Hassan McGinnis

Controls Engineer | Software Developer

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Summary

Engineer with professional software development and test experience in 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 150 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 allows Simulink code generation that targets 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_∞ 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_∞ 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