

# Madison Hanberry

PHYSICS RESEARCHER · SOFTWARE ENGINEER · CLOUD AUTOMATION EXPERT

Seattle WA, USA

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## 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,  $\text{\LaTeX}$ , 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-volatile 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

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### NMAG Nanomagnetic Simulator

[nmag.soton.ac.uk/nmag](https://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](https://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 achieve native performance
- Integrated code isolation so that modular.js can coexist with all other code and frameworks without modification

## Education

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### Georgia Tech (Georgia Institute of Technology)

[Atlanta, Georgia](#)

M.S. IN COMPUTER SCIENCE WITH A FOCUS IN COMPUTER ARCHITECTURE

2023

- 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

2018

- Received awards for research and academic excellence
- Staff researcher in Dr. Alexander Kozhanov's spintronics research lab
- Contributed to numerous research teams across multiple disciplines including:
  - Spintronics
  - Cancer Cell Migration
  - Diabetes Treatment
  - Cognitive Development
  - Political Science
  - Literature and Language Analysis

## Experience

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### Very Good Security

[Seattle, Washington](#)

SENIOR SOFTWARE ENGINEER

March 2022 - PRESENT

- Implemented and brought to market a file processing and obfuscation product for enterprise customers
- Implemented a standardized approach to IaC and CI/CD with company-wide impact
- Overhauled the company's observability stack for 60% cost savings and increased reliability

### Home Depot

[Seattle, Washington](#)

SENIOR SITE RELIABILITY ENGINEER

March 2021 - March 2022

- Maintained Google Cloud Infrastructure and Policies
- Implemented IaC for production and non-production environments using Terraform
- Implemented continuous integration pipelines using Circle CI
- Implemented continuous deployment pipelines to Google Kubernetes Engine clusters using Harness and Spinnaker

### Symetra

[Seattle, Washington](#)

FULL STACK ENGINEER

September 2020 - March 2021

- Created an automated insurance approval system
- Built an entire platform on AWS technologies utilizing Serverless
- Implemented a machine learning to aid in the evaluation of insurance candidates
- Developed a distributed blockchain ledger to track contract history

## AppyMeal

CO-FOUNDER & LEAD SOFTWARE ENGINEER

- 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
- Successfully Launched on Google Play and Apple App Store

Seattle, WA & Atlanta, GA

April 2019 - PRESENT

## AIM Consulting

CLOUD ENGINEERING AND SOFTWARE DEVELOPMENT CONSULTANT

- Worked on creating a FHIR-compliant REST api for Medinformatix
- Built serverless endpoints on AWS Lambda
- Implemented a go-forward CI/CD solution built on Cloudformation, CodeBuild, and Codepipeline

Seattle, Washington

June 2020 - September

## Fiserv

CLOUD AUTOMATION ENGINEER

- Led the design and implementation of Fiserv's hybrid-cloud platform
- Created cloud-agnostic solutions to standardize infrastructure-as-code for Azure, AWS, GCP, and vSphere
- Deployed and managed multi-cloud kubernetes clusters utilizing vanilla kubernetes, Azure Kubernetes Service, Amazon EKS, Google Kubernetes Engine, and Rancher
- Deployed and managed additional container solutions including docker swarm and pivotal cloud foundry
- Engineered standardized CI/CD solutions based on Jenkins, Azure Pipelines, and GitLab CI
- 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

Atlanta, Georgia

Aug. 2017 - June 2020

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

STAFF SPINTRONICS RESEARCHER

- 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

Atlanta, Georgia

Jan. 2015 - May 2018

## Georgia State University Center for Excellence in Teaching and Learning

STUDENT INNOVATION FELLOW

- 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

Atlanta, Georgia

July 2016 - July 2017

## Awards & Certifications

### CERTIFICATIONS

- 2021 **Google Cloud Architect**, GCA Exam October 2021
- 2019 **Google Cloud Engineer**, GCE Exam at Google Next 2019

Seattle, WA

San Francisco, CA

### 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

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