# Em Mears

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Em is a skilled Software Engineer with 5 years of experience in modern C++ programming, as well as 2 years of Fullstack web development experience. Most recently she lead development of a web based custom modeling tool built with multithreaded C++ that hosts users' project data in the cloud! Em is an innovative and efficient engineer with a passion for creating fast, efficient and clever solutions, and learning as much as she can.

## Skills

Low level fast programs (C++, C, Rust), Full Stack Programming (Vue, JavaScript, Java, Python, SQL), Linux Administration (Bash, DHCP, Systemd, Docker), Presentation (Powerpoint, Video Editing, Spanish B1)

## Experience

**uml.cafe Modeling Platform** *Lead developer,* *Nov 2023 - Current*

Uml Cafe is a live, realtime multi-user, UML diagramming platform hosted on the web whose development was led by Em. She developed the protocol, datastructures and API's used to interact with a UML project, and built the platform up from there. She wrote the entire Rust and C++ multithreaded backend, and lead a small team of two in creating the frontend client. The platform is hosted live on https://uml.cafe with a concise demo video on the welcome screen. She maintains the server and provides regular updates.

**Software Systems Engineer** *MITRE, 202 Burlington Rd, Bedford MA* *October 2019 - Nov 2023*

Software Systems Engineer for the Emerging Systems Engineering Technologies department at MITRE. The following is the description of the projects and tasks that she completed, most recent to least:

- A C++ multithreaded model of a system to be used for testing, worked on the data structures and interfaces it consumed so it could integrate well with different industry protocols. Ran as a distributed system sending data to cloud storage.
- A set of tools in Java used for identifying important connections in graph models in MagicDraw of computer networks populated from SQL databases and Kafka brokers.
- Integrating a simulation environment with the modeling tool MagicDraw, this involved a set of static analysis tools that looked at the Abstract Syntax Tree of the simulation's code to populate diagrams and tables within the modeling software, as well as producing runnable Python code to start the simulation.
- A tool using proxmox the virtualization manager and ansible to spin up qemu virtual machines in order to set up a network with PLC's running FreeRTOS. The program would then run MITRE's caldera ("red team" AI) built for real time operating systems.

**Thermodynamics Research** *WPI, 100 Institute rd, Worcester MA* *June 2018 - June 2019*

While working on the WPI senior year capstone project she was able to work in a lab and assisted with some image analysis algorithms written in python that were used and eventually cited in a publication in Nature to validate some non-equilibrium thermodynamics theory a staff member was working on.

## Education

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