Daniel W. **Boyle**

AI / EMBEDDED SOFTWARE ENGINEER

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Experience

Sr. Software Engineer / Program Analyst

ALPHA OMEGA GROUP LLC

Remote (Los Angeles, California)
October 2023 - Present

- Data science and automation support via Python for USSF contract, dealing with personnel processing and reporting
- Provide internal learning sessions to fellow engineers in various topics including machine learning, multi-threaded development, and common design patterns
- Help stand up new business processes and best practices for company's new software division

AI Framework Engineer

INTEL

Remote (Hillsboro, Oregon)
July 2022 - October 2023

- Large-scale multi-team production environment for Intel's Neural Processing Unit
- C++17 firmware development on future hardware used for the scheduling and execution of neural network workloads
- JTAG debugging for diagnosing firmware issues pertaining to model loading and inference execution
- Implemented automation tools to improve team development efficiency, including build automation, remote hardware debugging, remote windows driver installation and automatic machine-reservation using python
- Helped unify software baselines across multiple firmware products

Senior Software Engineer

LOCKHEED MARTIN - SPACE

Littleton, CO
Apr 2021 - July 2022

- Embedded C++ development on communication box for the OPIR satellite, utilizing the NXP LS1043 processor
- Design and implementation of communication interface and hardware configuration for GR718B SpaceWire Router, and Radnet-1848-PS Serial RapidIO Switch
- Extensive unit-testing for C++ applications using the Google Test framework
- Python CI Framework development for remote hardware validation and regression testing using pytest

A/AI Machine Learning Engineer

Colorado Springs, CO

LOCKHEED MARTIN - RMS

Dec 2019 - Apr 2021

- Policy-Gradient based Deep Reinforcement Learning for Red vs Blue Ballistic Missile defense simulation.
- Implementation of custom Proximal Policy Optimization (PPO) and Twin Delayed Deep Deterministic Policy Gradient (TD3) models using the PyTorch framework
- Machine learning lifecycle management via MLFlow
- Created OpenAI gym environment wrappers around the AFSIM simulator
- Gave multiple large internal presentations on applied reinforcement learning
- Backend micro-service architecture development for warfighter recommendation using Java with the SprintBoot framework
- VueJS development for application frontend
- Database work utilizing MariaDB and Redis
- Setup containerization for development environment and micro-services via Docker
- Maintained Gitlab CI/CD pipelines for multiple repositories

Embedded Software Engineer

Colorado Springs, CO

LOCKHEED MARTIN - SPACE

Sept 2018 - Dec 2019

- Green Hills Integrity 178B RTOS configuration and development on Curtiss Wright VPX6-187 boards
- Design and implementation of generic kernel and application infrastructure for future DO-178B certifiable real-time applications in C
- Driver development for USB, Serial (RS232 / RS422), and Ethernet communication
- Embedded GUI development with GLStudio utilizing Safety-Critical Embedded C++
- Development of NC3 system prototype using a multi-board architecture designed to pass Nuclear Surety
- Guided multiple customer-facing demonstrations on prototype capabilities
- Gitlab server management including server configuration, user administration and issue tracking

Software Engineer Associate

Orlando, FL

LOCKHEED MARTIN - MFC

Dec 2017 - Sept 2018

- Embedded and application-level C and C++ programming
- Linux kernel driver development for DMA, CMA and PCIe communication
- Inter-process communication library design and development utilizing TCP, UDP, Serial and DDS communication using C++
- Hardware interfacing through PCIe and RS422 serial communication
- OS configuration with Yocto/Petalinux for Xilinx Zynq-7000 series SoCs

Software Engineer Associate

LOCKHEED MARTIN - SPACE

- Re-hosted embedded legacy VAX/ELN ICBM code to Linux using Ada and C/C++, received Individual Excellence reward for completing far ahead of schedule
- Developed C++ libraries for multi-threading, TCP communication and lock-free IPC message brokering
- Led multiple inter-company technical interchange meetings on component design and application performance
- Creation of Software Design Documents (SDD) for preliminary and complex design program phases
- Software requirements tracking and management via DOORS
- C#/.NET MVVM application and UI design for data processing tools

Technical Summary

- Strong C/C++ experience, including areas such as template meta-programming, multiple inheritance, polymorphism, concurrency, inter-process communication memory management, and safety-critical development
- Knowledge in real-time embedded, system and application level C and C++ programming
- Advanced Python developer, experienced across many areas including micro-service development, machine learning, API development, hardware-automation and financial applications
- Deep knowledge in various AI topics including Representation Learning, Natural Language Processing, Time Series Forecasting and Deep Reinforcement Learning
- Experience implementing and training neural networks, including Transformers, Convolutional Neural Networks (CNN), Recurrent Neural Networks (RNN / LSTMs), Variational Autoencoders (VAE), and ensemble methods
- Extensive use of Python math and ML-support libraries including pandas, NumPy, SciPy and sklearn.

Skills

Languages:	C, C++, Python, Cython, Rust, Matlab, C#, Bash, Java, JavaScript, SQL, LaTeX
AI Frameworks and Libraries:	PyTorch, Tensorflow/Keras, NumPy, SciPy, Pandas, Scikit-learn, Ray, MLFlow
Operating Systems:	Linux, GreenHills Integrity, VxWorks, Windows, Mac OS
Performance and Debugging:	GDB, PDB, Valgrind, Perf, Prof, Callgrind
Configuration Management:	Jira, Gitlab, Github, Docker, Bitbucket, Jenkins

Education

University of Colorado, Colorado Springs

B.S. IN COMPUTER SCIENCE (GPA: 3.9)   *Dec 2017*

B.A. IN MATHEMATICS (GPA: 3.8)

M.S. IN COMPUTER SCIENCE - ARTIFICIAL INTELLIGENCE / MACHINE LEARNING (GPA: 4.0)   *Dec 2022*