

David Jefts

Bachelor of Science, Computer Science

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Summer 2018 Internship

Cray Inc, Software Engineering Intern

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Internship Evaluation Report

I interned over the summer as a Software Engineering tester at Cray Inc., an American supercomputer manufacturer. Their main headquarters are in Seattle, Washington with their main offices in Minnesota and other offices spread around the world. Their newest product is called Aurora and was codenamed SHASTA. Cray Inc.'s 'next generation' supercomputer, Aurora has a lot of different teams working on the various parts of it, both software and hardware. My team was completely software based and worked on creating the network management service for SHASTA.

The Network Management Team (NWMGMT) consisted of nine people working together on different parts of the service in an Agile-Scrum environment. Agile-Scrum is a model of development based on appointing tasks in short bursts, called sprints, and breaking down the project into small parts that are easier to complete and manage. The Product Manager and the Scrum Master served as the managers of the team. The Product Manager was in charge of our product, making sure that we hit our sprint goals, running our meetings and excursions, and the team's budget. The Scrum Master was in charge of making sure our software met all of the expectations set out by Cray and that we worked with the other teams also working on SHASTA to integrate our service. I mostly worked with the Quality Assurance tester, who was in charge of making sure that all of our software actually works and that there are no bugs or issues in any of the systems we are developing. The other six people, Developers, worked together developing the actual network management software, with each person specializing in a different aspect of the software. I came into this team to be the 10th person present and to assist with testing. I attended all of the team meetings, keeping everyone up-to-date with what I was working on, and giving my insight on problems that arose. The two managers made most of the decisions, but everyone on the team, including myself, had input on all of the decisions made. Everyone on the team contributed solutions to obstacles that arose, and everyone assisted each other with their problems. I had some supervision from the Product Manager and worked closely with the Quality Assurance person who effectively was my mentor during my internship. I asked a lot of questions, learned even more things, and was even able to provide some suggestions to how the team could work more efficiently. To keep track of everyone's roles and tasks in the

team we used a program called JIRA, an online tool to track issues and goals for a team that everyone had access to. We also used an online software called GitHub to allow the entire team to work on the same software. GitHub is a code-management software that keeps track of everything coded by everyone on the team.

My job on the team was to help test the network management software, through functional Bash scripts and Python-based randomized testing scripts. My internship started off with writing Bash scripts for our software demonstrations we held at the end of each sprint. I moved from Bash scripting to stress testing with Python Long-Run Software Development Environment (SDE) scripting as our team realized that we needed to be able to test our software and our virtual environment over a long period of time (48 hours or more). Using PyCharm, an Integrated Development Environment (IDE), to help me write code I created a script that would run until failure, which randomly but intelligently performed actions using the network management software on our virtual environment. I programmed this script using the Object Oriented Paradigm (OOP) along with libraries created by other members of my team that allowed my scripts to interact with the actual software environment.

During the course of my internship I learned all about the network stack- the functions of its seven layers, the connections between parts of a network, how traffic is routed and controlled, and how endpoints are managed among many other things. I also learned a lot about Bash and Python scripting along with how both languages work, their capabilities, and their syntax/structure. I worked with many additional libraries and learned how Docker containers and virtual machines are managed and used. I also learned about JIRA and came to love some of its features like sprint-tracking along with its ability to seamlessly work with the Agile Scrum model.

Almost everything I did during my internship involved programming, which is extremely relevant to my educational and career interests because I intend to program full-time after Embry Riddle. I am currently studying Computer Science and plan to obtain a Master's degree in Software Engineering, and eventually I want to become a Software Engineer and code for an organization that deals with space exploration (SpaceX, NASA, etc.) and create my own applications. Through my work with libraries, BitBucket (which showed me how to do team programming), and delving into Python, I feel more confident that I can create and test applications properly. My experience this summer has helped me grow as a programmer, and create a foundation on which to continue developing my computer software skills.

I learned that my best way to unwind is sleeping, and my best way to alleviate stress from any part of life, including work, is to sleep. I also play piano to separate my work life from home life, and play often right when I get home. Spending time with friends and family also helps me be energized for work the next day, as does working out. To help my focus at work, I went on routine walks a few times a week and listened to music all day every day. Additionally, I worked slightly longer hours Monday through Thursdays so that I could get off earlier on Fridays. I am really grateful that everyone on the team was extremely awesome and supportive of me.

This internship showed me that I really enjoy coding, not just coding in class but also real-world software development. I think I enjoy it so much because I love solving problems, and

the company culture at Cray revolves around problem solving. My manager, Frank Harris, checked in on me 2-3 times per week to make sure I had a valuable problem to solve. His leadership showed the most in team meetings; we met often which contributed to building team morale. Cray focuses on hiring programmers who fit into the culture, and I felt extremely welcomed there. I also learned that it is really easy to make a lot of money in the software development world because there is a very high demand for good software developers- whether they are interns, graduates, professionals, or amateurs. I am really appreciative of the opportunity I had this summer and really enjoyed working with everyone at Cray. I felt welcomed, learned a lot, and realized my passion for completing valuable programming work.