

Jeshaiah Khor Zhen Syuen

Engineering Research & Development

[\(+60\)17-5999-883](tel:+60175999883) | jeshaiahkhor@gmail.com | [linkedin.com/in/jeshaiahkhor/](https://www.linkedin.com/in/jeshaiahkhor/) | jeshaiahkhor.github.io

QUALIFICATIONS SUMMARY

- **Youngest PhD graduate of Monash University Malaysia** with 5+ years of experience in the development of novel medical devices, as well as substantial experience in the field of mobile and articulated robotics. Experienced in the mechanical, electronic, and software design, development, integration, and validation of innovative technologies, with a strong focus on holistic, user-centred design. Practical experience spanning all phases of the project development cycle.
- **Substantial technical skills** in prototype design, development, and testing, 3D CAD design and printing, Python and MATLAB coding for big data analytics, and digital/analog electronic circuit design. Proven success in prototyping, developing, and validating a novel wearable insole device for balance enhancement.
- **Effective team player and independent operator**, fast, passionate, and naturally curious life-long learner, and creative problem-solver. Demonstrated strengths in cross-functional teamwork, public speaking, and reporting/presenting technical content to industrial, academic, and general audiences.

EDUCATION

PhD in Biomedical Engineering – *Monash University*

Aug 2017 – Mar 2023

- Thesis title: Quantifying the effects of mechanical noise bandwidth on postural control in a noise-based insole.

B. Eng. (Hons) in Mechatronics Engineering (H2A) – *Monash University*

Mar 2013 – Mar 2017

- CGPA: 3.612 | GPA: 3.125

RESEARCH EXPERIENCE

Graduate Student Researcher – *Monash University Malaysia*

Aug 2017 – Mar 2023

- Executed a multi-year cross-functional research project conceptualizing, designing, building, and validating a novel prototype noise-based vibrating insole for balance improvement, contributing to advancements in wearable assistive devices as demonstrated by a 4-18% improvement in balance during human experimental trials.
- Executed randomized controlled human trials and utilized big data analytics to assess the insole's effects on biomechanical postural sway dynamics and lower limb muscle activation patterns during quiet standing, resulting in novel discoveries into the relationship between mechanical noise and postural control during balance.
- Published research findings in a reputable journal (*Scientific Reports*) and presented to academic, industrial, and general audiences at multiple academic conferences.

Research Assistant – *Malaysian Textile and Apparel Centre (MATAC)*

Jun 2017 – Aug 2017

- Authored a comprehensive Industry 4.0 handbook for textile manufacturers, leading to enhanced automation practices, as reflected by adoption rates and stakeholder feedback.
- Collaborated with industry stakeholders to identify key areas for automation, contributing to the strategic adoption of new technologies, as measured by successful implementation in participating companies.

Research Assistant (Engineering) – *Monash University Malaysia*

Dec 2016 – Mar 2024

- Led or otherwise contributed to research efforts on a variety of projects, listed in reverse order below.
- **Mobile Robot Design** (Jan 2024 - Mar 2024): Independently designed, fabricated, and tested a mobile client-server robot for IoT teaching purposes, leading to an improved product outperforming the commercially produced robot it replaced, as measured by successful integration into an engineering undergraduate course.
- **Vascular Anastomosis Device** (Aug 2022 – Nov 2022): Developed, prototyped, and tested a proof-of-concept 3D-printed medical implant for vessel-graft coupling in vascular anastomosis, advancing medical device innovation.
- **Bio-Energy Coffee Physiological Effects** (Sep 2021 – Sep 2022): Led the design, execution, and comprehensive data analysis of a phase of a cross-functional research project assessing a coffee additive's physiological impact during strenuous exercise, resulting in actionable insights for the sponsoring industry.
- **Automation of Textile Manufacturing for Industry 4.0** (May 2017 – Jul 2017): Contributed to the development of a nationwide industrial handbook that guided Malaysian textile manufacturers in adopting Industry 4.0 standards, thereby modernizing and optimizing manufacturing processes, which helped improve industry efficiency.
- **Quadcopter Soft Robotics Gripper** (Dec 2016 - Jan 2017): Assisted in the design and development of a soft gripper for quadcopter applications, focusing on enhancing its ability to securely handle irregularly shaped objects, opening new possible applications for quadcopter gripping systems.

Project Intern (Robotics) – *ABB Malaysia Sdn. Bhd.*

Nov 2015 – Feb 2016

- Assisted in designing robotic automation solutions in ABB RobotStudio addressing various industries' needs.
- Supported client decision-making on multiple successful projects by developing and presenting simulations for feasibility analysis and line flow rate approximations of proposed automation systems.

KEY SKILLS

Hardware:

- 3D CAD modelling (SolidWorks, AutoCAD) and printing
- Prototype design & development
- Electronic circuit design & testing (LTspice)

Software:

- Programming (Python, MATLAB, Git)
- Analog/digital signal processing
- Big data analytics

Soft:

- Academic, technical writing; general science communication
- Cross-functional teamwork
- Public speaking & presentations
- Relationship management

TEACHING EXPERIENCE

Sessional Teaching Staff (Engineering) – Monash University Malaysia

Mar 2020 – Dec 2024

- Communicated complex technical concepts (including systems engineering, PLC programming, MATLAB, robotics, thermodynamics, manufacturing processes, and more) to students from a diverse range of backgrounds in seven undergraduate engineering courses, resulting in consistently high (>90%) student satisfaction scores.
- Engaged and motivated students by effectively selling the practical significance and real-world applications of the material, learning how to make diverse audiences care about the relevance and real-life impact of the content.
- Managed relationships up, down, and across by collaborating with unit coordinators and lead lecturers on course direction, guiding students to meet learning objectives, and coordinating with other teaching staff and laboratory technicians to ensure smooth execution of teaching and lab sessions.
- Prepared and managed teaching materials on course management systems (Moodle), maintaining teaching documentation and ensuring efficient teacher/student access to learning resources, contributing to improved learning outcomes and streamlined information sharing.

Adjunct Lecturer (Physics) – UCSI College

Jan 2024 – Jun 2024

- Developed and delivered comprehensive physics syllabi aligned with UK and Australian standards, organizing complex concepts into structured learning modules to enhance student understanding & application of physics principles.
- Designed and implemented assessment rubrics to provide clear evaluation frameworks, ensuring accurate and objective assessment of student performance, which contributed to marked improvements in student outcomes.
- Analysed student performance and feedback to refine teaching methodologies, consistently adjusting course content to improve engagement and learning outcomes.

PUBLICATIONS

Journal:

- (Under submission: Journal of NeuroEngineering and Rehabilitation): **Khor, J. Z. S.**, Lan, B. L. & Gopalai, A. A. (2025). Motor Control Enhancements by Sub-Threshold Mechanical Noise Applied to Foot Soles During Quiet Standing.
- **Khor, J. Z. S.**, Gopalai, A. A., Lan, B. L., Gouwanda, D., & Ahmad, S. A. (2021). The effects of mechanical noise bandwidth on balance across flat and compliant surfaces. *Scientific Reports*, 11(1). <https://doi.org/10.1038/s41598-021-91422-w>

Conference Proceedings:

- **Khor, J. Z. S.**, Gopalai, A. A., Lan, B. L., Ahmad, S. A., & Gouwanda, D. (2022). Mechanical Noise Affects Rambling and Trembling Trajectories During Quiet Standing. *2022 IEEE-EMBS Conference on Biomedical Engineering and Sciences (IECBES)*, 252–257. <https://doi.org/10.1109/iecbes54088.2022.10079555>