Vanessa McHale

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Education

BA | MAY 2017 | UNIVERSITY OF WISCONSIN-MADISON

- Major: Mathematics

Graduate-level coursework

Math 721 – A First Course in Analysis
Math 741– Abstract Algebra
Physics 711 – Dynamics
Physics 721 – Electrodynamics
Math 776 – Model Theory
Math 771 – Set Theory
Math 751 – Introduction to Topology
Math 770 – Foundations of Mathematics

Undergraduate Coursework

Math 531 – Probability Theory
Math 567 – Elementary Number Theory
Math 551 – Elementary Topology
Math 632 – Introduction to Stochastic Processes

HIGH SCHOOL DIPLOMA | MAY 2013 | MONTGOMERY BLAIR HIGH SCHOOL

Coursework

Foundations of Computer Science
Algorithms and Data Structures

Experience

STUDENT HOURLY | CENTER FOR SLEEP AND CONSCIOUSNESS | JUNE 2015-AUGUST 2016

- I greatly improved an algorithm measuring the integrated information of a neural network and I accelerated it further by running it on a GPU with code generated in Haskell.
- The accelerated code ran comfortably on inputs 32 times the size of what was possible before, allowing researchers to study the information content of much more complex neural networks.

STUDENT HOURLY | ERIKSSON LAB – UW PHYSICS DEPARTMENT | MAY 2014-AUGUST 2015

- I implemented Ethernet packet reception and data analysis on an FPGA.
- I designed and built a temperature and humidity monitoring system for the lab, which used python to update a web server that I set up. I also wrote python code to send out email alerts if equipment overheated.

INTERN | CARNGEGIE INSTITUTION OF WASHINGTON – GEOPHYSICAL LABORATORY | JUNE-AUGUST 2012; MAY-AUGUST 2013

- I studied the electrocaloric effect using molecular dynamics with the program DLPOLY.
- I wrote python scripts for data analysis, and made edits to legacy FORTRAN code in order to simulate cooling in material under strain.
- I wrote a paper and made a slideshow at the end, providing theoretical evidence that solid-state refrigerators could be feasible at room temperature.

Projects

BF PARSER & INTERPRETER

- Built a parser and interpreter for the bf language, to learn monadic parser combinators and lenses.

YESOD-BASED BLOG

- Built a blog to learn the yesod framework, which updated content dynamically, pulled newest content first, and generated pagination and category pages.

TWITTER BOT

- Wrote a twitter bot that would tweet my build errors, which taught me how to use OAuth and REST APIs in Haskell

QR CODE GENERATOR

- Wrote a Haskell library to generate an image for a given string