ANSYS coupled nonlinear stochastic optimisation scheme for material optimisation using acoustic data

INDUSTRY

Structural Engineer of the structural assessment and renovation works of the landslide-damaged two-storey building at the Kalubovitiyana Maha Vidyalaya, Sri Lanka *Apr 2021*

Research Engineer of the BarChip based Fibre reinforced concrete for civil engineering applications in Sri Lanka. A collaborative project with Mitsui and Company Ltd., Sri Lanka *Mar 2021*

Structural Engineer of the structural fitness assessment of the cricket Pavilion at St. Thomas’ College – Mount Lavinia, Sri Lanka *Dec 2020*

Structural Engineer of the structural fitness assessments of the existing structures for pump and motor replacements at the Ambathale Water Treatment Plant, Sri Lanka *Nov 2020*

Structural Engineer of developing guidelines for interlocking masonry arches and retaining walls in collaboration with International Construction Consortium (ICC), Sri Lanka *Nov 2020*

Member of the investigation team on observed Tile popping in the ground floor of the Parliament Complex, Sri Lanka *Sep 2020*

Consulting Engineer of the investigation team on the Cracks in Columns at the movement joint of Manning Market Relocation project, Peliyagoda Sri Lanka *Sep 2020*

Veracity AI, Colombo, Sri Lanka *Jan 2020 – July 2020*

External Consultant – Civil Engineering Consultant of implementing an automated Point-cloud monitoring system of construction processes

Peter und Lochner Engineering, Stuttgart, Germany *Oct 2014 – Apr 2015*

Junior design engineer – Designed steel support structures of a cement silo in Malaysia

Pixelz, University of Moratuwa, Sri Lanka *Jan 2013 – Dec 2013*

Finance Director – Overseeing the financial status of Pixelz, a student-led company under the module Entrepreneurial leadership. Co-authored a book entitled ‘*Fundamentals of Engineering studies*’.

MAS intimates – Unichela, Panadura, Sri Lanka *Oct 2012 – Dec 2012*

Management Accountant Intern – Reported to the financial controller on tasks related to cost controlling, monitoring and auditing

TECHNICAL STRENGTHS

Programming – Python, MATLAB, Mathematica

Machine learning – Scikit-learn, Pytorch, Gaussian Processes

Finite Element Solvers – ABAQUS, ANSYS, SAP2000

KEY PUBLICATIONS

- Herath, S.**, and Haputhanthri, U. Topologically optimal design and failure prediction using conditional generative adversarial networks. *International Journal for Numerical Methods in Engineering*, pages 1–21, (2021).
- Herath S.**, and Yin, G. On the analytical formulations of finite deformable isogeometric beams. *Computational Mechanics* 67, 1705–1717 (2021).
- Herath S.**, and Haputhanthri, U. Nonlinear Multiscale Modelling and Design using Gaussian Processes. *Journal of Applied and Computational Mechanics*, 1-10 (2021).
- Herath, S.**, Xiao, X. and Cirak, F.. Computational modelling and data-driven homogenisation of knitted membranes. *arXiv preprint arXiv:2107.05707*, (2021).
- Jayasekara, M., **Herath, S.**, Gowrikanthan, N., and Mallikarachchi, C. Size effect and fibre arrangement on meso-mechanical modelling of woven fibre composites. In *Moratuwa Engineering Research Conference (MERCon)*, pages 124–129, (2021), **Best Paper Award**.
- Herath, S.**, Multiscale modelling of woven and knitted fabric membranes. *PhD thesis, University of Cambridge*, Jun 2020.
- Herath, S.**, Udith Haputhanthri, and Chinthaka Mallikarachchi. Initial design of trusses using topology optimization in a deep learning environment. In *2020 From Innovation to Impact (FITI)*, volume 1, pages 1–6, 2020.
- Herath, S.**, Nonlinear material modeling and design using statistical learning. In *Proceedings of SSES Annual Sessions 2020*, pages 66–73, 2020.
- Herath S.**, and Jayasekara, M., and Mallikarachchi, Y. C. Parametric Study on the Homogenized Response of Woven Carbon Fibre Composites. *Proceedings of the Multidisciplinary Engineering Research Conference 2020, University of Moratuwa*. **Best paper award**
- S. Casanova, J. Henry de Frahan, V. Guimaraes Goecks, **Herath, S.**, M. Herreras Martinez, N. Jamieson, T. Jones, S.W. Kang, S. Katz, G. Li, D. O’Sullivan, D. Pastor, N. Shar-iffrazi, B. Sinkovec, J.D. Sparta, and M. Vernacchia. Enabling deep space exploration with an in-space propellant depot supplied from lunar ice. In *AIAA SPACE and Astronautics Forum and Exposition, SPACE 2017*, number 203999, 2017, **Participant at the Caltech Space Challenge 2017 organised by Caltech and NASA JPL**

EXTRA-CURRICULAR ACTIVITIES

- National Secretary** IAESTE (International Association for the Exchange of Students for Technical Experience) Sri Lanka. *2021 – Present*
- Mentoring** Sri Lankan undergraduates on foreign jobs & higher studies opportunities *2018 – Present*
- Level 10** Google local guide. Keen traveller. *2014 – Present*
- First team player** for Little Shelford Cricket Club and Trinity Hall Cricket Club *2017 – 2020*
- Structures group student committee** – Coordinating social activities *2017 – 2018*
- President** IAESTE Sri Lanka local committee *2015 – 2016*
- Rotaract Club, University of Moratuwa** *2012 – 2015*
- Vice President** (2014/15), **Director** (2013/14), **Assi. Treasurer** (2012/13)
- Chaired** 4 main projects including the **Careers fair of the University of Moratuwa**.
- Actively participated in 10+ **community service** projects. Received **7 awards**.
- Student representative** of Civil Engineering Department *2013 – 2014*