# Hassan McGinnis

Controls Engineer | Software Developer

Natick, MA | **(502) 295-8499**

hassan.mcginnis@gmail.com | hrmcginnis.github.io

## Summary

I'm an engineer with professional software development and test experience using MATLAB, Simulink, and C++, as well as research experience in robust control and signal processing for structural vibration analysis.

## Software Skills

**Tools/Environments**: MATLAB, Simulink, Stateflow, GNU/Linux, Emacs

**Languages**: MATLAB, C++, bash, python

## Work Experience

### MedAcuity Software | Software Specialist | Westford, MA

*July 2017 - present*

- Software consultant for clients in the medical device industry, serving as the domain expert with MATLAB and Simulink test and development.

### MathWorks | Senior Application Engineer (Post-sales) | Natick, MA

*Sept 2013 - July 2016*

- As a domain expert in Simulink code generation workflows, provided solutions for major customers using Simulink Coder and Embedded Coder for production C/C++ code generation.
- Developed/advocated for software improvements for MATLAB and Simulink based on customer needs, including achievement of MISRA compliant code, enhanced user customization of generated code, and improved support for third-party compilers.

## Projects

### MedAcuity Software | Verification of Controls Software for Surgical Robot

*Aug 2017 - present*

- Developed a comprehensive strategy for verification and full MC/DC test coverage of Simulink-based state machines and control algorithms governing robotic arm motion.
- Lead a team of engineers through verification of over 400 functional and non-functional software requirements implemented in Simulink, C++, and MATLAB code.
- Collaborated with a third-party software vendor to unit test custom software that enables Simulink code generation and compilation for the QNX Neutrino real-time operating system.

### MathWorks | Development of Python System Object for Simulink Raspberry Pi Support Package

*May 2016*

- Developed a Simulink block in MATLAB and C for the Raspberry Pi support package that interfaces with the Python/C API, allowing users to easily send simulation data to any Python module on the Raspberry Pi in soft real-time.
- Demonstrated the functionality by using Simulink to drive a servomotor with a Raspberry Pi using the RaspiRobot Python library.

### Purdue University | Sensitivity analysis of wear prognosis in an $H_\infty$ controlled F-16 simulation

*Aug 2010 - Dec 2011*

- Investigated the minimization of fault propagation in a hydraulic actuator through real-time adjustment in the commanded flight path.
- Developed a robust altitude controller for an F-16 fighter aircraft model using $H_\infty$ synthesis.
- Performed sensitivity analysis of the path adjustment algorithm under modeling error.
- Demonstrated the improved control strategy using a hydraulic solenoid valve hardware-in-the-loop system prototyped in Simulink and driven by dSPACE software.

## Education

### Purdue University

MS Mechanical Engineering | 3.81/4.00 | Dec 2011

### University of Kentucky

BS Mechanical Engineering | 3.46/4.00 | May 2009