SHOUYUE HU

hu.shouyue@outlook.com | GitHub | LinkedIn

EDUCATION

Queen's University, Kingston, Ontario, Canada
Bachelor of Computing, Mathematics minor Sep. 2018 – Jun. 2022

- CGPA 3.82/4.3, 3rd and 4th year GPA 3.92/4.3
- Excellence Scholarship, Dean's Honour List, Academic All-Star
- Athlete in Fencing Varsity

RESEARCH EXPERIENCE

Lab INIT Robots, École de technologie supérieure, Montreal, QC
Research Assistant Feb. 2023 – Aug. 2023
Adviser: *David St-Onge*

- Researched cognitive data tracking for robot operators
- Created an efficient blink detection algorithm for pupil diameter signal, utilizing dynamic programming, with O(N) time and O(1) space complexity *[Source]*
- Studied and applied filters, calibration, and data interpolation
- Produced reports for methods and experiments, collaborated with lab members, supported mechanical students in coding, and presented research demos to lab visitors
- Developed CNNs for cognitive load prediction based on audio slices

Queen's University, Kingston, ON
Interactive Melody Generator with Multi-song Fusion Sep. 2021 – Apr. 2022
Adviser: *Ting Hu*

- Proposed an Evolutionary Algorithm that generates songs incorporating commonalities and merges the features of input songs based on the user's interactive selections
- Designed and implemented the method, constructed the code architecture

INDUSTRY EXPERIENCE

Shuangyuan Optoelectronics Tech Co., Ltd., International
Robotics Engineer Intern Jul. 2021 – Aug. 2021

- Studied calibration methods, kinematic robustness filters, segmentation (Morphological Transformations and gradient), product detection (Hough and K-Means clustering), and coordination transformation
- Designed a multi-threading distributed broadcast pipe to drive the hardware
- Created a Scara robotic arm control solution with 5 DoF and a repeatability of 0.15mm with object detection code, including the parameter tuning report (PID settings, vision parameters, light poses, etc.)

Strategy Department, Delta Controls Inc., Remote, BC
Junior Developer Jan. 2023 – Present
Adviser: *Jayson Bursill*

- Developing building administration autonomous agent powered by LLMs, designing retrieval-augmented generation workflow, quantizing and fine-tuning Llama 2
- Built a workflow that retrieves/analyzes/visualizes database by interactive conversation, and improved edge device request speed by 58% by creating a 6-line asynchronism algorithm
- Independently establishing data pipelines including the scripts, visualization tools, and web-based IoT software
- Collaborating closely with the data scientist for proof-of-concepts in HVAC, weekly providing data-driven experimental insights to the CTO

PERSONAL PROJECTS

Hexapod on RaspberryPi *[Source]* Jun. 2021 – Sep. 2021

- Built and drove a hexapod with servo motors, IMU, and depth camera
- Self-taught 3D model design that fits the requirements of a 3D printer, welded voltage transformers, and studied SLAM basics

Path Planning using Evolutionary Algorithm *[Source]* Mar. 2021 – Apr. 2021

- Created a path-searching algorithm using stochastic optimization through iterations in the form of an Evolutionary Algorithm
- Enhanced the efficiency by incorporating loop elimination and dead-end avoidance
- The method achieved expedited path discovery in grids with dimensions greater than 1,000 x 1,000 compared to Breadth First Search (BFS)

SKILLS

Languages and Tools: Python, Linux, ROS, C/C++, Docker, Git, Matlab, LaTex, PostgreSQL, AWS, GCP, JavaScript, Java, Blender, SolidWorks

Packages: Pytorch, CUDA, Numpy, Matplotlib, OpenCV, Pandas, Threading, Conda, Socket, ffmpeg , OpenSMILE, Flask, SciPy

Google Data Analytics Certificate