



Integrating Frontend Architecture for Rapid Deployment of Scientific Protocols: Improving the Accessibility of High-Throughput Screening Through a Graphical User Interface

Saharat Phiphatsirikajorn, San Joaquin Delta College,

PI: Johanna, Jessie Schwartz, **Mentor:** McBride, Mathew Kent, Lawrence Livermore National Laboratory

ABOUT ME

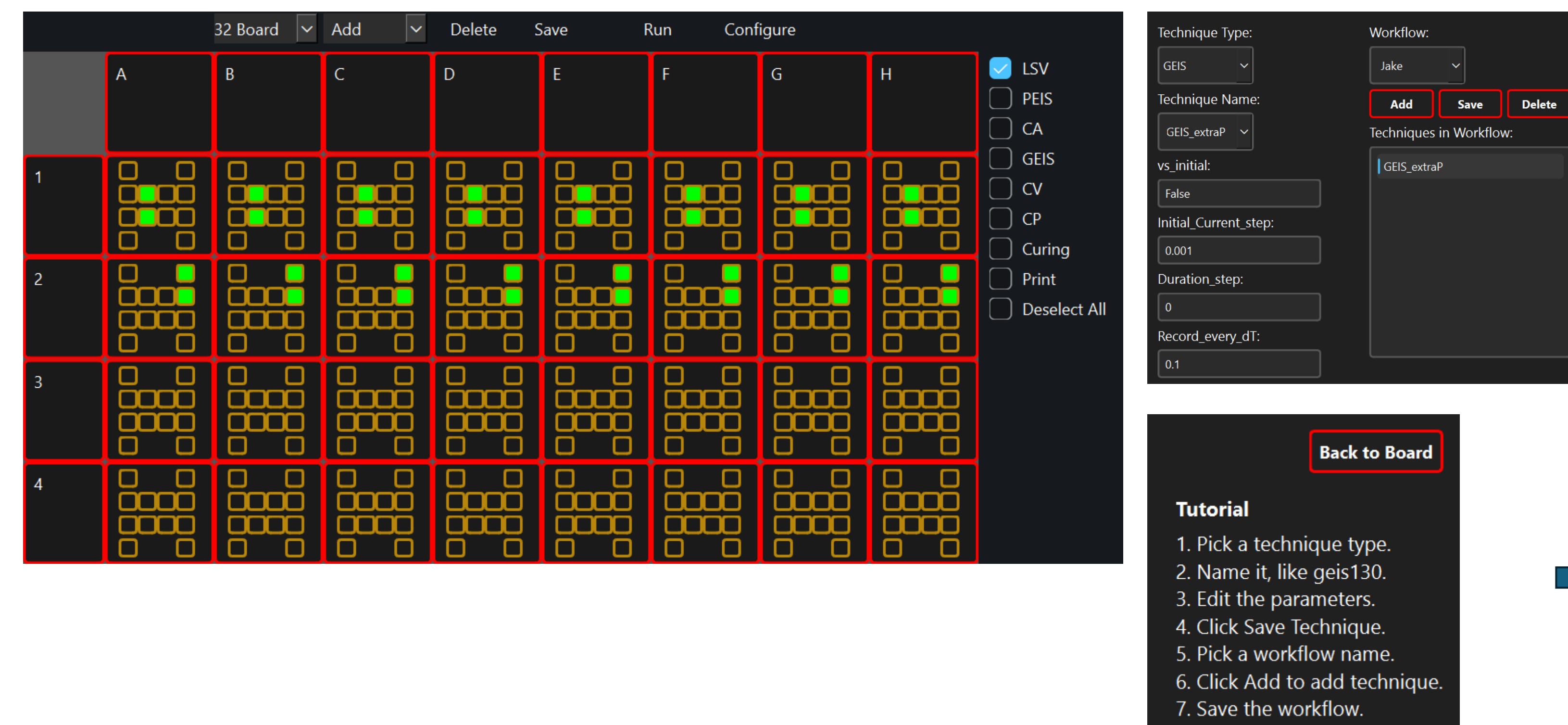
- **Major & Minor:** Computer Engineering
- **Career Goals:** To develop innovative solutions and gain the knowledge and skills needed to become an effective engineer.
- **Interests:** I enjoy staying active at the gym, gaming, spending time with friends/family, and eating food!
- **Why did you choose to have a fellowship at LLNL?** I pursued this fellowship to work with exceptional researchers and gain exposure to LLNL's extensive research capabilities and advanced machines.



SUMMER RESEARCH

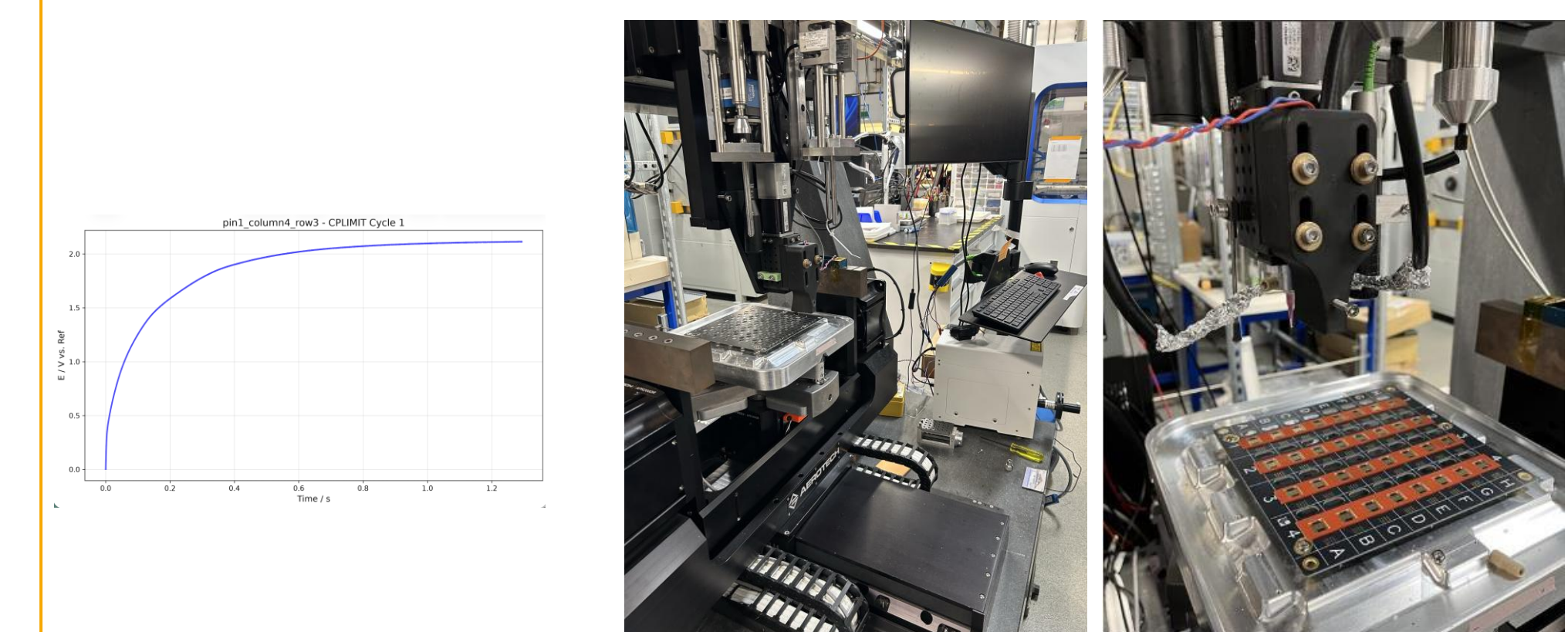
Abstract: High-throughput experimentation relies on automated systems for printing, curing, and electrochemical characterization. However, operating these systems often requires both chemistry expertise and technical knowledge, creating a barrier for new users. This project presents the development of a Graphical User Interface (GUI) that simplifies machine operation by integrating, workflow management, and electrochemical technique selection into a single interface. By providing an intuitive workflow for configuring scientific protocols, the GUI reduces operator training requirements and improves the accessibility of autonomous high-throughput screening.

Methods: During the initial development process, significant portions of the code were repeated. To improve maintainability and reduce redundancy, the DRY (Don't Repeat Yourself) principle was applied to consolidate common functionality. The workflow was further simplified by mirroring the machine's existing board movement logic, allowing the GUI and backend to share the same coordinates and motion strategy.



LLF AWARD

I plan to use these funds to support my education and personal projects, and this fellowship has strengthened my understanding of research, especially through working with talented individuals from different majors. It has also helped me realize my passion for research and inspired me to pursue research and continue learning more in fields such as mechanical and chemical engineering.



This work was performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344.

Poster IM NUMBER: RR0172060