Muhammad Nur Shahril Iskandar

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Education

Nanyang Technological University (NTU) — Singapore
Department: Physical Education and Sports Science Academic Group — Apr 2020 - Jun 2023
- B.S., Sport Science and Management with Honours (Highest Distinction)

Republic Polytechnic (RP) — Singapore
Department: School of Sports, Health and Leisure — Apr 2014 - Apr 2017
- Diploma in Sports and Exercise Sciences with Merit

Research Experience

Research Assistant, Nanyang Technological University
Sports Biomechanics Lab | Principal Investigators: Phillis Teng, PhD & Swarup Mukherjee, PhD — Aug 2023 - Present
- Assisting in a project titled, "Screening and Biomechanical Risk Factors for Early Knee Osteoarthritis".
- The project aims to develop a novel screening method to identify biomechanical markers for recreational runners identified to be at risk of early knee osteoarthritis, by utilizing various equipment such as foot pressure mapping, ultrasound, tensiomyography, DEXA and markerless motion capture.

Research Intern, Agency for Science, Technology and Research, Bioinformatics Institute
Biophysical Modelling Lab | Principal Investigator: Chiam Keng Hwee, PhD — Jan 2023 - Jun 2023
- Contributed to a project on data-driven gait rehabilitation of lower limb amputees.
- Implemented generative AI (Stable Diffusion) to enhance existing open-source pose estimation algorithm (OpenPose & DeepLabCut) in identifying lower limb amputee's anatomical landmarks for the purpose of gait analysis [P1].

Undergraduate Research Assistant, Nanyang Technological University
Sports Biomechanics Lab | Principal Investigator: Kong Pui Wah, PhD — Apr 2022 - May 2023
- Contributed to a project analyzing the biomechanical effects of exoskeletal in military personnel.
- Coordinated synchronized gait data collections using VICON on Bertec split-belt instrumented treadmill, Delsys EMG system and loadsol® sensors.
- Wrote MATLAB and Python scripts to extract data and conduct data analysis of ground reaction forces using statistical parametric mapping (SPM) Python package, spm1d.
- Presented findings at an academic conference [CP3], co-authored a journal article [J2,] and in preparation for another manuscript [P3].

Honors Thesis (Grade: A+), Nanyang Technological University
Sports Biomechanics Lab | Principal Investigators: John Cher Chay Tan, PhD & Sofyan Sahrom, PhD — Apr 2022 - Nov 2022
- Collaborated with National Youth Sports Institute and Singapore Weightlifting Federation.
- Led the application of research ethics and designed the study protocol of evaluating the validity of a velocity-based training device in weightlifting exercises using VICON 3D motion capture cameras [P2].
- Wrote a MATLAB script to efficiently extract data from c3d files to perform Bland-Altman analysis [].
- Awarded Best Poster Presentation award at the 11^{th} Lau Teng Chuan Physical Education & Sports Science Symposium.

Undergraduate Research Programme (URECA), Nanyang Technological University
Sports Biomechanics Lab | Principal Investigator: Kong Pui Wah, PhD — Aug 2021 - Aug 2022
- Contributed to the development of a video-based analysis model for assessing treadmill running biomechanics.
- Facilitated over 40 participants' recruitment and utilized Kinovea to analyze running kinematics.
- Presented findings at 2 academic conferences [CP1, CP2] and published 2 journal articles [J1, J3].
- Conferred the title "NTU President Research Scholar" for completing the programme with Distinction.

Undergraduate Research Assistant, Nanyang Technological University
Human Bioenergetics Lab | Principal Investigator: Yang Yifan, PhD — Sep 2020 - Mar 2021
- Contributed to the project assessing the dose-response of leucine on muscle maintenance during weight loss.
- Independently recruited over 20 participants and coordinated weekly anthropometric measurements.
- Verified accuracy of participant's data entry for daily physical activity, sleep, and dietary intake log.

Final-Year Thesis (Grade: A), Republic Polytechnic
Biomechanics Lab | Principal Investigators: Shigetada Kudo, PhD & Alexander Ong, PhD — Apr 2016 - Oct 2016
- Collaborated with Singapore Sports Institute and Singapore Swimming Association.
- Performed 2D kinematic analysis on springboard diving using Kinovea.

Publications

* indicates corresponding author

Peer-reviewed Journal Articles

[J3] **Iskandar, M. N. S.**, Loh, R. B. C., Ho, M. Y. M., Pan, J. W. & Kong, P. W.* (2023). Crossover Gait in Running and Measuring Foot Inversion Angle at Initial Foot Strike: A Front-View Video Analysis Approach. *Frontiers in Bioengineering and Biotechnology*. 11, 1210049. doi: https://doi.org/10.3389/fbioe.2023.1210049

[J2] Kong, P. W.*, **Iskandar, M. N. S.**, Koh, A. H., Ho, M. Y. M., & Lim, C. X. E. (2023). Validation of In-Shoe Force Sensors During Loaded Walking In Military Personnel. *Sensors*. 23(14), 6465. doi: https://doi.org/10.3390/s23146465

[J1] Pan, J. W., Ho, M. Y. M., Loh, R. B. C., **Iskandar, M. N. S.**, & Kong, P. W.* (2023). Foot Morphology and Running Gait Pattern between the Left and Right Limbs in Recreational Runners. *Physical Activity and Health*, 7(1), 43–52. doi: https://doi.org/10.5334/paah.226

Peer-reviewed Conference Proceeding

[C1] **Iskandar, M. N. S.**, Loh, R. B. C., Ho, M. Y. M., Pan, J. W., & Kong, P. W.* (2022). Comparison of Rearfoot Inversion Angle at Initial Footstrike Measured From Front And Back View Videos. *Proceedings of the 40th International Society of Biomechanics in Sports*, 40(1), 291.

In Progress

[P3] Kong, P. W.*, Koh, A. H., Ho, M. Y. M., **Iskandar, M. N. S.** & Lim, C. X. E. (In preparation). Effectiveness of A Passive Military Exoskeleton in Offloading Weight during Static and Dynamic Load Carriage: A Randomised Cross-Over Study.

[P2] **Iskandar, M. N. S.***, Tan, J. C. C., Wong, H., Low, A., & Sahrom, S. B. (Submitted). Criterion Validity of The FLEX Device Measuring Barbell Velocity in Weightlifting Exercises Across the Load-Velocity Profile.

[P1] Zhou, T., **Iskandar, M. N. S.**, & Chiam, K. H.* (Submitted). Diffusion Models Enable Zero-Shot Pose Estimation for Lower-Limb Prosthetic Users.

Conference Oral Presentations

[CP3] Validation of the loadsol® in-shoe force sensors during walking in military boots under heavy load carriage, *9th Asian Society of Sports Biomechanics (ASSB) Conference*, Bangkok, Thailand, August 2023

[CP2] Two-Dimensional Video Analysis of the Rearfoot Inversion Angle at Initial Footstrike in Treadmill Running, *10th International Conference of Undergraduate Research (ICUR)*, Virtual presentation, September 2022

[CP1] Comparison of Rearfoot Inversion Angle at Initial Footstrike Measured From Front And Back View Videos, *40th International Society of Biomechanics in Sports (ISBS) Conference*, Liverpool, United Kingdom, July 2022

Professional Membership

Student Member - International Society of Biomechanics in Sports

Community Service

Yayasan MENDAKI PSLE Math Tutor 2020
Mentored 2 minority primary students weekly in mathematics for their Primary School Leaving Examination (PSLE).

Awards

Anugerah Cemerlang MENDAKI Award 2023
Awarded by Yayasan MENDAKI to undergraduate Malay students for graduating with first-class honors/highest distinction.

Internship Commendation Award 2023
Awarded by NTU to the top 15% of the cohort for excellent work performed during the undergraduate internship.

Best Thesis Oral Presentation Award 2022
Awarded by NTU at the 11th Lau Teng Chuan Physical Education & Sports Science Symposium.

ISBS Student Travel Grant 2022
Awarded by ISBS to attend the 40th ISBS Conference.

Skills

Programming: Python, MATLAB, R, Excel VBA, HTML/CSS, Raspberry Pi
Software: SPSS, JASP, OpenSim, Visual3D
Languages: English (Native), Malay