

Wayne Krug

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SUMMARY

Over 14 years of total engineering experience, with 3.5 supporting hardware production, 2 developing signal processing algorithms, and over 8 developing software. Experience in both a large and a very small company.

- Significant interdisciplinary experience (software/systems/electrical/mechanical)
- Written both embedded and conventional backend software
- Both led greenfield development efforts and dove in to significant legacy codebases
- Excellent oral and written communication skills. Has frequently written technical papers and given technical presentations in a variety of venues.

TECHNICAL SKILLS

- Languages: C, Java, Python, Matlab, Fortran, JavaScript
- Domains: radar signal processing, real-time systems, distributed systems, natural language processing, machine learning
- Hardware: embedded development, production support and test, field support
- Libraries and frameworks: Hadoop, MPI, AngularJS, Apache Lucene, Glassfish

EXPERIENCE

Senior Software Engineer, Language Computer Corporation, Richardson, TX, April 2012 - present

Software engineer developing research, prototype, and production natural language processing (NLP) applications in Java.

- Architect of and lead engineer for an automatic document summarization system (Estesa)
- Designed both the Java backend and JavaScript (AngularJS) frontend for Estesa
- Demonstrated the Estesa system at a Navy trade show in June 2015
- Architected common Java system for REST applications across the company
- Created a Java research application to profile and identify the authors of documents
- Conducted and published research on using machine learning models to identify non-content words in documents
- Created a Java research application to compile cultural profiles of Twitter hashtag usage
- Created Java/Python tools to automatically download and index data from Twitter and the Google News RSS feed
- Developed JNI adapters to connect Java application code to C-based machine learning libraries
- Created a simple, fast Bayesian profiling system used in multiple places within the company's software
- Active in proposal work for new and continuing business efforts

Senior Systems Engineer, Raytheon Company, Dallas, TX, May 2008 - April 2012

Key contributor on the signal processing algorithms implementation team for the P-8 Advanced Airborne Sensor. Development targeted real-time embedded Linux on POWER and x86-64 commercial server platforms. All core development was done in C, with some tools development in Python. Also performed the software requirements analysis for one of the radar modes.

- Refactored legacy C code to improve runtime performance and reduce memory usage by an order of magnitude
- Drove a well-received trade study of clustered SAN filesystems (GPFS, Lustre, GlusterFS)
- Architected a subsystem for efficiently packing and unpacking STANAG-4607 format binary messages
- Conducted research and benchmarking on various processor architectures in support of proposal efforts
- Wrote key sections of the AAS proposal dealing with choice of processor
- Developed platform-specific optimizations for the signal processor's common math library
- Modified and tuned the kernel in Red Hat Enterprise Linux to add real-time capabilities

Systems Engineer, Raytheon Company, Dallas, TX, July 2006 - May 2008

Developed and tested new signal processing algorithms for the AN/APG-149 surveillance radar and its follow-on, the Advanced Airborne Sensor. Most work was done in Matlab, Fortran, and Python.

- Created a job management framework to speed the creation of cluster processing jobs used to test new algorithm iterations
- Authored or coauthored multiple internal whitepapers
- Wrote and presented a paper at the program annual meeting in 2007
- Made regular presentations on work at quarterly analyst meetings
- Provided real-time data QC and technical support for a two-week field experiment

Electrical Engineer, Raytheon Company, Dallas, TX, September 2002 - July 2006

Supported the production and field deployment of the power supply for the F-22A radar. Was involved with hardware failure analysis and test, evaluation of replacement parts during production, and test software development.

- Identified and fixed a long-standing bug in the power supply controller software that eliminated some intermittent false test failures and reduced unnecessary retesting
- Significantly reduced hardware testing process cycle time and saved the company over \$185,000
- Helped production deliveries go from several months late to on-schedule
- Participated in a high-profile field failure investigation

EDUCATION

Florida Atlantic University - Boca Raton, FL, Bachelor of Science in Electrical Engineering

PUBLICATIONS

Refereed Conference and Workshop Papers:

- W. Krug and M. Tomlinson, *Automated Non-Content Word List Generation Using hLDA*, in The 26th Annual Florida Artificial Intelligence Research Society (FLAIRS) Conference, 2013
- M. Tomlinson, W. Krug, D. Hinote, and D. Bracewell, *#impressme: The Language of Motivation in User Generated Content*, in The 15th International Conference on Intelligent Text Processing and Computational Linguistics (CICLing), 2014 (accepted, to be published in April 2014)
- M. Tomlinson, D. Bracewell, W. Krug and D. Hinote *#mygoal: Finding Motivations on Twitter*, in the Proceedings of the 9th Language Resources and Evaluation Conference (LREC), 2014 (accepted, to be published in May 2014)