Tennis Trajectory Tracker

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Overview

Python Project to project and display results of Magnus Force differential equations that map the trajectory of a Tennis ball with Spin.

Goals

1. To build an interactive GUI that accepts input from the user
2. Solve the differential equations and plot the trajectory of the ball based on the User input

Specifications

Welcome to the Tennis trajectory tracker!

To begin using the code, please select and run the Frontpage. py file.

Make a choice of either calculations with Topspin or Backspin. There is another option included which allows inputted CSV files which will calculate the trajectory for you.

After making a selection of either Topspin or Backspin please enter the desired values into the respective fields. The following inputs are calculated in the following units: initial ball equation (x and y coordinate), velocity (km/h), initial angle of ball (degrees), spin rate (revolutions per minute)

After entering all of your values click on "calculate" and a graph will be generated for you . On the graph there are points shown where you can hover your mouse over the point and then find the details of the specific point. If the CSV is being imported the same details will be available for viewing.
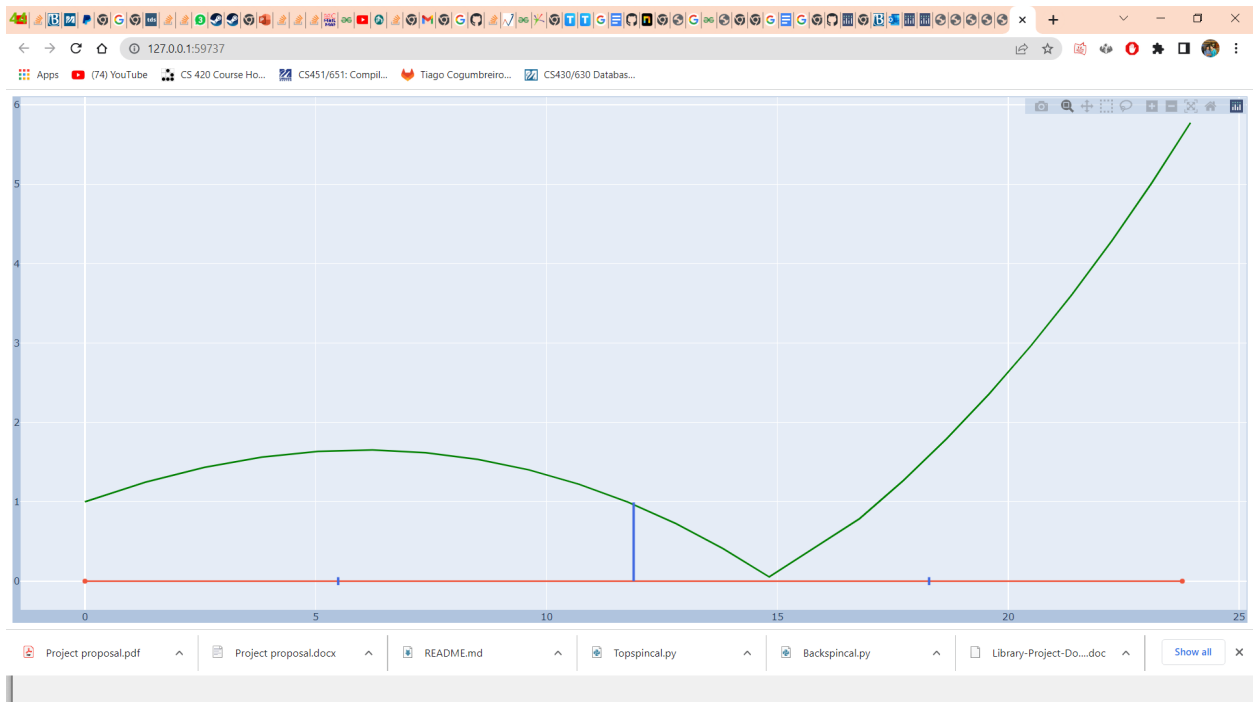
If you would like to calculate another trajectory please close out of the current window to return to the "home" screen and select another option from there.

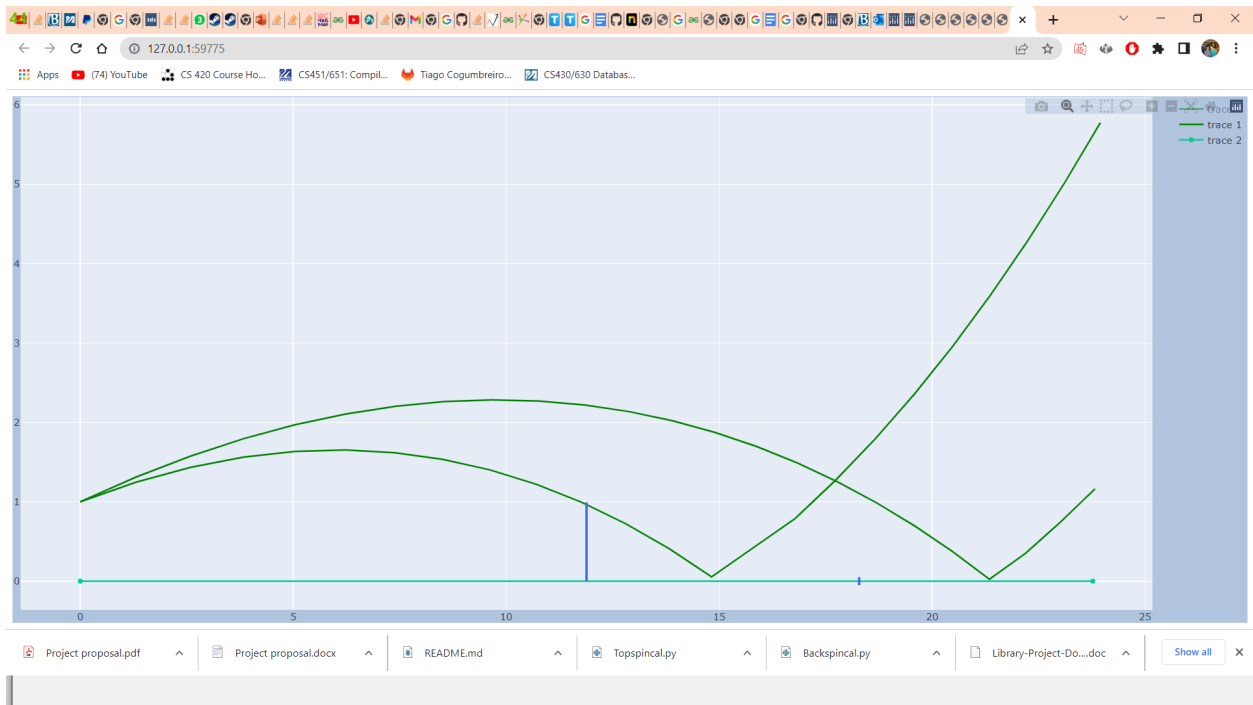All calculations entered will be saved in a CSV file which can then be viewed at the user discretion.

Test data
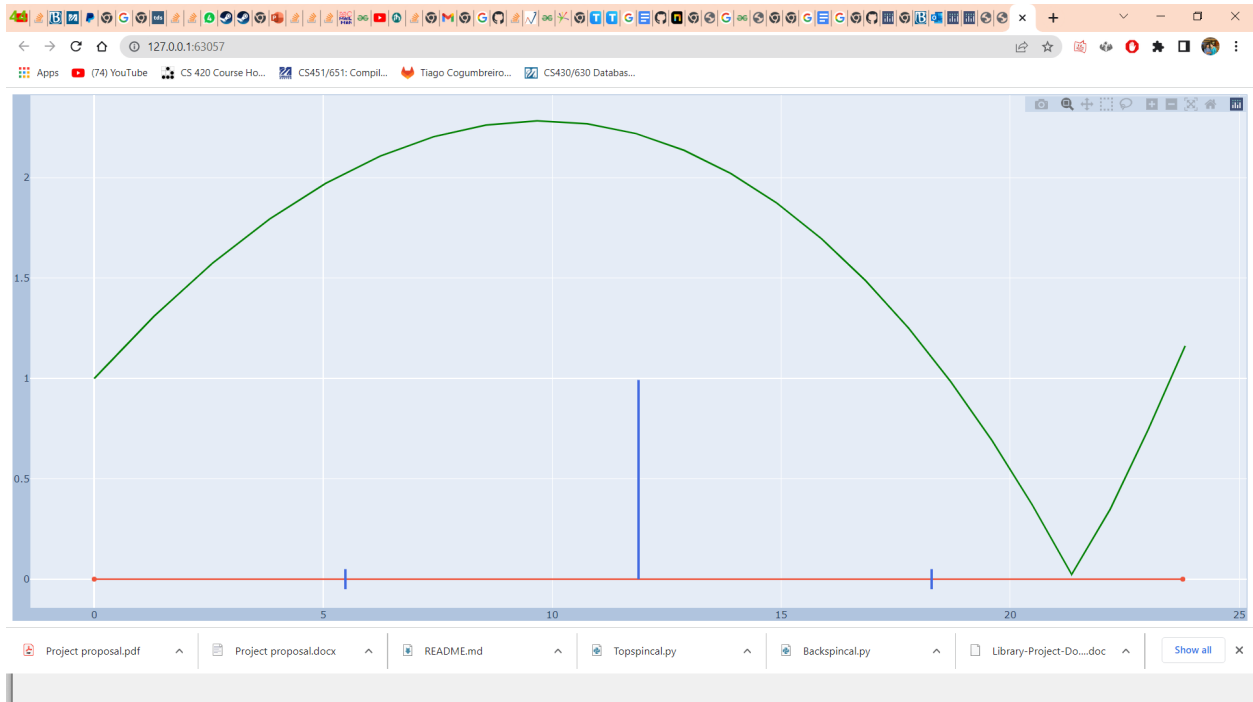
Top Spin plot

Backspin plot

Comparing Both