

Lab Conversion Template (LCT) Project Proposal

Group Members and Skills

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 - 3rd Year Computer Science Major
 - Programming experience: Java, Python, SQL, C, JavaScript
- Nyimul Hoque (NH)
 - 1st Year Mechanical Engineering Major
 - Programming Experience: Java, Python, Matlab

Overview

This ITS system is an online tool that will help students succeed in their ECE course. It has an embedded version of the textbook alongside many other helpful features, such as graphs, examples, and pictures to help students learn the required material.

Converting the ECE 2026 labs from MATLAB to an online, JavaScript-based format is a project that has been undertaken by many different groups of VIP students, to varying degrees of success. There have been many repeated errors and redundant discoveries that have been made by each of these groups while attempting to convert one of these labs, leading to a lot of wasted time and unnecessary headache. We want to create a standard process for converting these GUIs, as well as a functional code template that will streamline this GUI conversion process, cutting down on the time it takes to convert these GUIs as well as ensuring that they meet a standard of functionality and consistency, which is especially important as these labs are eventually going to be connected to the backend database. Eventually, we want to be able to mine data from students' use of these labs in order to understand how they learn and improve the ITS experience for them.

Project Goals

- Streamline the process of creating GUIs for future VIP students
- Provide implementations for common features present in the previous MATLAB GUIs
- Provide a standard for describing the state of a GUI in order to send to the database
- Create a template that is easily understood to be manipulated to create code for GUIs

Project Timeline

Week 4	Project Proposal Drafts
Week 5	Project Proposal Final Due
Week 6	Become familiar with React, JS, and JSXGraph
Week 7	Create a modular mockup of the template that shows the overall structure including block diagram
Week 8	Review existing GUIs to determine common features to implement - see Convolution and PIS GUIs for nonstandard features
Week 9	Begin implementing features and interfaces between features in simple GUIs
Week 10-11	Continue implementing features and implement saving of 'state' information
Week 12	Create documentation explaining how to use/manipulate the template
Week 13-14	Create example GUI using template - possibly based on Fourier Series GUI
Week 15	Bug test/finalize documentation
Week 16	Final presentation