Mark Dyehouse

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LinkedIn: www.linkedin.com/in/mark-dyehouse-71a66880 Portfolio: https://thepenultimatum.github.io/

Education:

Northwestern University (Fall 2018-Present) Evanston, IL

Master of Science in **Robotics**

Carnegie Mellon University (Spring 2016) Pittsburgh, PA

Bachelor of Science in **Physics**, Minor in **Chinese Studies**

Winner of **Pickering Scholarship** for study abroad in Shanghai

Received **Pennsylvania Space Grant:** research at CMU Physics department summer 2014

Spring 2016 MCS **Dean's List with High Honors**

Shanghai International Studies University (Summer 2013) Shanghai, China

Skills:

- Programming Languages: Scala, Python, ML, C, some C++, Mathematica
- Frameworks, Platforms, and Libraries: NumPy, OpenCV, ROS , Apache Kafka and Spark (Core, ML, GraphX, and Streaming), Cucumber for automated tests, Sci-kit library, Databricks, cv2
- Software: Git, SBT, Atlassian (Bitbucket, Jira, Bamboo, Confluence), IntelliJ, gdb, VirtualBox, Maple, Solidworks
- Other skills: Agile (Scrum), Test-Driven Dev, 3D printing, laser cutting, some Arduino, federal gov. proposals
- Language: Mandarin Chinese (written and conversant)

Research & Work:

- **Graduate Student** (NU MSR 2018-Present): Won team competition in embedded systems in robotics with ROS class with "Drawing with Sawyer" project.
- **Software Engineer** (Omnicell Feb-Sep 2018): Telemetry data streaming, processing, and analytics pipeline using Scala, Spark, and Kafka with AWS, Databricks; **Won hackathon's "Most Cross-Functional" Award,** fuzzy text matching system for comparing customer and manufacturer descriptions of medical items
- **Software Developer** (Management Science Associates, Jan 2017-Jan 2018): Backend software development, ETL pipeline using Spark, Kafka, Scala, HBase, Cucumber, ElasticSearch; Hadoop environment, MapR
- **Research Assistant** (2016): Designing skin system for closed-loop inflatable aeroponic plant habitat on Mars (small team), responsible for plant support design and resource/power distribution map and organism selection:
  - **Poster at American Society of Gravitational and Space Research 2016 Conference**
- **Research Assistant** (Summer 2016): Working with Nao robots for perception of objects involved in playing soccer using sci-kit image, cv2; region of interest specifier for classifier; gui for data labeling (PyQt)
- **Lockheed Martin** (Summer 2015): College student technical specialist; Dev-ops and Network engineering
- **Research Internship** (Summer 2014): Characterized liquid-liquid interfacial isotherm, analyzed microscope data

Projects and Activities:

- **Sensor Network Using Microcontrollers, Ultrasonic Sensors, XBee for Mobile Robot Localization** (2019)
- **Conversational AI with Transformer Model** (2019)
- **Drawing with Sawyer**: My tasks: path-planning and information extraction, image processing for transformation from image space to the task space. **First place** in team competition. Video: https://youtu.be/AccB97JPMUE
- **Sorting of Kilobot Robots by Size using Brazil Nut Effect**
- **Local Coordinate System Creation (and using it to achieve a non-trivial shape) in Swarm of Kilobot Robots**
- Built from scratch: optimized Binary Decision Trees & Multinomial Logistic Regression: speech predictions; neural net with customizable hidden layers and units: optical character recognition (2018)
- Language classification (multiple languages) and transcription (English) using only visual data (2016)
- Mars plant habitat light system design, constraints for protection from risks on Martian surface
  - Build18 Competition: (Fall, Spring 2013-14): piezo element, oscilloscope: knock triangulation
- Pololu 3pi robot programming for line following with onboard sensors, use servo motors to draw lines with a pen
- MHacks V project: Memory Museum using Unreal game engine for Oculus Rift
- 3D-Printed Microscope iPhone case (Fall 2014): glass bead lenses, designed in Solidworks
- Built Scala Trie for Spark GraphX, Spark ML; Chess with 3-D graphics using Python and VPython
- Palantir Puzzle Hunt at CMU (2013-15); Extra for Netflix show: Mindhunter, CMU Ski Team 2014-16
- International Justice Mission Co-President CMU chapter; Dossier Art Magazine Editor