Christopher Moriarty

Senior Software Engineer

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EXPERIENCE

Smithsonian Astrophysical Observatory, Cambridge MA - *Computer Engineer GS-14*

Technical Manager of the Minor Planet Center September 2021 - PRESENT

- Developed a Docker-based framework for hosting public facing React based web content, and Python APIs using Flask, with fast access to a replicated operational database.
- Reorganized management of the team by dividing operations and software development into separate workflows, leveraging Jira Service Desk and Jira Software Cloud.
- Wrangled many disparate code projects into a structured mono-repository, building a software development process around feature branching and pull requests using Github.
- Hired and directly manage two junior software engineers
- Mentored an intern to develop a Near Earth Object classifier using TensorFlow.

Senior Software Engineer for the Submillimeter Array September 2018 - September 2021

- Brought project management and software engineering best practices to the entire team.
- Persuaded team to adopt Google Calendar, Slack, Google Team Drive, and Github.
- Architected networking and software improvements for the SWARM data correlator.
- Fixed and automated VLBI software, greatly improving Event Horizon Telescope campaigns.
- Developed Python API for a Redis based messaging system.
- Co-organized observatory wide multi-day operations review.
- Started the CfA Software Engineering Steering Committee, and served as the chair.

Space Telescope Science Institute, Baltimore MD - *Senior Systems Software Engineer*

Lead Software Engineer of Makidon Optics Lab January 2017 - August 2018

- Developed an object-oriented Python monitor and control library for HiCAT, including environmental sensing and safe shutdown/recovery, enabling remote operations.
- Developed a real-time data pipeline with background subtraction, bad pixel correction, image registration (cross correlation), and standard fits metadata for archiving.
- Brought software engineering practices to a science research team (Git, Jira, object-oriented code, feature branching, unit tests, continuous integration).
- Co-I for successful NASA TDEM proposal, using results obtained with my updated software.

Senior Software Engineer for APT - Astronomer's Proposal Tool August 2012 - January 2017

- Worked with instrument scientists to collect requirements, and implement "templates" within APT for the new JWST instruments, and coordinate updates to downstream systems.
- NASA award for feature allowing HST users to check for bright objects for moving targets.
- Completed a multi-system feature for duplication checking against the STScI MAST Archive.
- Maintained and updated an automated JUnit regression testing suite.
- Encouraged best practices (feature branching, code reviews and continuous integration)
- Responsible for shepherding releases; building code, packaging, deployment, notifying users, updating tracking system, and merging code.

Harmonia, Blacksburg VA - *Software Engineer III* August 2010 - July 2012

Lead Software Engineer and AI Researcher for ABMA - Automated Battle Management Aid

- Led a Navy funded Phase II SBIR to obtain several new sources of funding.
- Developed an EXT-GWT app that integrated with C&C Navy systems to intelligently gather data and optimize military resources to recommend battle management plans.
- Reporting and documentation; technical whitepapers, proposals, and user manuals.
- Awarded a separate contract to turn my code into an SDK to standardize integration with the Navy's Command & Control Rapid Prototype Continuum.

Software Engineer for Predicting Traffic Patterns (C++, Neural Networks, FANN library)

- Applied neural networks to predict traffic related attributes about a simulated intersection

JDSU, Raleigh NC - *Software Engineer I* September 2007 - July 2010

Software Engineer for JBoss Portal for IPTV Monitoring

- Completed a multi-year software lifecycle gaining experience with requirements, design, development, testing, documentation, deployment, support, and customer interaction.
- Worked with a marketing and sales department to create formal requirements documents.
- Developed JSF (w/ RichFaces) portlets for JBoss Portal, which interfaced with network monitoring devices to display customized monitoring tools all with a similar look and feel.
- Formally trained for agile scrum and Jira.

Software Engineer for Network Monitoring Devices

- Added new alarm filters, and optimized PCR jitter calculation for an IPTV test device.
- Implemented an outward facing web-based XML API in C++.
- Feature updates and bug fixes for a MFC based GUI.
- Assisted development on a communication test suite in Java for Blackberry.
- Developed a control library in C for an RS-232 SPI device for switching femto-cell antennas.

EDUCATION

University of Central Florida, Orlando FL

- M.S. in Intelligent Systems GPA 3.9 May 2007
- B.S. in Computer Engineering GPA 3.1 May 2005
- M.S. Coursework: Neural Networks, High Speed Computer Architecture, Modeling Human Behavior, Expert Systems, Pattern Recognition, Multi-Agent Systems, Software Engineering.
- Master's Thesis - "Learning Human Behavior from Observation for Gaming Applications". Monitored Quake II human players to create non-player characters that behave more humanlike using C, C++, and multi-layer perceptron time-delay neural networks.

SKILLS

- **Coding:** Python, conda, pytest, PostgreSQL, Java, JUnit, C, C++, C#, Mathematica, GWT, Ext-JS, JSF, XML, ANT
- **Version Control/CI:** Git, Mercurial, Github, Github Actions, Git Kraken, Jenkins
- **Project Mgmt**: Jira, Trello, Open Project, Confluence, Jira Service Desk
- **IDEs:** PyCharm, VSCode, Eclipse, Netbeans,, Visual Studio, VI, VIM
- **Sys Admin**: VMWare, Docker, Systemd, Bash, VLANs, Arista Switches, Linux/Mac/Windows, administration.
- **Hosted Trainings:** Python, conda, Git, Github, pytest, Issue Tracking, Software Carpentries.