Joshua Daniel Suetterlein

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Education

University of Delaware (UD)   **Newark, DE**
Ph.D. in Electrical and Computer Engineering   *July 2017*

University of Delaware   **Newark, DE**
Masters in Electrical and Computer Engineering   *May 2014*

University of Delaware   **Newark, DE**
Bachelor of Science in Computer Engineering   *May 2009*

Previous Employment

Pacific Northwest National Laboratory   **Richland, WA**
Intern   *Mar 2015 – Current*

Modeled, designed, and developed a distributed, asynchronous, high performance runtime system.

ET International   **Newark, DE**
Software Engineer   *Jun 2014 – Mar 2015*

Aided in designing, developing, and testing HAMR, a novel hybrid batch/streaming Big Data solution.

Computer Architecture and Parallel System Laboratory   **Newark, DE**
Research Assistant   *Jun 2007 – Jun 2014*

Innovated new and efficient parallel runtime system solutions for shared and distributed memory systems.

University of Delaware   **Newark, DE**
Teaching Assistant for Microprocessor Systems   *Fall 2009*

Administered and graded labs and tests.

Emaxed   **Moorestown, NJ**
Software Engineer   *Summer 2007*

Developed an FTP transfer application interfacing with a SQL server.

Projects

- **Ph.D. Project:** *'A Case for Asynchronous Many Task Runtimes: a Modeling approach for High Performance Computing and Big Data'*

  I am part of a team that developed P-OCR, an extreme scale, fine-grain, asynchronous runtime system designed for large high performance computing systems. I developed a novel modeling/characterization methodology rooted in the Roofline model for asynchronous runtime systems to predict runtime overhead. Leveraging this model, I implemented adaptive streaming MapReduce operators to support Big Data analytics in P-OCR.

- **Masters Project :** *'DARTS: A Runtime Based on the Codelet Execution Model'*

  I explored the effectiveness of the novel, non-traditional Codelet Execution Model by developing and evaluating DARTS, an efficient, asynchronous runtime system for shared memory. I performed a two phase evaluation focusing on micro-benchmarks and representative HPC kernels.

- **ET International:** *'HAMR'*

  I designed and developed several features for a new Big Data solution (MapReduce replacement) focusing on file I/O, memory management, and machine learning. In addition to feature development, I also worked in both the performance optimization and QA teams fortifying the software.

- **CAPSL:** *'Cilk to Cyclops 64'*

  Leveraging the open sourced MIT CILK, I ported the Cilk runtime to IBM's CYCLOPS 64, an exotic many core architecture. In addition, I explored various data structures and stealing algorithms for the x86 platform.

Technical and Personal skills

- **Programming Languages:** Proficient in: C, C++, Java, Spark, Pthreads
  Competent in: Perl, OpenMP, MPI, MapReduce, Latex
  Knowledgeable in: RISC based Assembly, Matlab.

- **Operating Systems:** Linux, Mac OS X, and Windows based operating systems

- **Knowledgeable in:** Parallel Runtime Systems, Big Data, Computer Architectures, Parallel Programming, Compilers, Computer Networks, Code Optimization and Algorithms.

Publications

Joshua Landwehr, Joshua Suetterlein, Andrés Márquez, Joseph Manzano, and Guang R. Gao. Application characterization at scale: Lessons learned from developing a distributed Open Community Runtime system for high performance computing. In *Proceedings of the ACM International Conference on Computing Frontiers*, New York, NY, USA, 2016.

Joshua Suetterlein. DARTS: A runtime based on the Codelet Execution Model. Master's thesis, University of Delaware, 2014.

Joshua Suetterlein et al. Asynchronous runtimes in action: An introspective framework for a next gen runtime. In *Proceedings of the IEEE First Annual Workshop on Emerging Parallel and Distributed Runtime Systems and Middleware*, 2016.

Joshua Suettlerlein et al. An implementation of the Codelet Model. In *Euro-Par 2013 Parallel Processing: 19th International Conference*, Berlin, Heidelberg, 2013.