



# Fore-Sight

A golf simulation for practice at any time, for anyone

Ben Bejoian '25 & Ed Shi '25  
Faculty Advisor: Kenneth Kousen

Department of Computer Science, Trinity College, Hartford, CT



## Introduction

Golf is a highly inaccessible sport. From expensive equipment, to time-consuming rounds, only those who can afford to expend the resources can get the practice they need. Fore-Sight is a computer application that lets players take their real-life experiences back to a virtual environment, where they can simulate and study the game as they please.

## Technologies/Methods

**MATLAB** was used for simulation capabilities, including:

### Verlet Integration Scheme

Simulates realistic golf ball motion with live 3D visualization.

### Image Based Terrain Modeling

Uses heightmap images to build 3D greens and compute slopes.

### Multi-mode Learning

Manual and Ideal Finder modes support testing and optimization.

### Real world Mapping

Converts results into real-world distances using USGA standards.

**Python** was used for its wide range of libraries, including:

### Tkinter

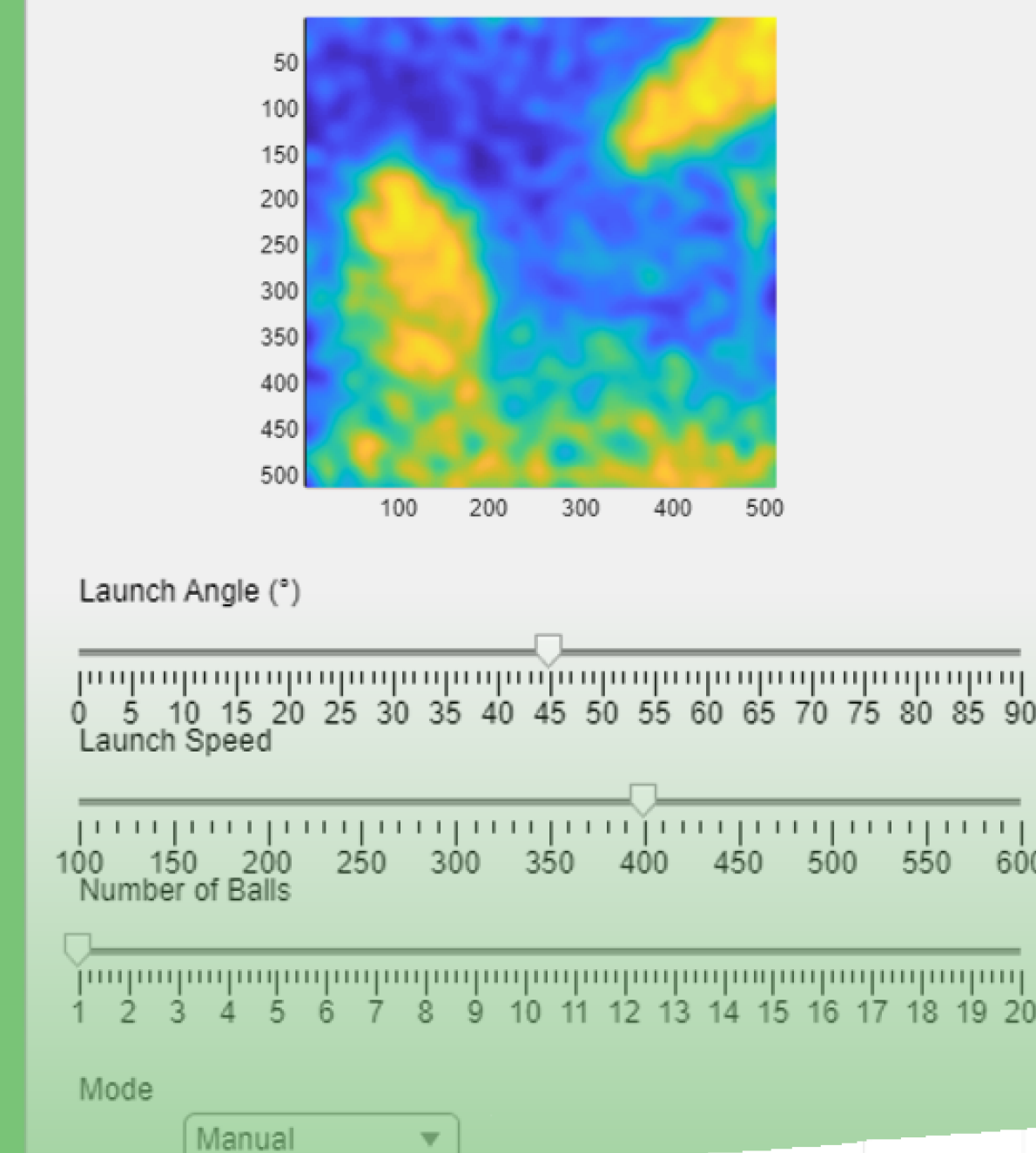
A library for UI design, which the user interfaces with as they customize their golf course.

### MATLAB Engine

Serves as a bridge between Python and MATLAB.

## Showcase

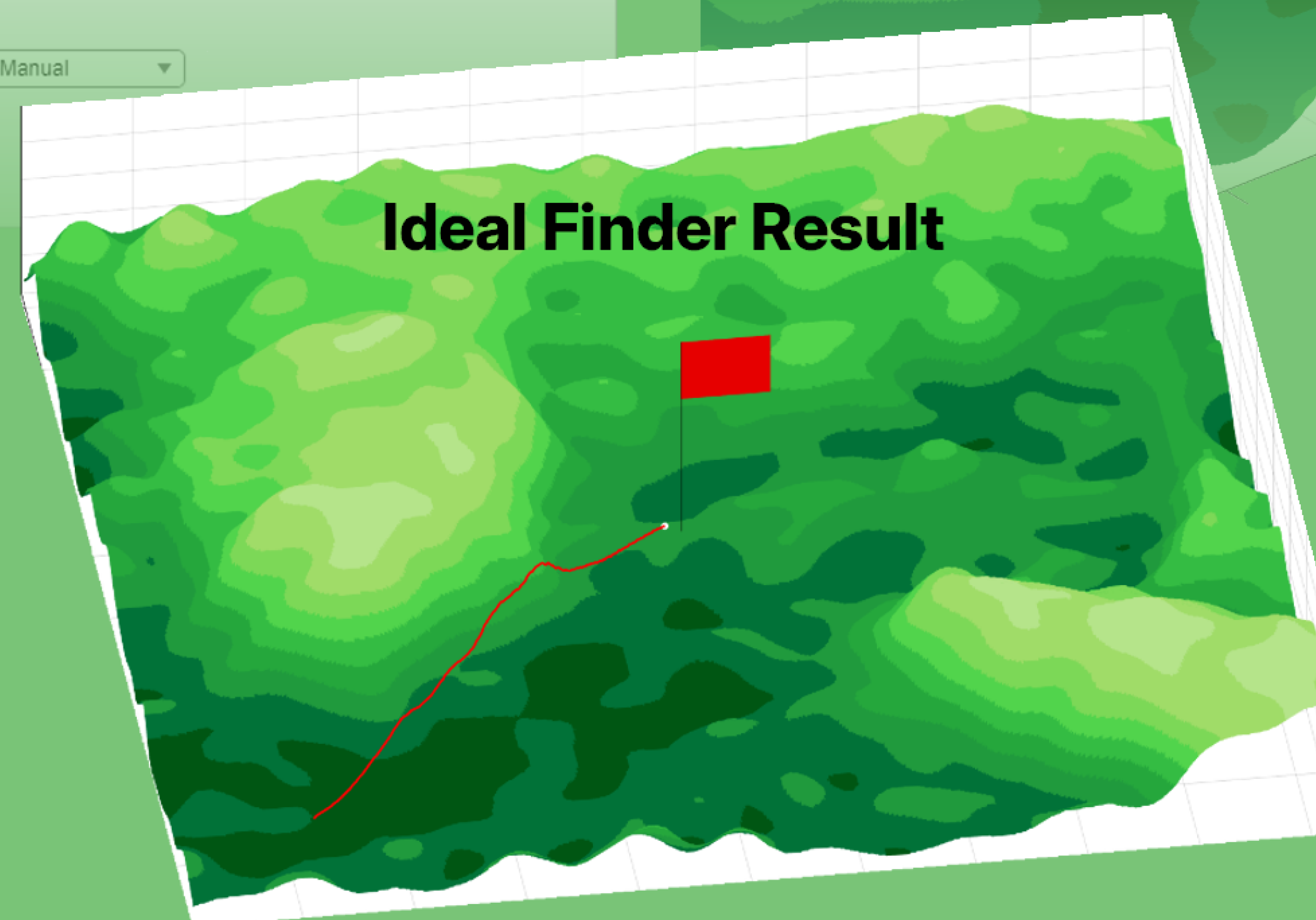
### User Interface



### Ideal Finder Simulation



### Ideal Finder Result



## Future Additions

### Terrain Variants

Future iterations could incorporate more diverse green environments, including bunkers, water hazards, and out-of-bounds zones.

### Adaptive Coaching

A coaching system could provide real-time feedback after missed putts, suggesting minor tweaks in angle or speed based on error patterns, enhancing the educational aspect of the simulation.

### Stimpmeter Integration

A stimpmeter measures how fast a ball rolls on a green. Full integration would let users test green speed at different points, simulating real-world effects like slope and moisture on ball movement.

### Shot History Log

A logging feature would record key data from each putt— angle, speed, outcome, and distance from the hole— allowing users to review past attempts, monitor improvement and analyze performance trends.

## Acknowledgements

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Creator of the original physics engine we built upon

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For all the help it's given us