Christopher X. Miller

chrisxmiller.com

Experience

Associate Product Manager – Motivo Engineering*; Los Angeles, CA* **5/20 – Present**

- Saved Motivo $300k by identifying timeline inefficiencies, facilitating engineers' communications, and reallocating company-wide resources across automotive, ag-tech, sporting, and robotics projects
- Decreased weekly burn rate by 36% for a team of seven engineers and technicians across several robotics projects ($1.8M total value) by optimizing people placement, detailing KPIs, and following Agile methodology
- Increased company revenue by 1.5% through development, small-scale manufacturing, and launch of a new ag-tech product for use in crop harvesting by leading a five-person team of engineers and technicians
- Developed eight new client engagements with Fortune 500 and private company executives by researching company financials, analyzing business operations, and synthesizing opportunity reports for Motivo's executive leadership

Research Assistant – Robotics: Assistive and Rehabilitation (argallab), *Northwestern Univ; Chicago, IL* **7/17 – 08/20**

Intelligent Wheelchair:

- Designed, managed, and executed a 16-person, IRB-approved study to classify human control inputs
- Modeled when to autonomously shift between assistance modes by classifying human control commands using RNNs, anomaly detection, and classical methods (KERAS/TensorFlow/scikit-learn); to be submitted to IROS 2021
- Developed software to measure the quality of human control commands (ROS/Python/C++)

Robotic Arm (Kinova MICO):

- Co-designed and -managed a 20-person, IRB-approved study to classify robotic arm control difficulty and developed software for control-sharing modes (ROS/Python) using an in-house potential fields library

Electrical Engineer II – National Robotics Engineering Center (NREC), *Carnegie Mellon Univ; Pittsburgh, PA* **6/16 – 7/17**

Wheel-to-Track Transformer Robot (DARPA Ground Vehicle X Program):

- Designed rugged, noise-immune electronic control and monitoring system through mixed-signal circuit design and PCB fabrication (Altium Designer); assembled and tested benchtop electrical prototype; assisted with full system integration

Mining Pipeline Profiler Robot (Anglo American Copper Chile):

- Designed high-level electrical system, robot's motherboard, motor controller interfaces, power supplies and cable harnesses (Altium Designer); assisted with systems integration and testing

Project Management:

- Served as electrical system project manager and lead electrical engineer on US DoD/DARPA- and industry-sponsored robotics projects through high-level system design (Visio), personnel task allocation, and milestone tracking
- Communicated updates with executive sponsor leadership via monthly presentations and quarterly reports

Summer Undergraduate Research Fellow – NASA's Jet Propulsion Laboratory/Caltech*; Pasadena, CA* **5/14 – 8/14**

- Miniaturized the BioSleeve V3 (a surface EMG gesture recognition system) from the size of a small desktop computer to that of an index card by developing C++ and MATLAB drivers for existing computer systems

Education

Master of Science in Mechanical Engineering Sep. 2017 – Jun. 2020
Northwestern University, Evanston, IL.

Bachelor of Science in Electrical Engineering with Honors Aug. 2012 – May 2016
The Pennsylvania State University, University Park, PA.

Major Awards

National Defense Science and Engineering Graduate Fellowship - U.S. Dept. of Defense ($124K + tuition) Apr. 2019
Graduate Research Fellowship – The National Science Foundation ($138k) Apr. 2019

Technical Skills

Languages	Python, ROS, MATLAB, C++, HTML5, CSS, Java
Tools	Microsoft Project, Confluence, Visio, Altium Designer, TensorFlow, KERAS, scikit-learn, pandas, SolidWorks
Hardware	PCB design, soldering (PTH & SMD to 0402), Arduino, SPI, I2C, UART, CAN, motion controllers, LIDAR, encoders, microcontrollers (e.g. TI, STM, and Microchip), bio-sensing systems (EMG/EEG)
Other	Agile, technical writing, IRB review, human trial design, battery characterization/modeling, cable harness design /assembly, Kalman filters, particle filters, rugged system design, robotic potential fields, robot arm control

Selected Publications

"An Intelligent Framework for Shifting between Different Levels-of-Autonomy," **(1st Author),** *To Be Submitted to IROS/RAL '21.*
"State of Charge Estimation for an Electric Wheelchair using a Fuel Gauge Model," **(1st Author)**, DSCC 2016.