Mark Dyehouse

Roboticist/Software Eng.

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About me

I am part-scientist, part-engineer aspiring to make the world more accessible for all. I aim to do this by breaking down barriers to better enable people to collaborate and interact with each other to explore the world and beyond.

Skills

Programming: Scala, Python, ML, C, some C++, Matlab
Other: Git, gdb, Solidworks, NumPy, OpenCV, ROS, Apache Kafka and Spark, Sci-kit packages, Agile (scrum), rapid prototyping, automated unit/integration tests, microcontrollers, mechatronics, sensors, SPI, I2C
Language: Mandarin Chinese (written and conversant)

Interests

Swarm robotics, embedded systems, soft robotics, localization, artificial intelligence (including machine learning), mechatronics, novel locomotion

On the Side

ESL tutor, Machine Learning tutor, Palantir Puzzle Hunt (2013-15,19); Extra for Netflix show: Mindhunter; CMU Ski Team 2014-16; International Justice Mission Co-President CMU chapter; Dossier Art Magazine Editor

Education

Ongoing — Masters of Science in Robotics — Evanston, IL, USA
Northwestern University

2011-2016 — Bachelors of Science in Physics, Minor in Chinese Studies — Pittsburgh, PA, USA
Carnegie Mellon University

2013 — Study Abroad — Shanghai, China
Shanghai International Studies University

Awards

2018 — 1st Place: robotics competition, Northwestern: Drawing With Sawyer (`https://www.youtube.com/watch?v=AccB97JPMUE`)
2018 — Omnicell company hackathon Most Cross-Functional Product award
2016 Spring — Deans List with High Honors
2013 — Pickering Scholarship for study abroad in Shanghai, China

Work Experience

2018 — Software Engineer — Omnicell
Backend engineering with Scala and Spark for streaming ETL of telemetry data processing pipeline; design, development, and testing; team won regional company hackathon's "Most Cross-Functional Product" award

2017-18 — Software Developer — Management Science Associates, inc.
Backend software development for data ingestion (ETL) pipeline

2016 — Research Assistant — Carnegie Mellon University School of Architecture
Designed, built prototype of closed-loop inflatable aeroponic plant habitat for Mars (small team); Presented poster at American Society of Gravitational and Space Research 2016 Conference

2016 — Research Assistant — Carnegie Mellon University School of Computer Science
Perception pipeline, region of interest specifier for classifier, gui for data labeling

2015 — College Student Technical Specialist — Lockheed Martin
Dev-ops, software development, and network engineering

2014 — Research Assistant — Carnegie Mellon University Physics Department
Characterized liquid-liquid interfacial isotherm, analyzed microscope image data; Pennsylvania Space Grant (NASA) funded

Projects

2019 — Robot for granular medium subsurface movement and navigation: MS in robotics final project; I am responsible for research, design, fabrication, implementation, controls, testing, and documentation under an adviser at Northwestern
2019 — Soft deformable snake robot made from McKibben muscles and other inflatable components
2019 — Sensor network from scratch, localize mobile robot
2019 — Multi-language conversational chatbot using Transformer model
2018 — Drawing with Sawyer: Path-planning and image-processing
2018 — Swarm sorting of Kilobot Robots by Size using Brazil Nut Effect
2018 — Local coordinate system creation and use in Kilobot robot swarm
2018 — Built from scratch: Optimized binary decision trees, multinomial logistic regression: speech predictions; neural net with customizable hidden layers and units: optical character recognition
2017 — Built Scala Trie for Spark GraphX, Spark ML
2016 — Language classification (multiple languages), transcription (English) using only visual data
2014 — Build18 Competition: knock triangulation, piezo element sensors
2015 — Pololu 3pi robot programming for line following with onboard sensors, use servo motors to draw lines with a pen