Brian W. Duff

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SUMMARY

Motivated **software engineer** and dedicated team member seeking to solve **complex problems** using self-reliance, versatility, and research experience developed over 4 years at a startup.

EDUCATION

Carnegie Mellon University, Pittsburgh, Pennsylvania — Aug 2009 – Dec 2012

- B.S. in Electrical and Computer Engineering
  - Cumulative GPA: 3.6 / 4.0

EXPERIENCE

Senior Software Engineer, **SpiralGen, Inc.** — Jan 2013 – Jun 2017

Reseached, developed, and commercialized the high-performance code-generation tool Spiral.

- DARPA HACMS (High-Assurance Cyber Military Systems)
  - Researched and developed formally-verified software for cyber-physical systems.
  - Worked with air and ground, manual and autonomous robots and virtual robots.
  - Released Spiral commercially at IEEE High Performance Extreme Computing Conference.
- Code generation toolbox for ADAS (Advanced Driver-Assistance Systems)
  - Developed a protype Matlab/Simulink toolbox interface for ADAS control code generation.
- DARPA BRASS (Building Resource Adaptive Software Systems)
  - Developed software which can autonomously adapt to changes in hardware or libraries.
  - Tested resource adaptation with synthetic apperature radar (SAR) test case.
- High Performance FFT library for Argonne National Laboratory (ANL)
  - Created a library of high-performance threaded batch FFTs for a supercomputer.
- Spiral Cloud Interface
  - Developed an online code-generation tool using Codebox, Amazon Web Services, and Docker.

Summer Intern, **General Motors Fuel Cell Activities** — Summers 2011, 2012

- Operated as interim software build manager with software design team using Simulink code generation.
- Researched and applied signal processing techniques to hydrogen fuel cells, scripted analysis in Matlab/Simulink.

PUBLICATIONS

B. Duff, D. Popovici, T. M. Low, J. Larkin, M. Franusich, F. Franchetti, “Quantifying Performance Improvements of Ported Software Using Spiral,” *2017 IEEE High Performance Extreme Computing Conference Proceedings*

DOE SBIR Phase I Proposal (awarded) coauthor, “Security Hardened Cyber Components for Nuclear Power Plants”

PRESENTATIONS

B. Duff (speaker), J. Larkin, M. Franusich, F. Franchetti, “Automatic Generation of 3D FFTs,” *2014 Oil & Gas HPC Workshop*

Demonstration of CMU team DARPA HACMS capabilities to Pentagon officials, *DARPA I2O Demo Day 2014*

LANGUAGES

C, C++, Java, Python, Matlab, Simulink, JavaScript, GAP

TECHNICAL SKILLS

Embedded Systems, High Performance Computing (HPC), Git, Subversion, Linux, Windows, Technical Writing, Controls, Signal Processing, Eclipse RCP, Make, NSIS