DrawBot: The Whiteboard Drawing Aid

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Fall 2025 - EECS 473: Advanced Embedded Systems

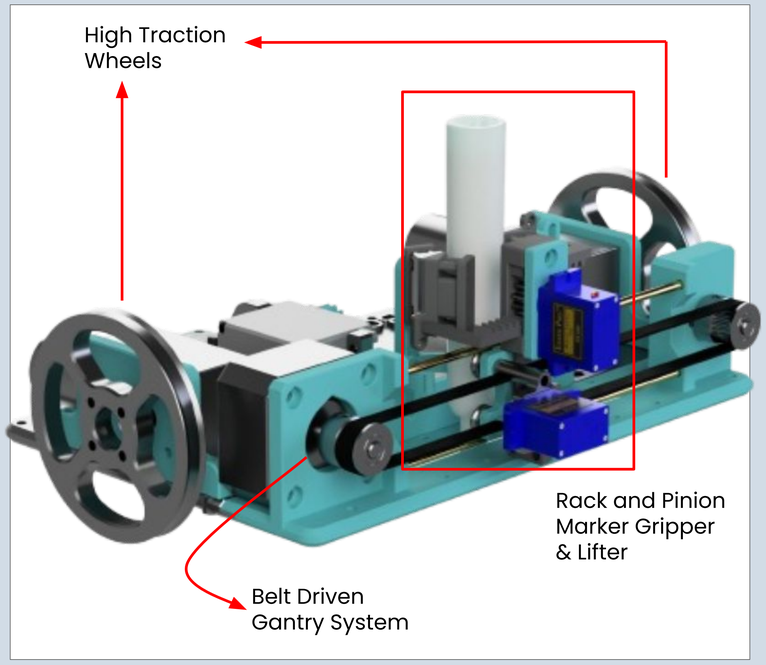
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Motivation

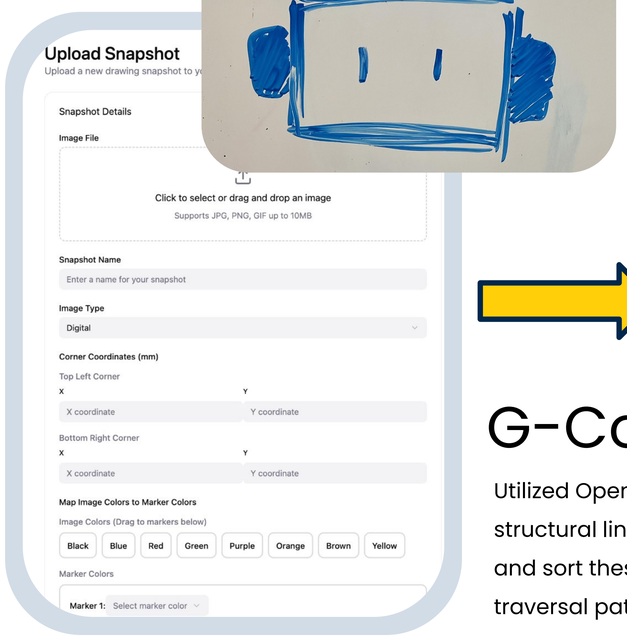
Professors need **clear and repeatable** diagrams during lectures. Redrawing by hand is **slow and error-prone**, taking time away from teaching. This reduces student interaction and disrupts the flow of a lecture.

Our Solution

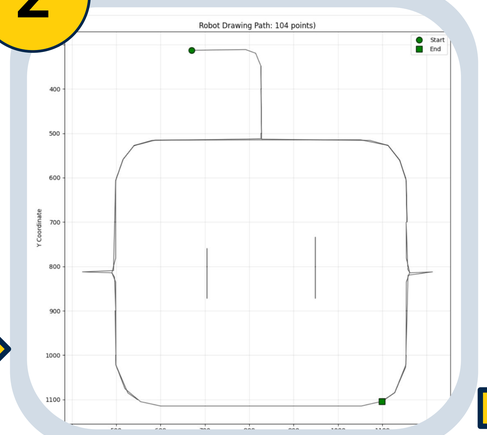
We've created a whiteboard drawing robot designed to help educators present their material more effectively and efficiently.



1 Upload on Website



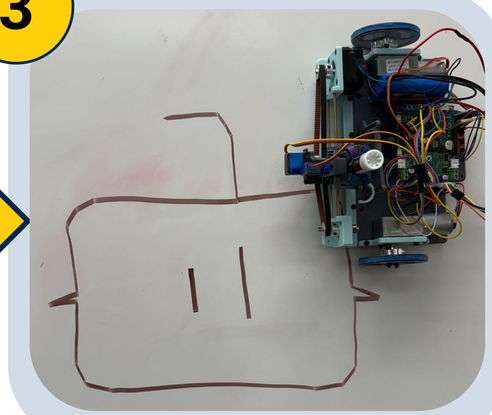
2 G-Code Conversion



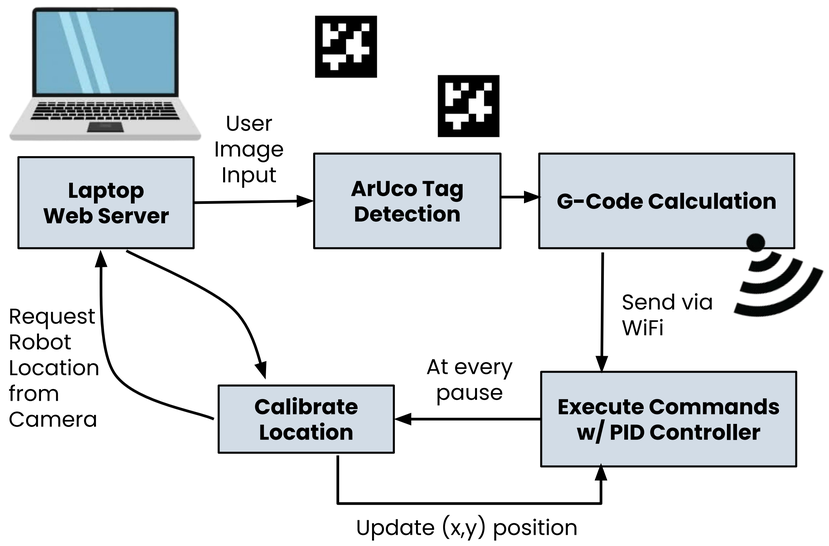
Utilized OpenCV to detect and classify contours, filter structural lines and key geometric shapes, and segment and sort these features to generate an optimized robot traversal path that minimizes total passes across the board.

3 Drawing Begins

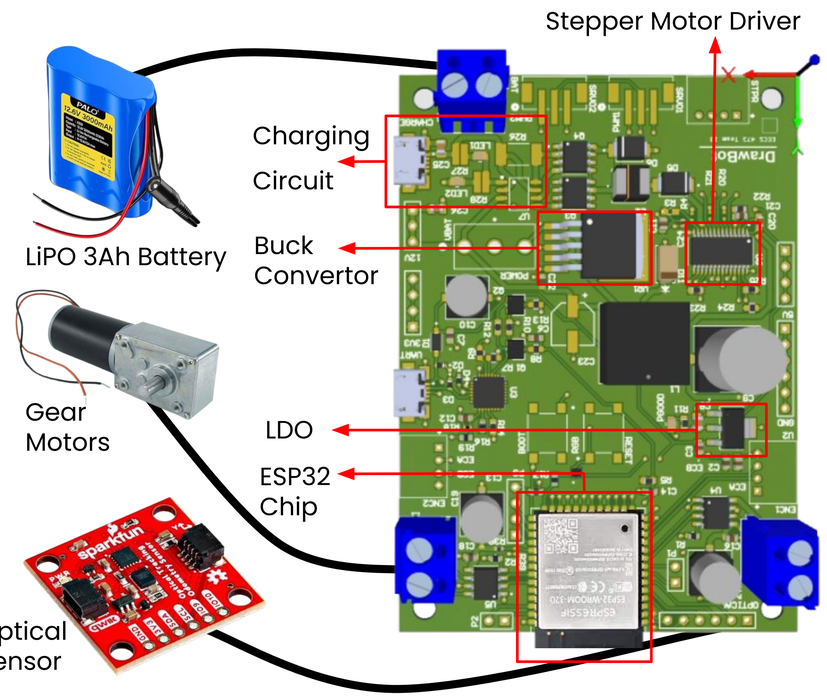
Configured a PID controller to translate G-Code to robot commands. The robot uses a FreeRTOS system to manage all tasks.



Implementation Diagram



PCB & Electronics Diagram



Special thanks to Dr. Mark Brehob, Matt Smith, James Carl, Anna Huang, Alec Zettel, Frederick Yin, and Infineon