Cory Hufford

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SELECTED EXPERIENCE

Radiance Technologies | Beavercreek, Ohio

Software Engineer, Modeling and Simulation Operation *Sep 2023 – Present*
- Worked with mathematicians to write a new C++ library implementing multiple sensor fusion algorithms, then helped evaluate and improve the algorithms for object tracking use cases
- Implemented new features and bug fixes in a C++ library for creating Kalman-filter-based object trackers
- Created a new C++ library, in part by translating existing MATLAB code, containing algorithms for air battle simulation used in models for the [Advanced Framework for Simulation, Integration, and Modeling (AFSIM)](#)

Software Engineer, Advanced R&D Operation *Sep 2022 – Dec 2023*
- Worked on a multidisciplinary team to create a new Kalman-filter-based object tracker and implement a proof of concept in Python that outperformed competing algorithms, then translated it to Rust and wrote a Python interface for it to create a production ready version that was 11-30 times faster than the fastest proof of concept and included extensive technical documentation and frequent semi-automated releases
- Implemented automated tuning for object trackers and other algorithms in Python with differential evolution
- Containerized various existing pieces of software with Docker, and created and maintained Docker and Docker Compose based Continuous Integration (CI) infrastructure

Applied Optimization | Fairborn, Ohio

Computer Engineer, Additive Manufacturing Team *Sep 2021 – Aug 2022*
- Primary maintainer of [ParaGen](#), an application for iterative steady state simulation of the powder bed, powder spray, and wire feed additive manufacturing processes; performed significant algorithm upgrades to the creation of simulation geometries to improve simulation reliability
- Implemented a workflow for the simulation of gas flow in the powder spray and powder bed processes using OpenFOAM in a simulation and analysis suite called [AMP](#)[2]
- Developed a new simulation application that simulates the trajectories and vaporization spatter of particles in the powder spray process, which was successfully validated against experiment data and used to analyze the effect of machine process parameters on nozzle blockage formation
- Overhauled a tool route generation algorithm to improve run time performance by 2-8x per part, improve layer routing reliability from <10% to >90%, decrease memory and disk usage by >50%, and parallelize part route generation
- Maintained and used a Slurm based compute cluster for various simulation applications and developed new tools for reliable automated maintenance

Computer Engineer, Space Science Team *June 2019 – Nov 2021*
- Worked on a multidisciplinary team to design new algorithms and improve existing algorithms for exploiting photometric data of objects in geostationary and cislunar orbits in Python and C++ (often with Python interfaces)
- Revamped C++ build processes and dependency management to convert a suite of Windows and MSVC specific software into highly compatible cross platform libraries and applications
- Created and maintained language agnostic and language specific programming guidelines, hosted formal and informal training sessions, and performed code reviews to improve code quality and consistency across multidisciplinary teams
- Created and implemented a comprehensive version control strategy including multi-platform continuous integration (CI) pipelines, issue reporting templates, branching and merging procedures, formal code and documentation reviews, and software release and delivery procedures
- Implemented and maintained CI infrastructure and pipelines that included building and packaging, testing, documentation generation and publishing, static code analysis, and deployment
- Wrote extensive documentation including project reports, software user and technical manuals, and API documentation for target audiences at a variety of skill and technical levels

PUBLIC WORK

- Advanced Maui Optical and Space Surveillance Technologies (AMOS) Conference papers:
  - Co-author, "[Automated Multi-Sensor Data Fusion Using the Unified Data Library](#)", AMOS 2021
  - Co-author, "[Simulated Photometry of Objects in Cislunar Orbits](#)", AMOS 2020
- Contributed file format improvements and corrections to satellite eclipse calculations in the [Electro-Optical Space Situational Awareness (EOSSA) File Format Description Document](#)

EDUCATION

Miami University | Oxford, Ohio

B.S. Computer Engineering   *May 2019*
- GPA 3.54

SELECTED SKILLS

- Rust, C++, and Python programming languages
- Cross-platform Windows and Linux development
- Rust/Python and C++/Python interoperability
- Docker and Docker Compose
- VM (Vagrant with VirtualBox and libvirt) and container based (Docker) continuous integration infrastructure with GitLab CI
- Technical writing and documentation for target audiences of varying skill and technical levels