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 simple 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*

Intermediate level software engineer for the Emerging Systems Engineering Technologies department at MITRE. Primary responsibility is leading the software engineering on two projects at a time, coming up with the general design and assigning tasking to a small team of around 3 including myself on each project. Software deals with simulation environments/engines, as well as visual modeling tools such as UML and SysML based applications.

Projects

Simulation Tool for Aircraft System Testbed *Mitre* *January 2021 - current*

Working with a small team on hosting a system that runs a high fidelity real time simulation written in C++ in order to develop an adapter for the aircraft being simulated and an open message interface to interact with hardware in the loop.

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. Fun project that is maturing and can hopefully make a difference in the Systems Engineering industry. Fun project to practice modern C++ design principles. Source code: `https://github.com/nemears/uml-cpp`

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 ui to the SysML model. The software was developed for a complex data set that the Air Force had to deal with and is deployed onto classified infrastructure.

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