Aaron Reed Young

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Computer Engineering Ph.D. Student

Work Experience

University of Tennessee, Knoxville

- January 2016–Present: Research with the Neuromorphic Computing Group. Developing applications to test the effectiveness of neuromorphic computers and assisting with the path from the hardware to the processor.

Garmin International, Inc., Olathe, KS

- Summer 2015: On the Aviation Software-Navigation Library Team. Improved the Navigation Library by revising requirements, making changes to the code base, and creating new test cases.

Oak Ridge National Laboratory, Manufacturing Demonstration Facility, Knoxville, TN

- Summer 2014: Programmed slicing engine for use with ORNL's two large-scale additive manufacturing machines using C++ and C#. Software was used to print the world's first 3D printed car.

Siemens Medical Systems, Knoxville, TN

- Summer 2013: Implemented embedded system control software using MQX RTOS on an ARM9 processor. Development included interfacing with GPIO, I^2C, SPI, CANopen, RS-323, and Ethernet. Embedded software supported interfacing to LEDs, LCD, FPGA, Temperature and Humidity sensors, EEPROM, DACs, SFP+, and a Power Controller. Designed a C# testing interface to communicate with the processor over TCP/IP.
- Summer 2012: Designed a system using an Altera Stratix IV FPGA development board to read data from two TI 1 GHz ADCs. Developed a NIOS II FPGA soft-core running µC/OS-II using Quartus II. Designed a C# application to interface with the development board using UDP/IP.
- Summer 2011: Used C# and ASP.NET to develop a database-driven website to keep track of employee's tasks. Learned and utilized LINQ to access the SQL database records.

Education

- University of Tennessee, Knoxville, Ph.D. in Computer Engineering Fall 2017–Present, GPA: 4.0. Will complete Ph.D. Degree 2020.
- University of Tennessee, Knoxville, Master's Degree in Computer Engineering, Fall 2016–Summer 2017, GPA: 4.0.
- University of Tennessee, Knoxville, Bachelor's Degree in Computer Engineering, Chancellor's Honors Program, EECS Honors. Fall 2012–Spring 2016, GPA: 4.0.
- Engineering in London Study Abroad Program: Spent five weeks in London earning six University of Tennessee engineering credit hours, June 2013.
- Hardin Valley Academy, Knoxville, Tennessee, High School Diploma, May 2012. GPA: 4.38 / 4.0. Received college credit for AP classes.

Awards

- Bodenheimer Fellowship Recipient, August 2016–Present.
- Top Collegiate Scholar, College of Engineering, The University of Tennessee, May 2016.
- Outstanding Computer Engineering Senior, Department of Electrical Engineering and Computer Science at the University of Tennessee, December 2015.
- Outstanding Computer Engineering Senior, Department of Electrical Engineering and Computer Science at the University of Tennessee, December 2014.
- Outstanding Computer Engineering Junior, Department of Electrical Engineering and Computer Science at the University of Tennessee, December 2013.
- Min H. Kao Electrical and Computer Engineering Scholarship Recipient, 2013–2015.
- Alcoa—College of Engineering Study Abroad Fellowship, 2013.
- Tau Beta Pi, The Engineering Honor Society, 2013.

Publications

- A Review of Spiking Neuromorphic Hardware Communication Systems, A. R. Young, M. E. Dean, J. S. Plank and G. S. Rose, in *IEEE Access*, vol. 7, pp. 135606-135620, 2019.
- Poster: Neuromorphic Array Communications Controller, Aaron R. Young and Mark E. Dean, *JDRD Symposium*, 2019.
- Understanding Selection and Diversity for Evolution of Spiking Recurrent Neural Networks, Catherine D. Shuman, Grant Bruer, Aaron R. Young, Mark Dean and James S. Plank, *IJCNN: The International Joint Conference on Neural Networks*, 2018.
- Neuromorphic Array Communications Controller to Support Large-Scale Neural Networks, Aaron R. Young, Mark E. Dean, James S. Plank, Garrett S. Rose and Catherine D. Schuman, *IJCNN: The International Joint Conference on Neural Networks*, 2018.
- Scalable High-Speed Communications for Neuromorphic Systems, Young, A. *Masters Thesis, University of Tennessee,* 2017.
- Poster: DANNA Neuromorphic Application Development Kit Demo, Mark Dean, Aaron Young, Parker Mitchell, Patricia Eckhart, John Reynolds, Grant Bruer, Adam Disney, James Plank, and Catherine Schuman. *5th Neuro Inspired Computational Elements Workshop (NICE 2017)*, 2017.
- DANNA: A Neuromorphic Software Ecosystem, Adam Disney, John Reynolds, Catherine D. Schuman, Aleksander Klibisz, Aaron Young, and James S. Plank, *Biologically Inspired Cognitive Architectures, Volume 9*, 2016.

FIRST Robotics Participation

- Mentor for Hardin Valley Academy FIRST Robotics Team. Set-up source code version control. Assisted with teaching programming to students. Provided support at Regional Competition, 2012–2013.
- Computer Programmer for Hardin Valley Academy FIRST Robotics Team. Used C++ to design, simulate and implement the robot's control system and autonomous mode. Assisted with electrical set-up and mechanical manufacturing. Participated in regional and national competitions, 2011 & 2012.