Jared Miller

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SKILLS

- Matlab (incl. Simulink), Mathematica, Python (incl. NumPy, SciPy, matplotlib), LaTeX, Julia
- Microsoft Office: Word, Excel, PowerPoint, Publisher

EDUCATION

Northeastern University   Boston, MA

B.S.	Electrical Engineering, Minor in Mathematics	2018
M.S.	Electrical and Computer Engineering (Controls, Communication, Signal Processing)	2018
Ph.D.	Electrical and Computer Engineering (Controls, Communication, Signal Processing)	(expected) 2023

GPA 3.91/4.0, Honors Program, Dean's List, Chateaubriand Fellow (2021), Outstanding Student Paper Award (CDC 2021)

Relevant Coursework

Optimal and Robust Control, Nonlinear Control, System Identification (sysid), Numerical Optimization, Sparsity, Machine Learning

WORK EXPERIENCE

Robust Systems Laboratory (Northeastern University)   Boston, MA
Controls Group, Research Assistant   Jan. 2017 –

- Estimating peak response of nonlinear systems with occupation measures for use in safety verification (ACC, CDC 2021).
- Developing an occupation measure framework for analysis and control of time-delay systems.
- Investigating applications of active set algorithms for system identification of linear systems (CDC 2020).
- Analyzed combinations of structured subsets and sparse decompositions for use in semidefinite programming (IFAC 2020).
- Led a group to combine chordal sparsity with the reweighted heuristic to solve large-scale rank minimization problems. Demonstrated efficacy of approach on subspace clustering for switched system identification (CDC 2019)
- Contributed to analyzing theoretical properties of the Iterative Spectral Method for Spectral Clustering (NeurIPS 2019)
- Collaborated to perform SVM-based domain adaptation for detecting faults of 3d-printing cyberphysical systems (CCTA 2019)

Paradigm Hyperloop (Northeastern/Memorial University collaboration)   Boston, MA
Software Group, Capstone Project   Jul. 2017 – Dec. 2017

- Modeled heave dynamics of air levitation for hyperloop pod. Found Lyapunov certificates of open loop stability through sum-of-squares optimization. Formulated a disturbance model and investigated corresponding robust control schemes (CCTA 2019).

ASML Holding   Eindhoven, NL
Metrology (GRID and SPM), Co-op   Mar. 2016 – Aug. 2016

- Designed and implemented a routine for scattered data interpolation using b-spline wavelets and sparse optimization.
- Evaluated feasibility of using Simulink and Stateflow based calibration routines for metrology analysis.

Advanced Micro Devices   Boxborough, MA
Shader Compiler Group, Co-op   Jan. 2015 – Jun. 2015

- Improved accuracy and performance of transcendental functions in AMD hardware drivers by minimax approximation.
- Created a utility to explore both conditions of 'if statements' in IL shaders to provide broader test coverage.
- Migrated hundreds of unit tests which verify the integrity of the shader compiler by modifying C++ source code using Python.

Princeton Plasma Physics Laboratory   Plainsboro Township, NJ
Intern/Contractor   Sept. 2012 – Aug. 2013, Mar. 2014 – Feb. 2016

- Used deep learning to predict plasma disruptions using 0d time traces (i.e. magnetic field, current)
- Ported a serial IDL Multi-Point Thomson Scattering analysis system to a parallelized Python implementation for NSTX-U.
- Simulated Rutherford Backscattering via Monte Carlo methods to find the thickness of a low Z coating on a high Z substrate.
- Implemented software that visualizes and produces animations for neutral beam injection and 3d datasets using VisIt.

Cornell High Energy Synchrotron Source   Ithaca, NY
Intern/Research Assistant   Jul. 2012 – Aug. 2012

- Ported the HeatLoadMatrix (safety analysis for samples exposed to synchrotron X-rays) project into Python, added PyQt GUI.