Jeshaiah Khor Zhen Syuen

Engineering Research & Development

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QUALIFICATIONS SUMMARY

- **Youngest PhD graduate** of Monash University Malaysia with 5+ years of R&D experience in **medical devices** and **robotics**. Skilled in mechatronics design, development, and validation, with a strong focus on user-centered, data-driven, iterative engineering.
- **Technically proficient** in systems engineering & integration, Python & MATLAB programming, CI/CD via GitHub, prototype development & testing, and electronic circuit design. Experienced in full-cycle product development.
- **A proactive team player and independent contributor** with strong problem-solving, cross-functional collaboration, and technical communication skills for 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**
- Spearheaded a five-year cross-functional research project to conceptualize, develop, and validate a novel vibrating insole prototype for balance enhancement, resulting in a 4-18% improvement to balance in human trials.
- Conducted experimental human trials and utilized big data analytics (via Python/MATLAB) to assess the insole's effects on balance dynamics and lower limb muscle activation patterns, demonstrating its positive effects on muscle efficiency leading to improved balance.
- Published research findings in a reputable scientific 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, developed, and tested a Python-based client-server mobile robot running on Raspbian & open-sourced on GitHub, reducing path deviation by 50% compared to the existing commercial robot it replaced.
- **Vascular Anastomosis Device** (Aug 2022 – Nov 2022): Designed, prototyped, and tested a proof-of-concept 3D-printed medical implant for heart surgery using SolidWorks, developing a device with the potential to minimize surgical trauma and accelerate patient recovery.
- **Bio-Energy Coffee Physiological Effects** (Sep 2021 – Sep 2022): Led the design, execution, and comprehensive data analysis of a phase of a cross-functional study investigating the effect of a coffee additive on resting and exercise heart rates, providing valuable pilot data on potential health benefits for the sponsoring industry.
- **Automation of Textile Manufacturing for Industry 4.0** (May 2017 – Jul 2017): A primary contributor to a national industrial handbook to modernize/optimize the manufacturing processes of textile producers, reducing their reliance on manual labour and associated overhead costs.
- **Quadcopter Soft Robotics Gripper** (Dec 2016 - Jan 2017): Assisted in the design and development of a soft gripper for irregularly shaped objects in quadcopter lifting operations, increasing the variety of carriable objects.

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

Technical:
- 3D modelling (SolidWorks, AutoCAD), design, & printing
- Data analytics & interpretation
- Electronics system design (LTspice) & testing
- Programming: Python, MATLAB, Git
- Prototype design, development & testing
- Systems engineering & integration

Soft:
- Cross-functional teamwork
- Public speaking & presentations
- Project planning & management
- Relationship management
- Technical writing; general science communication to public/layman audiences

TEACHING EXPERIENCE

Sessional Teaching Staff (Engineering) – *Monash University Malaysia*   **Mar 2020 – Dec 2024**
- Effectively communicated advanced technical concepts ranging from systems engineering, PLC programming, MATLAB, robotics, thermodynamics, and manufacturing processes to diverse audiences across seven undergraduate courses, achieving consistently high (>90%) student satisfaction scores.
- Persuaded and engaged learners by clearly articulating the practical significance and real-world impact of course material, ensuring that diverse audiences recognized its relevance.
- Managed relationships up, down, and sideways, collaborating with unit coordinators, lead lecturers, and support staff to align course direction, guide student learning, and facilitate smooth execution of teaching sessions.
- Optimized resource management by developing and maintaining teaching materials on resource management systems (Moodle), streamlining information sharing and improving learning outcomes.

Adjunct Lecturer (Physics) – *UCSI College*   **Jan 2024 – Jun 2024**
- Developed and delivered robust syllabi in accordance with UK and Australian standards, organizing complex concepts into structured learning modules that enhanced student understanding and practical application.
- Designed and implemented rigorous assessment rubrics that provided clear evaluation frameworks, driving marked improvements in student performance of up to 40 percentage points within a semester.
- Refined teaching methodologies through data-driven analysis of student performance and feedback, continuously enhancing engagement and overall learning outcomes.

PUBLICATIONS

Journal:
- (Under revision: 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