

Jacob Carstenson

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Education

Swarthmore College

2013-2017

Expected graduation in Spring 2017 with Bachelor of Arts in Computer Science and Film and Media Studies

Work Experience

Essie Mae's Snack Bar

2013-2014

Student Cashier: Worked mostly behind the counter taking orders and making food for people, which were mostly sandwiches and other snacks. I learned interpersonal skills because I had to take orders in a professional and quick manner to keep the snack bar running smoothly. Other jobs included cleaning the eating area and restocking the food.

Swarthmore Computer Science Department

2014-Present

Student Systems Administrator: Taking over projects of varying sizes working with and maintaining all of the lab computers and servers for the Computer Science Department. Here I learned how to script in Bash and Python. I am proficient in the Linux CLI and know various linux tools like SSH. Most of the projects I had required some way to perform one simple task over a large number of machines, whether this is editing a file, installing packages, or upgrading. Worked full time over the Summer of 2014.

Projects included: Setting up an LDAP server. Using FAI to upgrade all of the lab machines from Ubuntu 12.04 to 14.04. Writing a script that wraps around PSSH to easily move files or send commands to multiple machines with just one command. Setting up a XEN server. Setting up a Salt server.

Swarthmore IT Services

2015-Present

ITS Associate: Work in client services division of ITS. Troubleshoot Mac and Windows computers for students and staff on campus, with the aim of providing permanent solutions instead of quick fixes to client GUI issues.

Relevant Coursework

Computer Architecture

Spring 2014

This was an advanced class on computer architecture. We learned specifically about the MIPS architecture and how to use Verilog to design hardware for distributed systems. The final project involved creating and simulating a working MIPS CPU using Verilog.

Computer Graphics

Fall 2014

This was an introduction to computer graphics working with OpenGL and CUDA programming, mainly in C++. I learned about Vector and Matrix data structures, 3D transformations, the Phong lighting system, ray tracing, the CUDA parallel programming language, and curved surfaces. The final project I chose for this class was using an octree data structure to make, simplify, and speed up the ray tracing process, allowing for the placement of a greater number of objects and vertices without any kind of slow down in ray tracing.

Artificial Intelligence

Spring 2015

This was an overall introduction to artificial intelligence mainly using Python. I learned about various AI methods such as state space searching, such as A*, informed and local searching, evolutionary searching, adversarial searching, machine learning, decision trees, MDPs, value iteration, reinforcement learning, neural nets, and subsumption architecture. The final project I chose was using an artificial neural net module, CONX, in Python to detect whether a 20X20 RGB image contains a face or not.

Computer Networks**Fall 2015**

Networks focused on how computer networks are structured as well as an in depth description of the OSI layered model, implementing application layer, transport layer, and even network layer protocols of our own, using either C or Python to do this. We learned about everything from application layer programming, like HTTP to how routers and switches work, even to how the entire internet is structured.

Parallel and Distributed Computing**Spring 2016**

In this class, we looked in depth at various computer systems like clusters, supercomputers, and distributed systems that focus on parallel programming in order to get more work done in less time. We also looked at various parallel algorithms and talked high-level and low-level about the main goals of parallel programming. Labs were mainly coded in C, and for the final project, I worked on making a distributed hash table that uses a specialized form of binary search trees to hold values, with a parallel hashing function.

Skills**Programming Languages**

Python, C/C++, Bash, Java, Verilog, Visual Basic, Processing, OCaml, HTML, MySQL, Objective C

Operating Systems

Linux (Red Hat/Fedora, Ubuntu, Debian, CentOS, Arch, Mint), Windows, Mac

Object Oriented Programming

Experience programming in C++, Python, and Java in my classes and personal projects using classes and objects to do higher level programming.

Computer and server hardware

Building computers and servers from scratch. Knowledge in memory, hard drives, CPUs, motherboards, etc.

iPhone 4 screen replacement

Experience fixing my own iPhone screen multiple times.

Arduino prototyping

I own an Arduino Uno that I do fun prototyping projects on using LEDs, buttons, potentiometers, and servos.