

Yonatan Hutabarat

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Summary

Having focused on a subtopic in biomedical engineering that is related to biomechanics, gait analysis, wearable sensors, and machine learning algorithms during my MS and PhD, currently, I ventured out on a quest to understand the neuromechanics of unstructured movement under predatory threat in the context of Virtual Reality experiments.

Education

Tohoku University , Ph.D. in Biomedical Engineering Dissertation: Multimodal quantitative gait assessment using minimal wearable sensors	Japan 2022
Sirindhorn International Institute of Technology (SIIT), Thammasat University , M.S. in Engineering and Technology, GPA: 4.00/4.00 Thesis: Diverse studies within a multi-level controller framework of prosthetic knee	Thailand 2018
Universitas Gadjah Mada , B.E. in Engineering Physics, GPA: 3.55/4.00, <i>Cum Laude</i> Thesis: Hammerstein system identification for control valve stiction detection	Indonesia 2015

Work Experiences

The University of Bonn <i>Postdoctoral Fellow</i> , Topic: Decoding the structure of human movement under threat	Germany 08/2022 – now
Tohoku University <i>Research Assistant</i> , Topic: Wearable sensors and cognitive dual-task gait	Japan 10/2021 – 01/2022
National Electronics and Computer Technology Center (NECTEC) <i>Research Intern</i> , Topic: Learning algorithm for prosthetic control. <i>Research Assistant</i> , Topic: Patent review in computer vision for biomedical applications	Thailand 01/2018 – 06/2018 06/2016 – 09/2016

Teaching Experiences

Sirindhorn International Institute of Technology (SIIT), Thammasat University <i>Teaching Assistant (TA)</i> : Object Oriented Programming, 01/2018 – 05/2018, Feedback Control Lab., 01/2017 – 05/2017 & 01/2018 – 05/2018, Basic Electrical Engineering, 01/2016 – 12/2017	Thailand 2016 - 2018
Universitas Gadjah Mada <i>Teaching Assistant (TA)</i> : Embedded System Lab., 08/2015 – 12/2015, Analog Electronics Lab., 08/2013 – 12/2013, Engineering Drawing, 08/2013 – 12/2013	Indonesia 2013 - 2015

Honors, Grants, Awards

MEXT Scholarship (approx. JPY 7,000,000) <i>Minister of Education, Culture, Sports, Science and Technology, Government of Japan, Oct 2018</i> Full scholarship for pursuing the Ph.D. Degree in the field of Biomedical Engineering under one of the International Priority Graduate Program (PGP), the Data Sciences Program (DSP) II.	
Student Travel Grant Award (THB 7,500) <i>Electronics, Computer, Telecommunications, and Information (ECTI) Association, Thailand, Jul 2017</i> Student travel grant given to attend SICE Annual Conference 2017 at Kanazawa, Japan.	
National Research University (NRU) Research Grant (THB 20,000) <i>Office of the Higher Education Commission and Thammasat University, Thailand, Jan 2017</i> Research grant was given for a research project under the Centre of Excellence on Biomedical Engineering, SIIT.	
Smart Mobility Project Travel Grant (JPY 100,000, split equally with two other colleagues) <i>Shin-Kawasaki Frontier Research & Education Collaborative Square, Keio University, Japan, Nov 2016</i> Travel grant for academic exchange given to visit Smart Mobility Lab., Keio University, Japan.	

Excellent Foreign Student (EFS) Scholarship (approx. THB 480,000)
Sirindhorn International Institute of Technology, Thammasat University, Thailand, Dec 2015
Full Scholarship for pursuing the M.S. degree at SIIT, Thammasat University.

Cum Laude Graduate, *Universitas Gadjah Mada, Aug 2015*

Publications

Journal Articles

Y. Guo, Y. Hutabarat, D. Owaki, M. Hayashibe, "Speed-Variable Gait Phase Estimation During Ambulation via Temporal Convolutional Network," **IEEE Sensors Journal**, Dec 2023.

S. Sakamoto, Y. Hutabarat, D. Owaki, M. Hayashibe, "Ground Reaction Force and Moment Estimation through EMG Sensing Using LSTM Network during Posture Coordination," **Cyborg and Bionics System**, Feb 2023.

Y. Hutabarat*, K. Ekkachai, M. Hayashibe, and W. Kongprawechnon, "Reinforcement Q-Learning Control with Reward Shaping Function for Swing Phase Control in a Semi-Active Prosthetic Knee," **Front. Neurobot.**, Aug 2020.

Y. Hutabarat*, D. Owaki, and M. Hayashibe, "Quantitative Gait Assessment with Feature-Rich Diversity Using Two IMU Sensors," **IEEE Trans. Med. Robot. Bionics**, Aug 2020.

Review Articles

Y. Hutabarat*, D. Owaki, and M. Hayashibe, "Recent Advances in Quantitative Gait Analysis using Wearable Sensors: A Review," **IEEE Sensors Journal**, Dec 2021.

Bold = lead author * = corresponding author

Talks & Academic Services

Conference talk

EMBC 2022 (Virtual/Glasgow, UK), also published under **Proceedings of IEEE**
EMBC 2021 (Virtual/Guadalajara, Mexico), also published under **Proceedings of IEEE**
ICICI-BME 2017 (Bandung, Indonesia), also published under **Proceedings of IEEE**
SICE 2017 (Kanazawa, Japan), also published under **Proceedings of IEEE**
ICST 2015 (Yogyakarta, Indonesia), also published under **AIP Conference Proceedings**

Poster talk

ESMAC 2023 (Athens, Greece), also published under a **special section of Gait & Posture, Elsevier**.

Lecture

BIGS Neuroscience Summer School 2023 (Bonn, Germany),
organizing a series of lectures and being in charge of the hands-on VR+MoCap experiences for graduate students as part of one of the lab visit programs to the Hertz Chair for AI and Neuroscience, Uni Bonn.

Outreach

University of Bonn Open House/ Dies Academicus 2023 (Bonn, Germany),
preparing and operating the VR+MoCap lab for the public to try out some of our 'escape from predator' scenarios.

Professional Membership

European Society of Biomechanics, European Society for Movement Analysis in Adults and Children.

Reviewer of Journal Articles

Nature Portfolio: Scientific Data

Elsevier: Expert System with Applications, Biomedical Signal Processing and Control

IEEE: IEEE Sensors Journal, IEEE Robotics and Automation Letter

Taylor & Francis: Computer Methods in Biomechanics and Biomedical Engineering

Frontiers: Frontiers in Digital Health, Frontiers in Sports and Active Living

Reviewer of International Conferences

IROS 2021, MED 2021, CoDIT 2019, CoDIT 2018

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