Tanvir Mahmud Saurav

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Education

The University of New South Wales — Canberra, Australia
Ph.D. in Mathematics & Statistics — 2026 *(expected)*
- Advisors: Dr. Duncan Sutherland & Prof. Jason Sharples
- Research area: Computational fluid dynamics, Large–eddy simulation, Bushfire

The University of Melbourne — Melbourne, Australia
M.Phil. in Mechanical Engineering — 2021
- Advisors: Dr. Daniel Chung & Prof. Nicholas Hutchins
- Grade: 91/100, H1 *(Outstanding First Class Honours)*
- Research area: Turbulence, Computational fluid dynamics, Heat transfer

Temple University — Philadelphia, USA
B.S. in Mechanical Engineering, magna cum laude — 2018
- GPA: 3.72/4.00 *(Dean's List)*

Research

Computational modelling of ember storms at the wildland-urban interface
Ph.D. Dissertation

Effect of solidity on momentum and heat transfer of rough-wall turbulent flows
M.Phil. Thesis

Experience

The University of New South Wales | Canberra, Australia — 2022 - Present
- Develop a computational model of ember storm at the wildland-urban interface
- Perform large eddy simulation (LES) on high-performance computing clusters
- Investigate the effects of weather and building parameters on ember storms

The University of Melbourne | Melbourne, Australia — 2018 - 2020
- Developed roughness models using volume-of-fluid (VOF) method
- Perform direct numerical simulation (DNS) on high-performance computing clusters
- Investigated the effect of surface roughness on heat transfer in fluid flows

Temple University | Philadelphia, USA — 2015 - 2017
- Prepared multiferroic samples for data collection
- Maintained VSM and strain measurement systems
- Compiled and analysed magnetostriction data

Teaching

Computational Problem Solving – ZPEM1307 | UNSW
Engineering Mathematics 1A – ZPEM1303 | UNSW
Engineering Mathematics 1B – ZPEM1304 | UNSW
Engineering Mathematics 2A – ZPEM2309 | UNSW
Physics 1A – ZPEM1501 | UNSW
Math and Physics Student Support | Learning & Teaching Group, UNSW
Introduction to Engineering – ENGR1101 | Temple University

Publications

1. M Rajamuni, **T Saurav**, D Sutherland, J Sharples. Canopy edge effects on ember storm dynamics. *24th Australasian Fluid Mechanics Conference - AFMC2024*, 2024.
2. WA Rowin, K Zhong, **T Saurav**, T Jelly, N Hutchins, D Chung. Modelling the effect of roughness density on turbulent forced convection. *Journal of Fluid Mechanics* , 2024.
3. **TM Saurav**, D Sutherland, J Sharples. A computational framework for phenomenological modelling of ember storms at the wildland-urban interface. *25th International Congress on Modelling and Simulation - MODSIM2023*, 2023.
4. K Zhong, W Rowin, **T Saurav**, T Jelly, N Hutchins, D Chung. The influence of frontal solidity on fully rough heat transfer modeled through an exposed and sheltered flow dichotomy. *75th Annual Meeting of the Division of Fluid Dynamics*, 2022.
5. WA Rowin, **TM Saurav**, TO Jelly, N Hutchins, D Chung. Turbulent forced convection over roughness with different heights and densities. *12th Australasian Heat and Mass Transfer Conference - 12AHMTC*, 2022.
6. **TM Saurav**. Effect of solidity on momentum and heat transfer of rough-wall turbulent flows. *M.Phil. Thesis, The University of Melbourne*, 2020.
7. **TM Saurav**, ML Forst, JA Boligitz, HD Chopra. Contracting non-Joulian magnets. *Physical Review B*, 2017.

Awards and Honors

- **Australian HPC-AI Talent Program Scholarship**, NCI 2023
- **Best Student Speaker**, MODSIM2023, MSSANZ 2023
- **University International Postgraduate Award**, UNSW 2022
- **Melbourne Research Scholarship**, The University of Melbourne. 2018
- **Presidential Scholarship**, Temple University 2014
- **Honors Merit Scholarship**, Temple University 2014

Skills

C/C++, Fortran, Python, MATLAB, Linux, LaTeX, Nek5000, Gmsh, Git, 2D/3D CAD, HPC, Google Earth Engine.