Nicholas Emerson Mears

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An imaginative software engineer with determination to deliver well thought out honest work that is modern and fast. Well rounded with experience, determined to provide insight to create efficient and functional code to get the job done.

Skills

C++, C, Java, Python, POSIX, Bash, Rust, Typescript, Javascript, Modeling and Simulation, UML/SysML, Cmake, Gradle, Groovy, Kotlin, DIS, Modern C++ Design, Networking and Sockets, Systems Programming, Concurrent Programming

Work Experience

Software Systems Engineer *MITRE, 202 Burlington Rd, Bedford MA*   *October 2019 - Current*
Software Systems Engineer for the Emerging Systems Engineering Technologies department at MITRE. Primary responsibility is software development on two projects at a time, coming up with the general design and assigning tasking to a small team of around three including myself. The software for each project deals with simulation environments, as well as visual modeling tools such as UML and SysML based applications (MagicDraw, IBM Rhapsody etc.).

Projects

Simulation Tool for Aircraft System Testbed *MITRE*   *January 2021 - current*
Working with and tasking a small team on hosting a system that runs a high fidelity real time simulation written in C++. Its purpose is to aide in developing an adapter, for the aircraft being simulated, between an open message interface and the aircraft's message set. This enables hardware in the loop testing before deployment.

Model Filtering Tool *MITRE*   *December 2021 - current*
Leading a small team in developing and maintaining a set of filters written in Java for the SysML MagicDraw environment. Software relies on graph and set theory to apply user supplied filters from a user interface to the SysML model. The software is deployed onto classified infrastructure, and was developed for a complex data set that the Air Force had to deal with.

Simulation Language Static Analysis Tool *MITRE*   *November 2020 - October 2021*
Lead developer for a tool that linked the syntax of physics simulation engine to a UML diagramming tool, Magicdraw. The physics simulation tool had its own syntax and filetype, therefore the task took the engines syntax and mapped it to visual diagrams within the UML tool and used those diagrams edited or not in the tool to export back out to functional code.

Open Source UML C++ Interface *Personal project*   *June 2020 - current*
An attempt to provide a C++ interface to UML that is fast, lightweight and can also integrate with current tools. It was written to solve a problem and to improve my own modern C++ programming skills. Fun project that is maturing and can hopefully make a difference in the Systems Engineering industry. Source code: https://github.com/nemears/uml-cpp

VSCode Modeling Extension and Website *Personal Project*   *June 2022 - current*
Writing mostly Typescript and Javascript code for a frontend for a server created in the UML C++ Interface. Code interacts with server through TCP sockets, the VSCode API, and a Javascript diagramming library (diagram-js). Hope is to have it be a free modeling environement unlike current options. Source code: https://github.com/nemears/open-uml

Education

Worcester Polytechnic Institute: Bachelors of Science in Physics with a minor in Computer Science
                                             GPA: 3.75 Graduated May 2019 with High Distinction