Ryu Okubo

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EDUCATION

Master of Science in Computer Engineering Expected May, 2024
University of Illinois Urbana-Champaign

Bachelor of Science in Computer Engineering (*with highest honors*) May-2022
University of Illinois Urbana-Champaign GPA: 3.92/4.00
Honors: Vashney Family Scholarship, Dean's List, James Scholar

WORK EXPERIENCE

Yummy Future Champaign, IL
Software/Electrical Engineer - Intern August, 2022 – current
- Designed and built the circuit board for manipulating and controlling the inter robot-device interaction
- Designed and developed novel MQTT based wireless communication protocol in python and C++ that enables simultaneous operation of multiple embedded system
- Developed a novel and intuitive program to control MG400 robotic arm

University of Illinois Urbana-Champaign Urbana, IL
Teaching Assistant - Department of Electrical and Computer Engineering August, 2022 – current
- Served as a head Teaching Assistant for the course ECE 311, digital signal processing
- Instructed students how to use python to design filters and process signals

BOSCH Yokohama, Japan
Machine Learning Engineer - Intern June, 2022 – July, 2022
- Initiated and contributed to the project aimed at developing a Machine Vision system for velocity measurement and positioning of test vehicles
- Conducted literature review in the field of computer vision; summarized and published the result at company Wiki database

RESEARCH EXPERIENCE

Wireless, Sensing, and Embedded Networked Systems Lab January, 2023 – current
Millimeter-wave Radio-frequency identification for Next-generation Smart Infrastructure
- Conducting research on how to set up 2 way wireless communication using Frequency Modulated Continuous Wave(FMCW) Radar and antenna tag
- Analyzed the data from FMCW Radar by combining techniques from signal processing and machine learning

Mobility and Fall Prevention Research Lab Jan, 2019 – May, 2022
Brain Computer Interface Application of Detecting Human Anxiety State while Walking in VR Environment
- Designed and developed Brain Computer Interface (BCI) based Virtual Reality system to measure human anxiety level
- Developed and validated EEG signal processing pipeline used to predict human gait activity via artificial intelligence
- Collaborated with team members to carry out the human subject tests to validate the accuracy of the BCI system

Human Dynamics and Controls Lab September, 2020 – May, 2022
PURE (Personal Unique Rolling Experience) project - Human Robotic Interface team
- Contributed to a multi-disciplinary project aimed at developing hands-free and omnidirectional robotic wheelchair using an interactive and adaptive robot that is uniquely personalized for each user
- Worked with the human-robotic interface team of the project to develop the novel lean-to-steer control method
- Led the validation study team and performed human subject test under Virtual Reality Environment

SKILLS

Area: Artificial Intelligence, Computer Vision, Human Computer Interaction, Virtual Reality, Signal Processing
Coding: Python (advanced), C/C++ (advanced), Java (advanced), Haskell (Intermediate), x86 Assembly (Intermediate)
Skill-sets: Android Studio (intermediate), VREP (Intermediate), MATLAB (Intermediate), OpenCV(Intermediate)
Languages: Japanese (Native), English (Fluent), Mandarin (Fluent)

PUBLICATION / PRESENTATION

- Designing a closed loop system to achieve real-time evaluation and manipulation of state anxiety while walking in virtual reality, 2021 10th International IEEE/EMBS Conference on Neural Engineering (NER), 2021
- Online Classifier of AMICA Model to Evaluate State Anxiety while Standing in Virtual Reality, 11th International IEEE/EMBS Conference on Neural Engineering (NER), 2022
- EEG BASED BRAIN COMPUTER INTERFACE APPLICATION OF DETECTING HUMAN GAIT ACTIVITY, 2022 IDEAS
- Hands-Free Human-Robot Interface for a Riding Ballbot (under review)
- Presentation at Undergraduate Research Symposium 2021 (Ryu Okudo, Tongyun Huang, Abdul Alkurdi, Elizabeth Hsiao-Wecksler, "Anxiety Detection")