Name: Dr. Mirza Rayana Sanzana
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Profile:

I am a dedicated interdisciplinary researcher bridging Computer Science and Civil Engineering, specializing in AI-driven solutions for sustainable energy, resilient urban systems, and intelligent health monitoring. My doctoral research focused on optimizing Thermal Energy Storage Air Conditioning (TES-AC) systems using Machine Learning to improve energy efficiency in commercial buildings, critical for tropical climates facing global warming.

With a strong foundation in Software Engineering and Computer Science, my research interests span renewable energy integration, autonomous vehicle security, AI for climate change mitigation, and multi-agent systems. I also explore AI applications in deep learning, real-time forecasting, smart cities, and digital twin technology.

I am committed to advancing AI-driven solutions that address global challenges such as climate resilience, energy transition, and public health. Currently, I am preparing a Marie Skłodowska-Curie Actions proposal and pursuing a European Research Council (ERC) Starting Grant. As a global ambassador for Women Tech Network, I advocate for inclusive AI and sustainable innovation.

Education

Degrees Earned

- PhD in Civil Engineering & Computer Science, University of Nottingham (2019–2023)

    - Research Focus: Applied machine learning for optimizing thermal energy storage air-conditioning (TES-AC)systems in commercial buildings.
    - Navigated challenges of remote collaboration and adapted research methods during the COVID-19 pandemic.

- MSc in Computer Science, University of Nottingham (2018–2019)

    - Research Focus: Evaluated virtual reality (VR) as a pedagogical tool for interactive learning.

- BSc in Software Engineering, University of Nottingham (2015–2018)

- Final-Year Project: Developed a GPS-tracking blood donation app to improve emergency medical response.

Research and Teaching Experience

Lecturer, Research and Teaching, Monash University Malaysia (2025–Present)

- Participating in interdisciplinary research applying Artificial Intelligence (AI) across disciplines, and innovating teaching and learning methods.
- Delivering education to undergraduate students.

Postdoctoral Researcher (Independent, 2023–Present)

- Leading interdisciplinary research on AI for misinformation detection, smart cities, and climate resilience.
- Developing machine learning models for early breast cancer detection as part of the ACROBAT Challenge.
- Collaborating with researchers on autonomous vehicle security and AI-driven decision-making.

Graduate Research & Teaching Assistant, University of Nottingham Malaysia (2019–2023)

- Researched AI-driven optimization of energy efficiency in commercial buildings.
- Designed gamified virtual labs for STEM education, integrating AI into higher education.
- Mentored undergraduate and postgraduate students in machine learning, AI, and computer science.

Teaching Assistant, University of Nottingham Malaysia (2019–2022)

- Supported Software Engineering and Civil Engineering modules.
- Assisted in developing virtual labs for chemistry and biology experiments to enhance interactive learning.

Key Research Interests

- Transparent and Green Artificial Intelligence
- Thermal Energy Storage and Renewable Energy System
- Autonomous Vehicle Security & V2X Communication
- AI for Sustainable and Resilient Cities
- AI in Higher Education & Gamified Learning

Potential Referees

1. Prof. Tomas Maul- Co Supervisor and Pastoral care giver
   Professor, University of Nottingham Malaysia (Computer Science)
   Email: Tomas.Maul@nottingham.edu.my
2. Dr. Jing Ying Wong-Main Supervisor
   Associate Professor, University of Nottingham Malaysia (Civil Engineering)
   Email: JingYing.Wong@nottingham.edu.my
3. Dr. Iman Yi Liao- Taught Undergraduate and Postgraduate modules and co-researcher
   Associate Professor, University of Nottingham Malaysia (Computer Science)
   Email: Iman.Liao@nottingham.edu.my
4. Dr. Chun-Chieh Yip- Co Supervisor
   Head of Department, University Tunku Abdul Rahman (Civil Engineering)
   Email: yipcc@utar.edu.my

Selected Publications

- Charging Water Load Prediction for a Thermal-Energy-Storage Air-Conditioner (*Journal of Building Engineering*, Elsevier) - DOI
- Effects of External Weather on the Water Consumption of Thermal-Energy-Storage AC (*Energy Nexus*, Elsevier) - DOI
- Application of deep learning in facility management and maintenance for heating, ventilation, and air conditioning (*Automation in Construction*, Elsevier) - DOI
- Chapter 6: The Potential of Deep Learning in Dynamic Maintenance Scheduling for Thermal Energy Storage Chiller Plants, *Book: Interpretable Machine Learning for the Analysis, Design, Assessment, and Informed Decision Making for Civil Infrastructure*- DOI

Grants and Recognitions

- SEPRS Full Scholarship for PhD (2019-2023)
- WomenTech Global Awards – Second Place IT Graduate of the Year (2022)
- AWS AI & ML Advanced Program Scholarship (2023)