

**MICHIGAN STATE**  

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**U N I V E R S I T Y**

# Alpha Presentation

## Mobile Train Handling Simulator

### The Capstone Experience

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*From Students...  
...to Professionals*

# Project Overview

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- Distributed Power Handling Simulator
- Built in Unity with PS Technology's Physics API
- Control Throttle and Braking of Train
- Keep Buff and Draft Forces in Check
- Complete Level to Unlock Tracks and Trains
- On-The-Go Training for Locomotive Engineers
- Cost-Effective



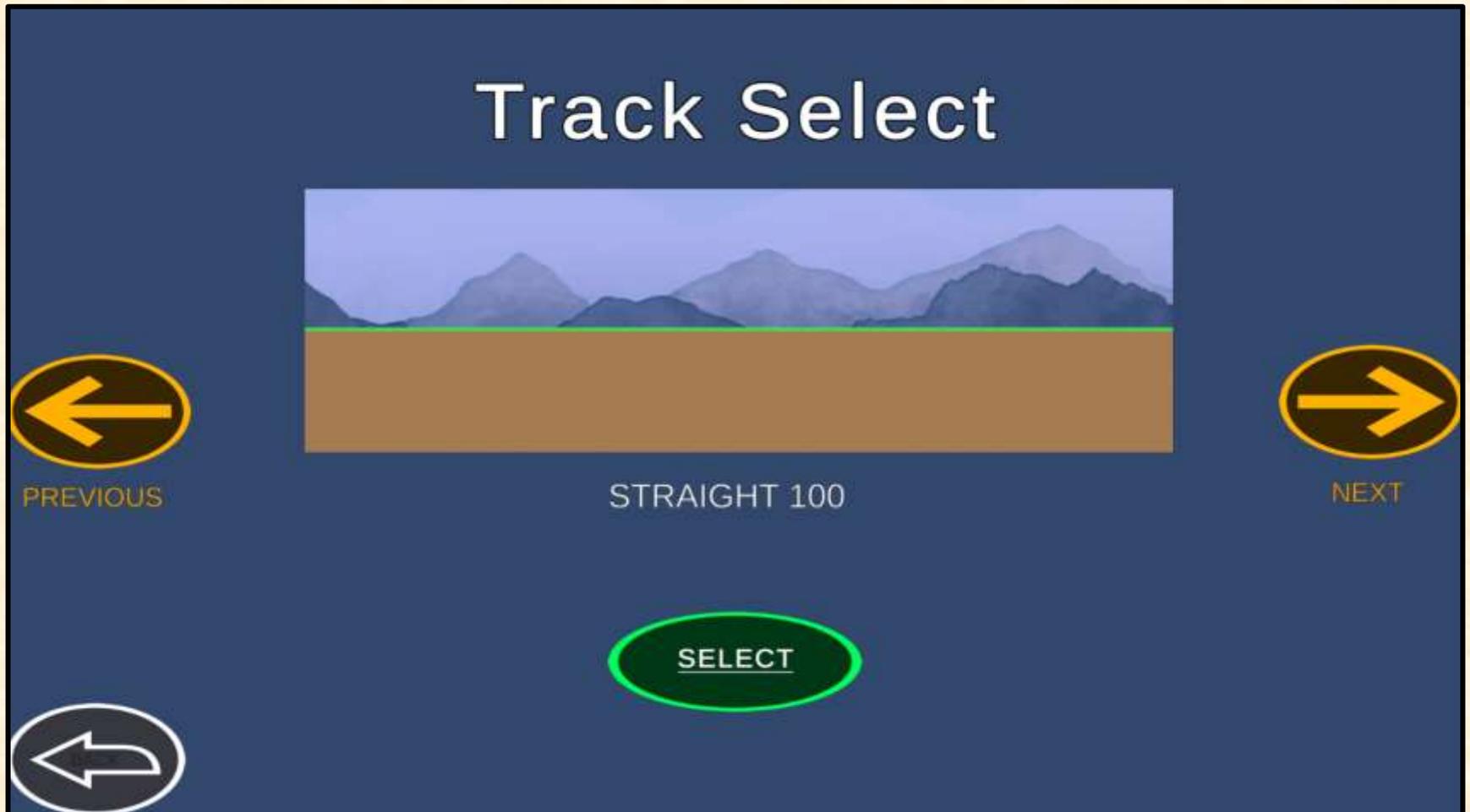
# System Architecture



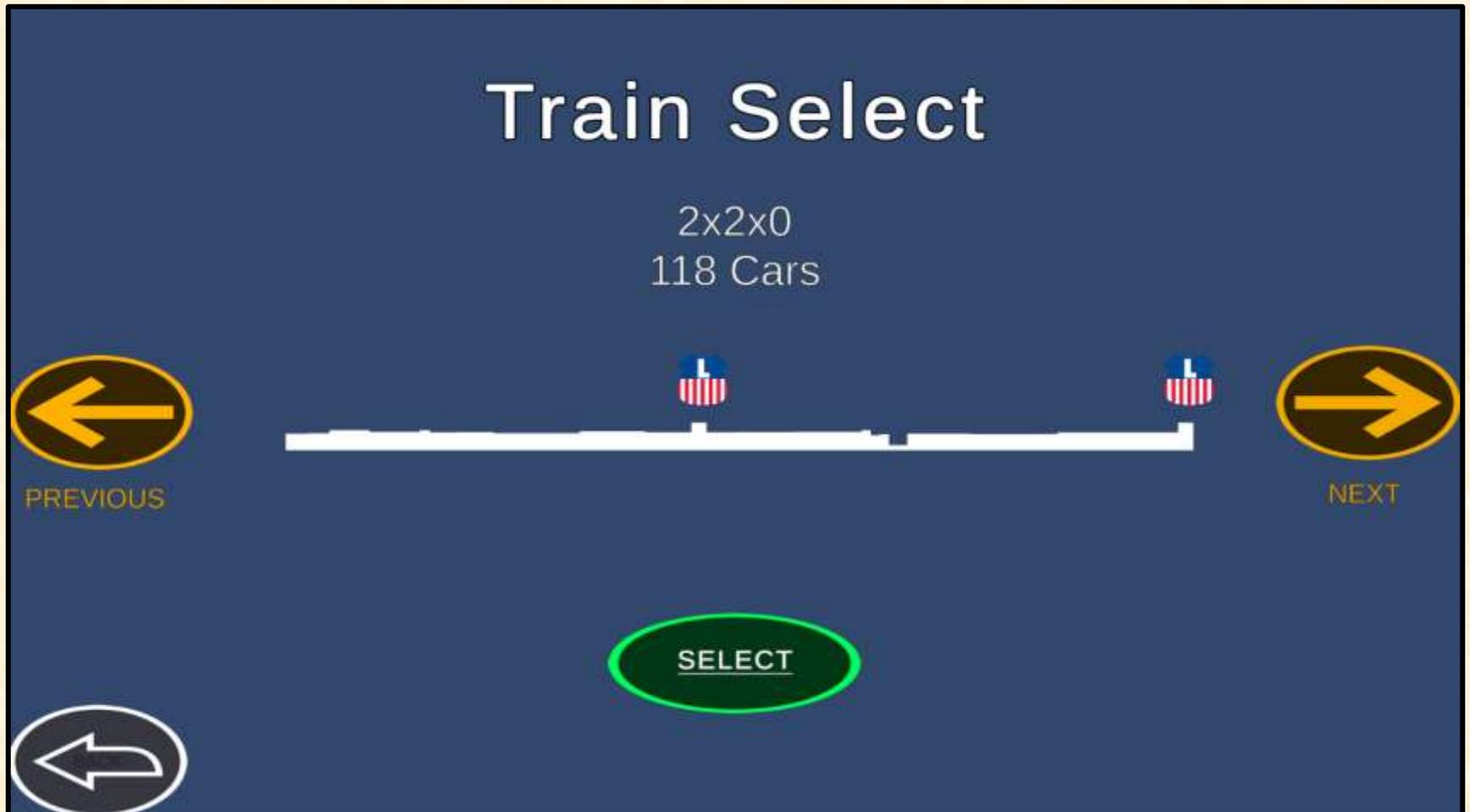
# Main Menu



# Track Select



# Train Select



# Game Scene



# What's left to do?

- Update UI
  - Implement Weight Graph
  - Implement Force Graph
  - Implement Force Gradient Key
  - Implement Pause Button and Screen
- Import All Tracks, Create Levels
- Saving and Loading Level Progress and Unlocks
- Dialogue System for Tutorial



# Questions?

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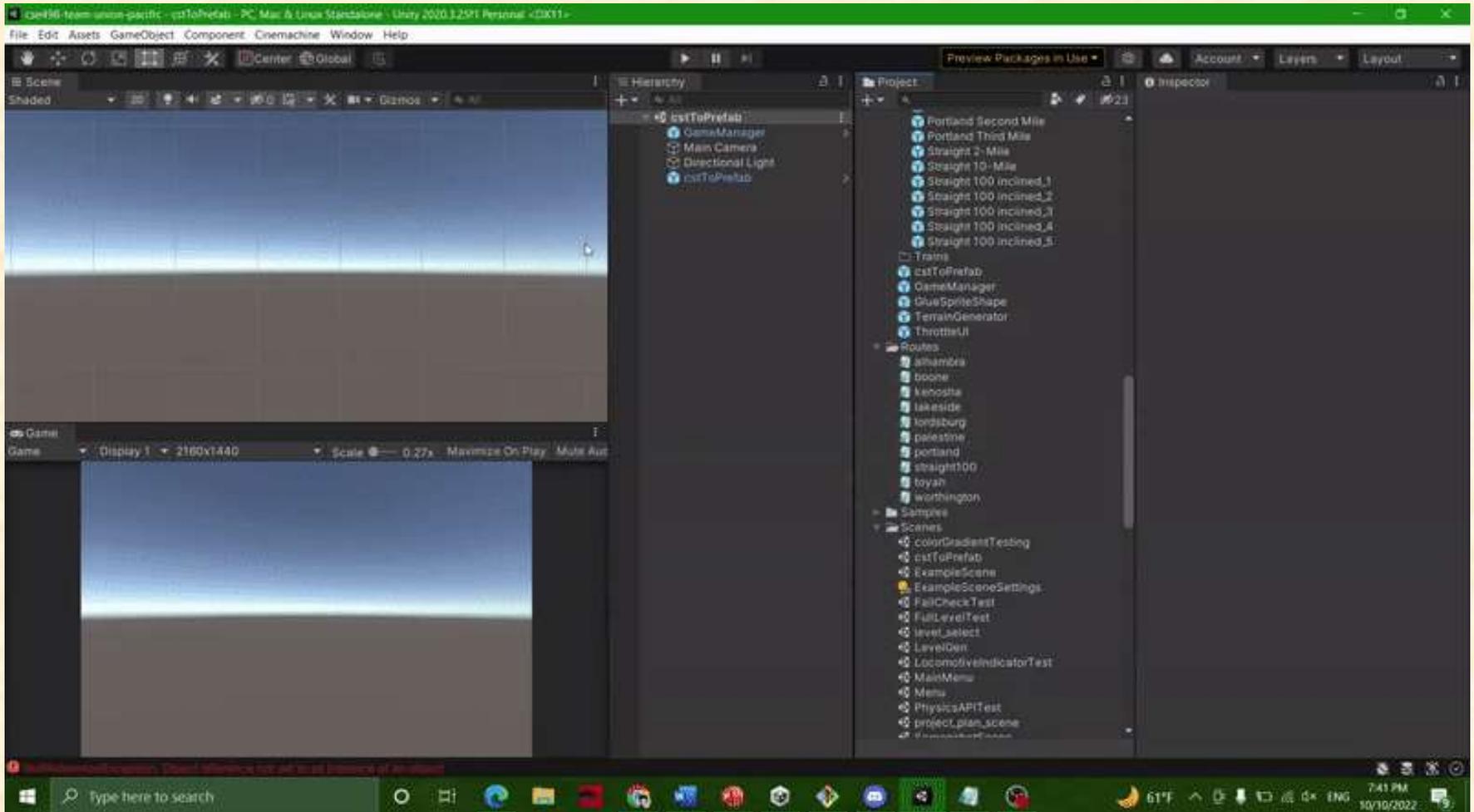




# Updated UI Mockup



# Train Generation



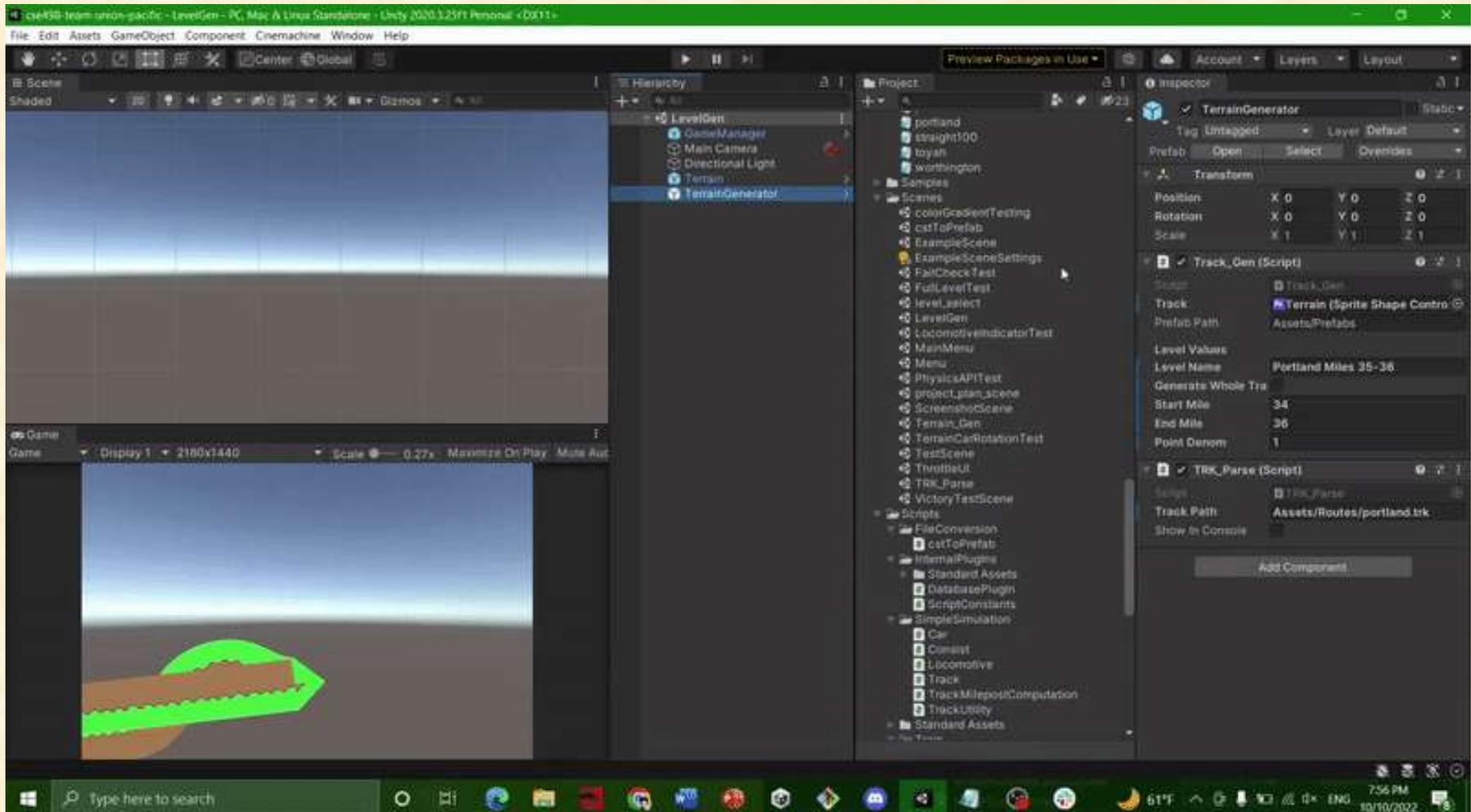
# Train Generation

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- Very Easy, Just Hit Play!
- Read CSV Files -> Produce Train Prefabs
- Set Real-Life Meter to In-Game Meter Ratio
- Can Modify Any Components As Needed
- Easily Scalable using Unity's Transform Feature



# Track Generation



# Track Generation

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- Very Easy, Just Hit Play!
- Parse XML Files -> Produce Track Prefabs
- Set Real-Life Meter to In-Game Meter Ratio
- Can Modify Any Components As Needed
- Easily Scalable using Unity's Transform Feature
- Can Make Segments of Tracks
- Can Select How Often Points Are Sampled



# Scaling Everything

- A Difficult Task
- Problem: How to Take a 1.5-Mile-Long Train Moving 22 mph on a 36-Mile Track and Create a Level Lasting Five Minutes?
- Answer:
  - Train and Track Actual Size to Start
  - Squish on X-Axis, Amplify on Y-Axis Appropriately to Fit Camera
  - Simulate Game at 50x Speed

