Juhyun Jung

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INTERESTS

Robotics, Bio-Inspired Robots, Deep Learning and Multimodality

EDUCATION

B.S. / *Mechanical Eng. (Minor: Artificial Intelligence, College of Computer Science)*
Illinois Institute of Technology | Chicago, IL   Expected graduation: Dec 2024
  Dean's list (4.0/4.0 GPA)

B.S. / *Mechanical Eng.*
Ajou University | Korea   Expected graduation: Dec 2024
  Dean's list (4.47/4.5 GPA) *Ranked 1st in class (1/170)*

RELEVANT COURSEWORK

Mechanical Eng.: Systems Analysis and Control, Design for Innovation, Computational Mechanics, Electrical Energy & Efficiency
CS: Intro to Machine Learning, Introduction to Artificial Int, Artificial Intelligence Language Understanding, Data Structures and Algorithms
Math: Multivariate & Vector Calculus, Intro to Diff Equations, Elementary Linear Algebra, Probability and Statistics, Intro to Mathematical Modeling

RESEARCH EXPERIENCE

Multiscale Bio-inspired Technology Laboratory (MOST Lab) / Ajou University | South Korea   Jan 2022 – June 2022
Advisor: Dr. Je-sung Koh
- Designed and developed a comprehensive experimental setup for advanced DEA research.
- Conducted extensive experiments manipulating key parameters such as frequency, electrode area, elastomer composition, thickness, voltage, and pre-strain.
- Achieved a significant breakthrough, demonstrating a maximum DEA strain of 12.3%.

Computer Vision and Multimedia Laboratory (CVM lab) / Illinois Institute of Technology | Chicago, IL   June 2023 – Present
Advisor: Dr. Yan Yan
- Developed an algorithm using Recurrent Neural Networks (RNN) to classify mouse behavior based on pose dataset of mice.
- Created a behavior classification algorithm using Vision Transformer (ViT) applied to entire mouse video datasets, enhancing behavior prediction accuracy.
- Assisted PhD students in evaluating the performance of multimodal models, including Concatenation Fusion and Gated Information Fusion, for behavior classification tasks.

Bhushan Research Group / Illinois Institute of Technology | Chicago, IL   May 2024 – Present
Advisor: Dr. Abhinav Bhushan
- Developed and implemented a feedback control system integrating PID control with real-time image analysis to regulate microfluidic cell flow.
- Leveraged advanced image processing techniques to enable accurate and automated adjustment of bead quantities based on user-defined targets.

PROJECTS

Understanding the varied economic impact of Tax Increment Financing (TIF)   Jan 2024 – May 2024
Advisor: Dr. Robert Ellis / Consulting Expert: Tom Tresser (CivicLab Co-Founder)
- Analyzed the impact of Tax Increment Financing (TIF) on median income trends in Chicago, revealing a significant increase for the White population in TIF districts, while other racial groups remained unaffected.
- Revealed that White-dominant, wealthy regions experienced a significantly higher median income increase compared to other areas.

Automated decision-making system of scheduling   Jan 2023 – April 2023
Advisor: Dr. Hemanshu Kaul
- Developed an automated decision-making system using advanced graph theory and linear algebra to optimize course and exam scheduling at IIT, effectively mitigating student time conflicts and balancing weekly schedules.

Autonomous Mobility Competition - Vision Lane Following Project   Sep 2021 – Dec 2021
- Achieved 2nd place in a competition by HL Mando Corporation by designing and implementing a vision-based lane following algorithm, utilizing advanced image processing and PID control to optimize real-time data for improved model car performance.

System Innovation competition   Mar 2021 – May 2021
Advisor: Dr. Peom Park
- Awarded 3rd place in the Korean Society of Systems Engineering (KOSSE) competition for analyzing limitations of VR technology such as cybersickness, and designing solutions like accelerometer integration and sound effects to enhance user experience, supported by comprehensive market surveys.

PROFESSIONAL PRESENTATIONS

Poster Presentation / Illinois Institute of Technology | Chicago, IL   July 2024
"Autonomous control using automated image analysis"
Summer 2024 Amour R&D Research Immersion Exposition, Chicago, IL

Poster Presentation / Illinois Institute of Technology | Chicago, IL   April 2024
"Understanding the varied economic impact of Tax Increment Financing (TIF)"
Ed Kaplan Family Institute for Innovation and Tech Entrepreneurship Innovation Day, Chicago, IL

Poster Presentation / The Korean Society of Systems Engineering | South Korea   June 2021
"Assessment of Cybersickness in VR Social Media Services"
The Korean Society of Systems Engineering 2021 Fall Conference, Jeju, South Korea

OTHER ACTIVITIES

- Sigma Phi Epsilon Fraternity, Illinois Beta – The Balanced Man Scholarship Chair
- Tau Beta Pi, The Engineering Honor Society
- Climbing Club

HONORS AND AWARDS

Dean's List	Illinois Institute of Technology	2022 - 2024
Dean's List	Ajou University	2018,2021,2022
Academic Excellence Scholarship	Ajou University	2018,2021,2022
Department Chair's Award for Academic Excellence	Ajou University	2019,2022
Mando Autonomous mobility VLF (Vision Lane Following) 2nd award	HL Mando Corporation	2021
System Innovation Competition 3rd award	The Korean Society of Systems Engineering	2021
Soldier of Valor Award	Republic of Korea Army	2020
Active Learner Self-Development Scholarship	Ajou University	2018-Spring, 2018-Fall