

# Madison Hanberry

SOFTWARE ENGINEER · CLOUD AUTOMATION EXPERT · PHYSICS RESEARCHER

Seattle WA, USA

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## 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 WITH 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 across multiple disciplines including:
  - Spintronics
  - Cancer Cell Migration
  - Diabetes Treatment
  - Cognitive Development
  - Political Science
  - Literature and Language Analysis

## Skills

### Programming Languages

Python, C/C++, JAVA, Node.js/Javascript, PHP, OCaml,  $\text{\LaTeX}$ , Bash, Fortran, Matlab, ARM/NASM Assembly

### 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

### Cloud Platforms

Amazon AWS, Microsoft Azure, Google Cloud, Digital Ocean

### Database Systems

SQL, REDIS, MongoDB

## 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)

SELF-DIRECTED SPINTRONICS RESEARCHER

Atlanta, Georgia

Jan. 2015 - May 2018

- Designed a non-volatile base-six computer processor utilizing directional anisotropy in nanomagnetic 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

STUDENT INNOVATION FELLOW

Atlanta, Georgia

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

PROGRAMMING INSTRUCTOR

Atlanta, Georgia

July 2017

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

## Baily International of Atlanta

IT CONSULTANT

Atlanta, Georgia

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

WORKSHOP INSTRUCTOR

Atlanta, Georgia

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

PHYSICS II LAB INSTRUCTOR

Atlanta, Georgia

January 2016 - August 2016

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

## Georgia State University Math Assistance Complex

UNIVERSITY MATH TUTOR

Atlanta, Georgia

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

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### AWARDS

- 2016 **Best Oral Presentation**, GSURC for the presentation of *Triad Computing*
- 2016 **Who's Who Among Students**, Georgia State University for academic excellence
- 2014-18 **Honor Roll**, Georgia State University

Atlanta, Georgia

Atlanta, Georgia

Atlanta, Georgia

### CERTIFICATIONS

- 2019 **Google Cloud Engineer**, GCE Exam at Google Next 2019

San Francisco, CA

## Presentations

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### 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-volatile base-six processor

## Dzyaloshinskii-Moria Interaction in CoNiPt Tri-Layer Heterostructures

SECONDARY AUTHOR, AMERICAN PHYSICAL SOCIETY MARCH 2017 MEETING

[New Orleans, Louisiana](#)

March 2017

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

## Magnetization Reversal Dynamics in CoNi Heterostructures

SECONDARY AUTHOR, AMERICAN PHYSICAL SOCIETY MARCH 2017 MEETING

[New Orleans, Louisiana](#)

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

SECONDARY AUTHOR, AMERICAN PHYSICAL SOCIETY MARCH 2017 MEETING

[New Orleans, Louisiana](#)

March 2017

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

## Triad Computing

FIRST AUTHOR & PRESENTER, 2016 GEORGIA STATE UNIVERSITY UNDERGRADUATE RESEARCH CONFERENCE

[Atlanta, Georgia](#)

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

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## NMAG Nanomagnetic Simulator

MAINTAINER & CONTRIBUTOR

[nmag.soton.ac.uk/nmag](http://nmag.soton.ac.uk/nmag)

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

CREATOR & MAINTAINER

[berrybuilder.com](http://berrybuilder.com)

2018 - PRESENT

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