Madison **Hanberry**

Physics Researcher · Software Engineer · Cloud Automation Expert

Seattle WA, USA

mhanberry1@gmail.com | mhanberry1

Relevant Experience

Georgia State University Center for Nano-Optics (Dr. Alexander Kozhanov)

Atlanta, Georgia

Spintronics Researcher — *Jan. 2015 - May 2018*

- Used LabView to Capture and process high quality footage of magnetic domain reversal in a MOKE microscopy setup
- Utilized the LabWindows C-language integration to speed up capture rates and eliminate dropped frames
- Designed and machined parts to enable real-time control of lense placement
- Using LabView, regulated Cryostat Temperatures to keep magnetic samples at optimum temperatures
- Created a magnetic field regulation system to allow researchers to control the direction of the field from a LabView interface
- Designed and implemented experiment-control interfaces
- Automated image analysis of MOKE microscopy footage

Skills

Programming Languages	LabView, LabWindows, LaTeX, Matlab, Python, C/C++, OCaml, Bash, Fortran, JAVA, Node.js/Javascript, PHP, ARM/NASM Assembly
Cloud Platforms	Amazon AWS, Microsoft Azure, Google Cloud, Digital Ocean
Web Technologies	HTML, CSS, jQuery, angular.js, react.js, modular.js, CGI web backend implementation, REST API implementation
Infrastructure Automation	Terraform, Ansible, Docker, Kubernetes, VMware vSphere, vRealize Automation, vRealize Orchestrator, NSX Firewall, F5 Load Balancers, BlueCat DNS, Enterprise and Non-Enterprise GNU/Linux Systems, AIX
Database Systems	SQL, REDIS, MongoDB

Presentations

Switching Dynamics in Triangular Nanomagnets

New Orleans, Louisiana

First Author & Presenter, American Physical Society March 2017 Meeting — *March 2017*

- Unveiled simulation results of complex triangular nanomagnetic systems
- Detailed how said systems could be used to implement a non-volitile base-six processor

Dzyaloshinskii-Moria Interaction in CoNiPt Tri-Layer Heterostructures

New Orleans, Louisiana

Secondary Author, American Physical Society March 2017 Meeting — *March 2017*

- Detailed experimental observation and analysis of the DMI effect in a CoNiPt sample

Magnetization Reversal Dynamics in CoNi Heterostructures

New Orleans, Louisiana

Secondary Author, American Physical Society March 2017 Meeting — *March 2017*

- Detailed experimental observation and analysis of magnetization reversal in various CoNi samples

Spin Waves Propagation in Structured Magnetic Films with Perpendicular Magnetic Anisotropy

New Orleans, Louisiana

Secondary Author, American Physical Society March 2017 Meeting — *March 2017*

- Detailed results and analysis of spin wave simulation in thin magnetic films
- Summarized the potential for applications in computer logic

Triad Computing

Atlanta, Georgia

First Author & Presenter, 2016 Georgia State University Undergraduate Research Conference — *March 2016*

- Outlined the potential for higher-base computing using novel magnetic approaches, particularly the use of nanomagnetic triangles, or *triads*
- This was awarded first place for *Best Oral Presentation*

Notable Open Source Contributions

NMAG Nanomagnetic Simulator

nmag.soton.ac.uk/nmag

Maintainer & Contributor

2017 - PRESENT

- NMAG is a nanomagnetic simulator that has been cited in over 300 publications.
- Wrote a patch in 2017 that allowed it to be compiled easily with a modern software stack on Linux
- Continued maintaining said patch in the coming years.
- The patch saw significant use and led the creator of NMAG (Hans Fongohr), to ask if I would like to become the maintainer of the project in 2019.
- Since becoming the project maintainer, I have made the following contributions:
  - Worked to port the project off of the southampton.edu servers
  - Containerized the application using the singularity container platform
  - Worked to modernize the codebase.

Modular.js Framework

berrybuilder.com

Creator & Maintainer

2018 - PRESENT

- Addressed the need for a light-weight way to distribute website component
- Implemented advanced caching and cache-baking to acheive native performance
- Integrated code isolation so that modular.js can coexist with all other code and frameworks without modification

Education

Georgia Tech (Georgia Institute of Technology)

Atlanta, Georgia

M.S. in Computer Science with a focus in Computer Architecture

Jan. 2019 - PRESENT

- Constructed a hypervisor management daemon using libvirt
- Implemented extensive processor caching mechanisms for MIPS emulation
- Analyzed and created a patch for malware within a sandboxed environment

Georgia State University

Atlanta, Georgia

B.S. in Computer Science wit a focus in Theoretical Computer Science

Aug. 2014 - May 2018

- 3.95 GPA
- Received awards for research and academic excellence
- Self-directed research in coordination with Dr. Alex Kozhanov's spintronics lab
- Contributed to numerous research teams accross multiple disciplines including:
  - Spintronics
  - Cancer Cell Migration
  - Diabetes Treatment
  - Cognitive Development
  - Political Science
  - Literature and Language Analysis

Experience

Fiserv

Atlanta, Georgia

Cloud Automation Engineer

Aug. 2017 - PRESENT

- Contributed to design and delivery of the IaaS platform
- Created a self-service portal for the Fiserv Enterprise Hybrid Cloud
- Main contributor for cloud integration efforts during the Fiserv and First Data merger
- Created a chatbot from scratch to offload common support and devOps tasks

AppyMeal

Seattle, WA & Atlanta, GA

CTO & Lead Software Engineer

April 2019 - PRESENT

- Designed and implemented everything in the AppyMeal app (frontend, backend, payment processing, identity management, PCI compliance, etc.)
- Automated the server infrastructure for hands-off maintenance and lean operation
- Led a team of 6 developers and designers
- Set to launch closed beta in April

Georgia State University Center for Nano-Optics (Dr. Alexander Kozhanov)

Atlanta, Georgia

Self-Directed Spintronics Researcher

Jan. 2015 - May 2018

- Designed a non-volitile base-six computer processor utilizing directional anisotropy in namomagnetic triangle arrays
- Designed and implemented experiment-control interfaces
- Created software for fractal dimension analysis of magnetic domains
- Automated image analysis of MOKE microscopy footage
- Designed and simulated nanomagnetic interfaces

Georgia State University Center for Excellence in Teaching and Learning

Atlanta, Georgia

Student Innovation Fellow

July 2016 - July 2017

- Engineered software solutions for research teams at collaborating universities
- The subject matter was diverse and included the following:
  - Diabetes Treatment
  - Cognitive Development
  - Political Science
  - Literature and Language Analysis

Tech Corps

Atlanta, Georgia

Programming Instructor

July 2017

- Taught children C# programming using the Unity 3D game engine

Baily International of Atlanta

Atlanta, Georgia

IT Consultant

May 2016 - August 2017

- Was responsible for more than 60 workstations running various versions of Windows
- Set up and maintained GNU/Linux Servers
- Automated networking tasks

Georgia State University Center for Instructional Innovation

Atlanta, Georgia

Workshop Instructor

January 2016 - August 2016

- Pioneered courses on bash scripting
- Automated data analytics for administrative purposes
- Instructed classes on programming topics

Georgia State University Physics Department

Atlanta, Georgia

Physics II Lab Instructor

January 2016 - August 2016

- Coordinated and instructed lab sessions for Calculus-based Physics II

Georgia State University Math Assistance Complex

Atlanta, Georgia

University Math Tutor

January 2015 - May 2016

- Provided free tutoring for students in the following courses:
  - Calculus III
  - Linear Algebra
  - Calculus-Based Statistics
  - All Lower Levels of Math

Awards & Certifications

Awards

2016 **Best Oral Presentation**, GSURC for the presentation of *Triad Computing* — *Atlanta, Georgia*

2016 **Who's Who Among Students**, Georgia State University for academic excellence — *Atlanta, Georgia*

2014-18 **Honor Roll**, Georgia State University — *Atlanta, Georgia*

Certifications

2019 **Google Cloud Engineer**, GCE Exam at Google Next 2019 — *San Francisco, CA*