



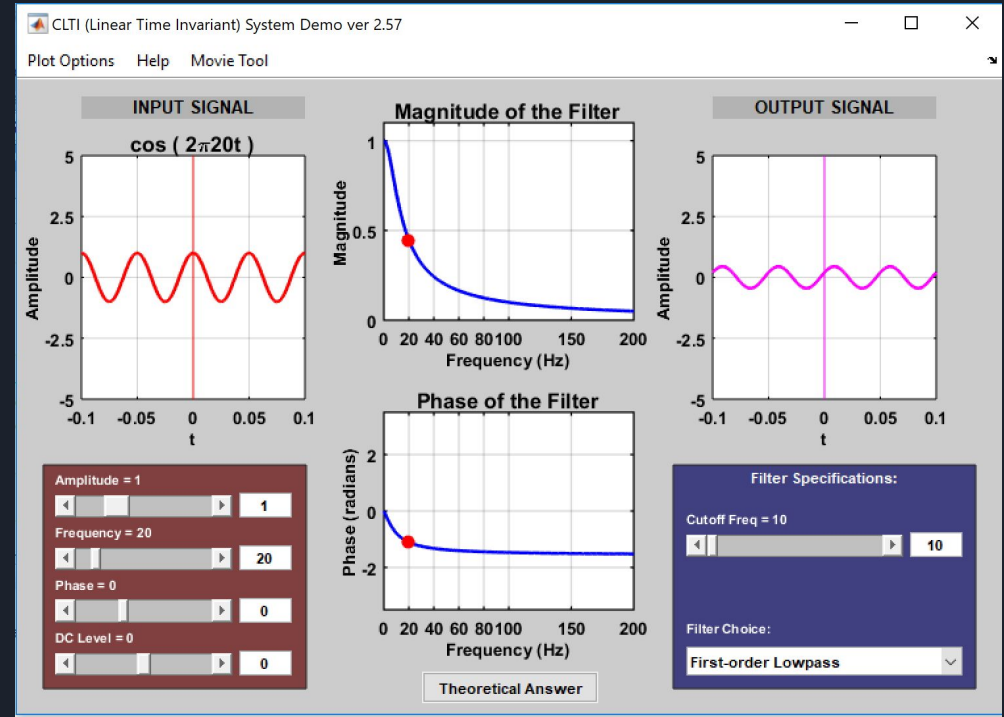
# CLTI Demo

Intelligent Tutoring System

Jordan Gross  
Sungyoung Joo  
Akshay Karthik  
Lucas Phillips  
Catherine Zhuang

# Overview

- Introduction
- Objectives
- Proposal
- Issues and Solutions
- Testing
- Final product
- What we learned
- Future application

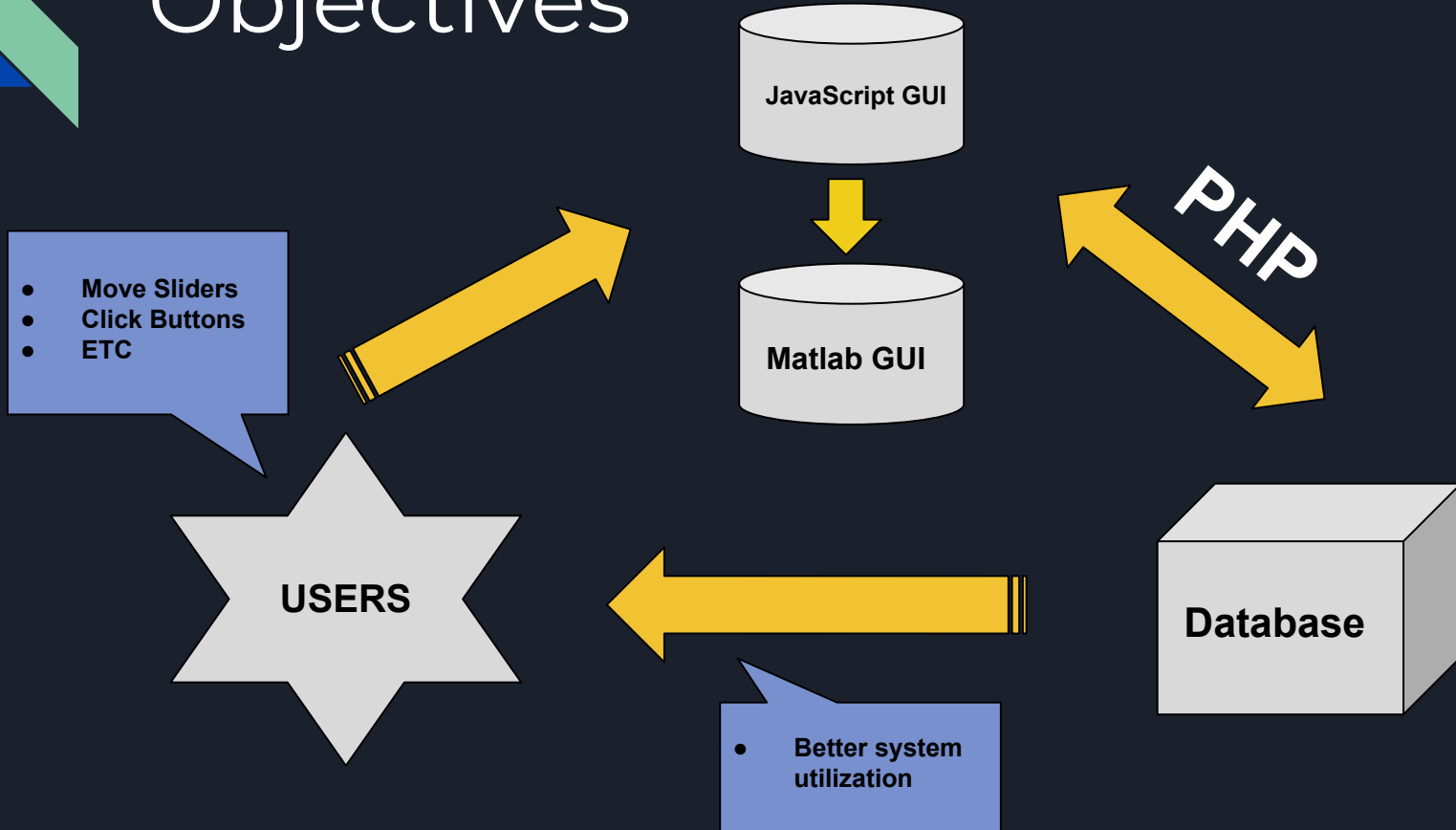




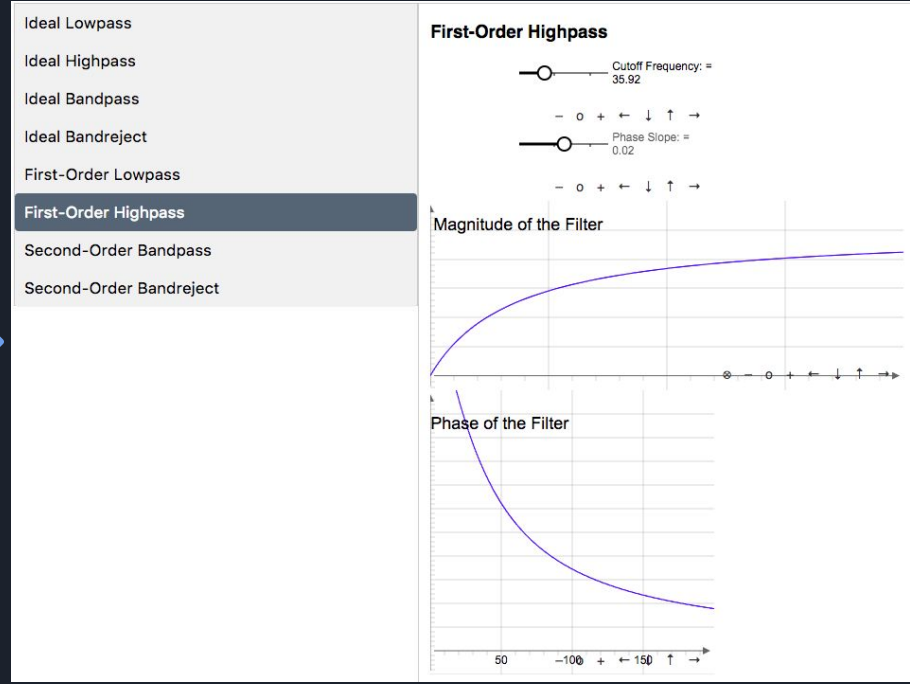
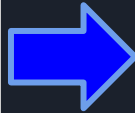
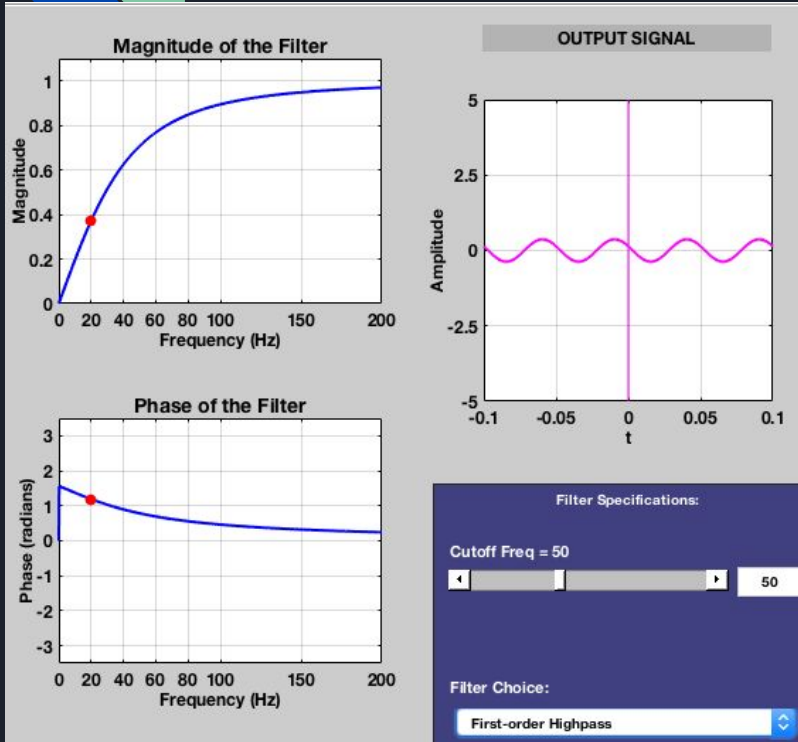
# Introduction

<b>Front-End</b>	<b>Database</b>
Jordan Gross	Sungyoung Joo
Akshay Karthik	Lucas Phillips
Catherine Zhuang	

# Objectives

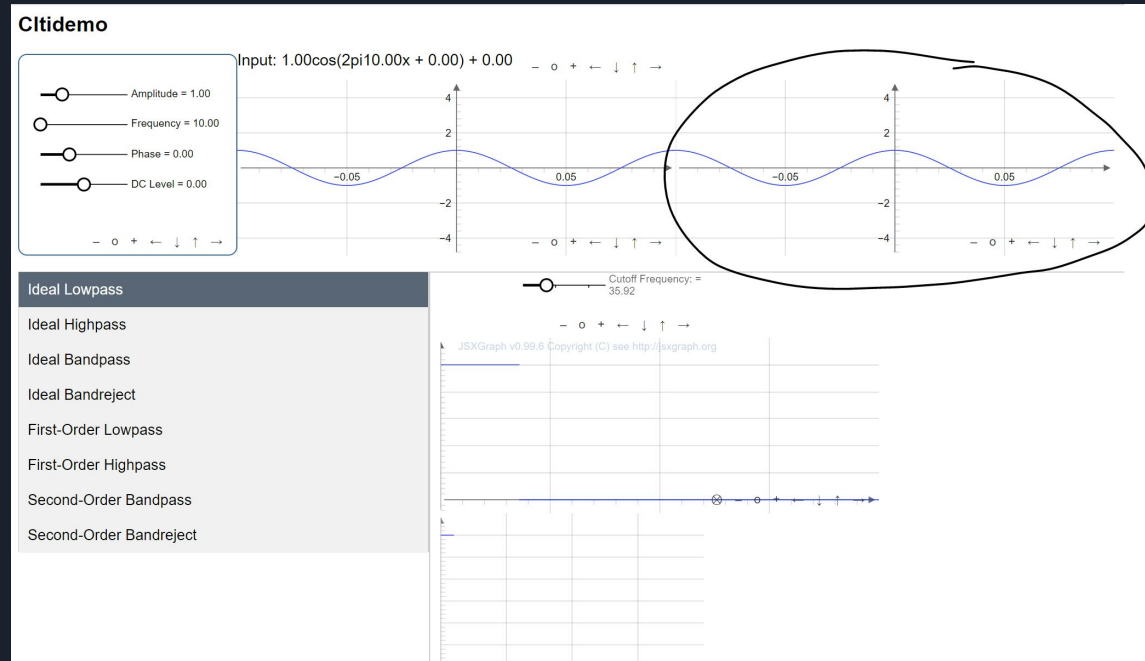


# Proposal - GUI



# Issues - GUI

- Separate HTML, CSS and JS
- Update one graph vs new graph in each tab
- Tabs communication with the output graph





# Solutions/Testing - GUI

- Changed JavaScript code into different functions
- HTML file only
  - contains the structure/layout of the page
  - calls the JavaScript functions
- Connections between input and output graphs:
  - have global slide bars to control all JSXGraph Boxes

# Final Product - GUI

## Cltidemo

Input:  $1.00\cos(2\pi 10.00x + 0.00) + 0.00$  - o + ← ↓ ↑ →

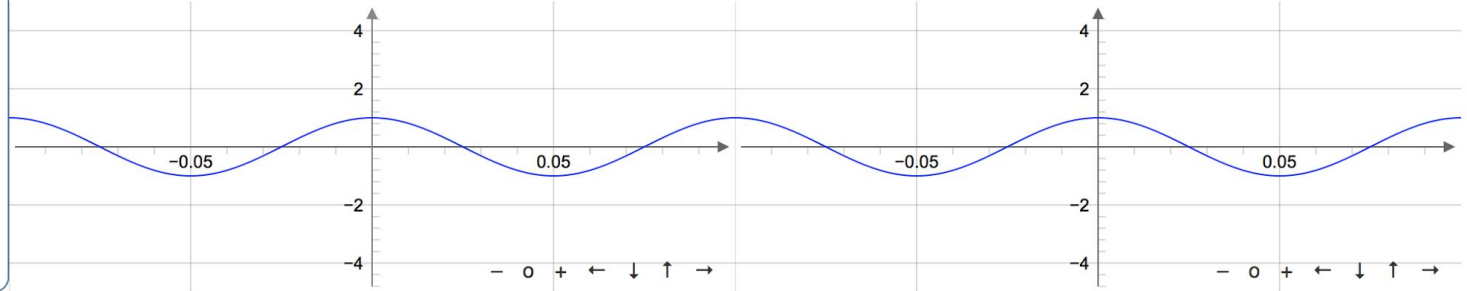
Amplitude = 1.00

Frequency = 10.00

Phase = 0.00

DC Level = 0.00

- o + ← ↓ ↑ →





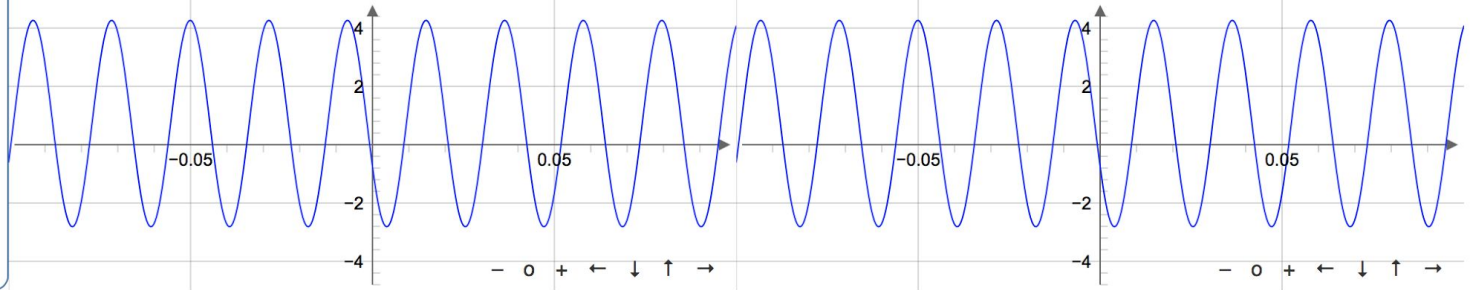
# Final Product - GUI

## Cltidemo

Input:  $3.54\cos(2\pi 46.29x + 2.00) + 0.73$  - o + ← ↓ ↑ →

- Amplitude = 3.54
- Frequency = 46.29
- Phase = 2.00
- DC Level = 0.73

- o + ← ↓ ↑ →



# Final Product - GUI

Ideal Lowpass

Ideal Highpass

Ideal Bandpass

Ideal Bandreject

First-Order Lowpass

First-Order Highpass

Second-Order Bandpass

Second-Order Bandreject

## Ideal Bandreject

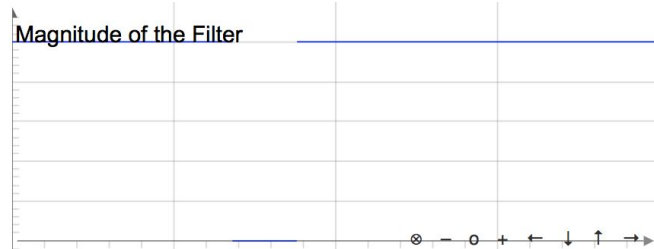
Cutoff Frequency: = 78.16

- o + ← ↓ ↑ →

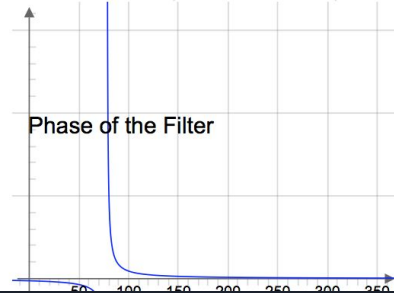
Phase Slope: = 0.00

- o + ← ↓ ↑ →

Magnitude of the Filter



Phase of the Filter





# What We Learned-GUI

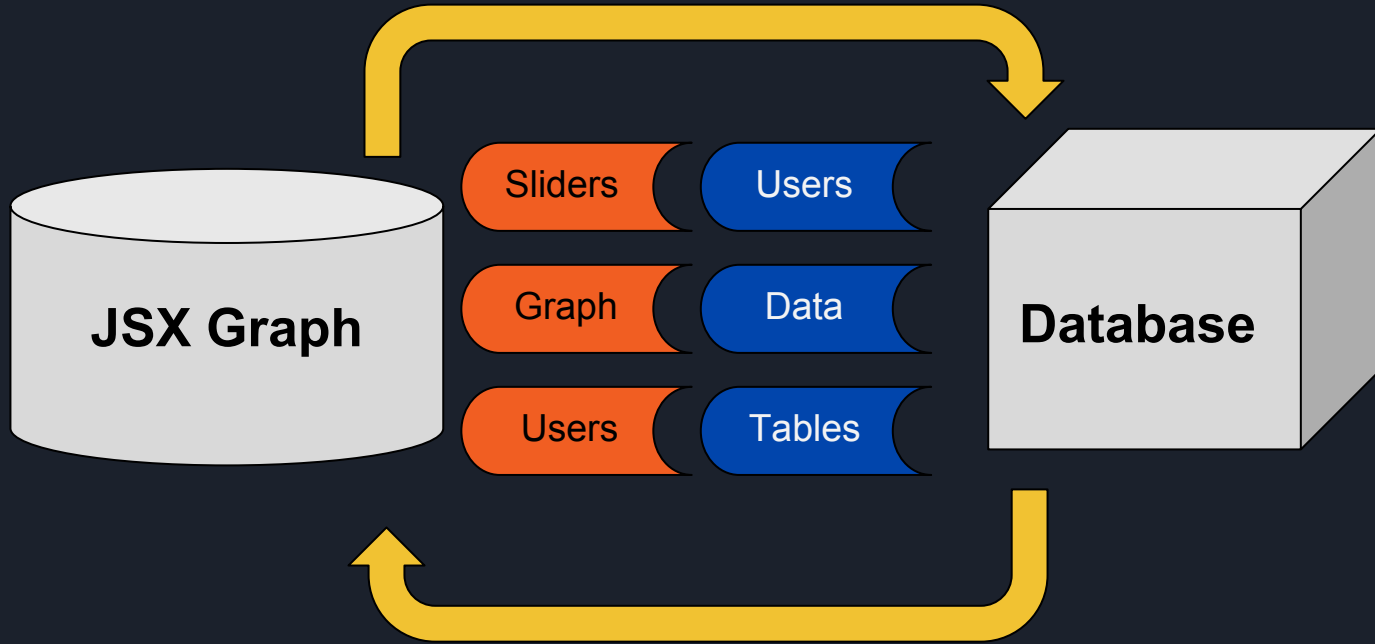
- ECE 2026 concepts (Matlab and CLTI filters)
- JavaScript, JSXGraph, CSS, HTML
- `updateOutput()` to change the output graph
- Communication



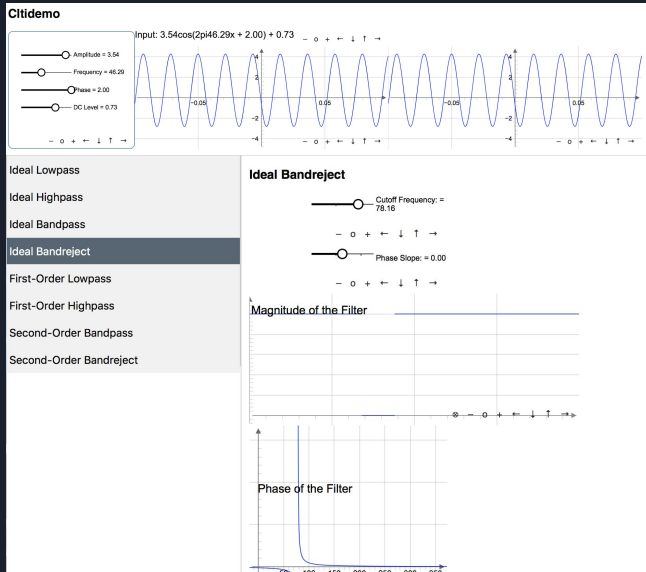
# Future Application - GUI

- Debug, add aesthetic features
- Additional functionality
- Replace Matlab GUI in 2026 labs
- Usable in ITS exercises

# GUI and Database Connection



# Proposal - Database



## User Interaction Data

ID	Amp	Freq	Tab	...

# Issues and Solutions - Database

## Tools Needed

- Had to figure out which languages are necessary.



- Asking a lot of people and learning about the ITS database.

## How each tool works

- No experience with or understanding of PHP, MySQL or jQuery.



- No shortcuts for this. Look at lots of documentation.

## Connecting all the tools

- Making sure each tool can communicate with each other. Eg. MySQL and PHP.



- Work backward focusing on one step at a time.



# Final Product - Database

id	amp	freq	phase	dc	tab	ts
1	1	10	0	0	#idealLow pass	2000-01-01 00:00:00
-	-	-	-	-	#idealHigh pass	-





# What We Learned - Database

- Communication Skills
- Teamwork & Collaboration with other teams
- Research Skills
- Relationships between backend and frontend languages
- Real-World Working Experience



# Future Application - Database

- Optimization
  - System and User-Friendly
- Helping future Users
- Better Quality and Organization of System



QUESTIONS?