Powder Scale and Dispenser
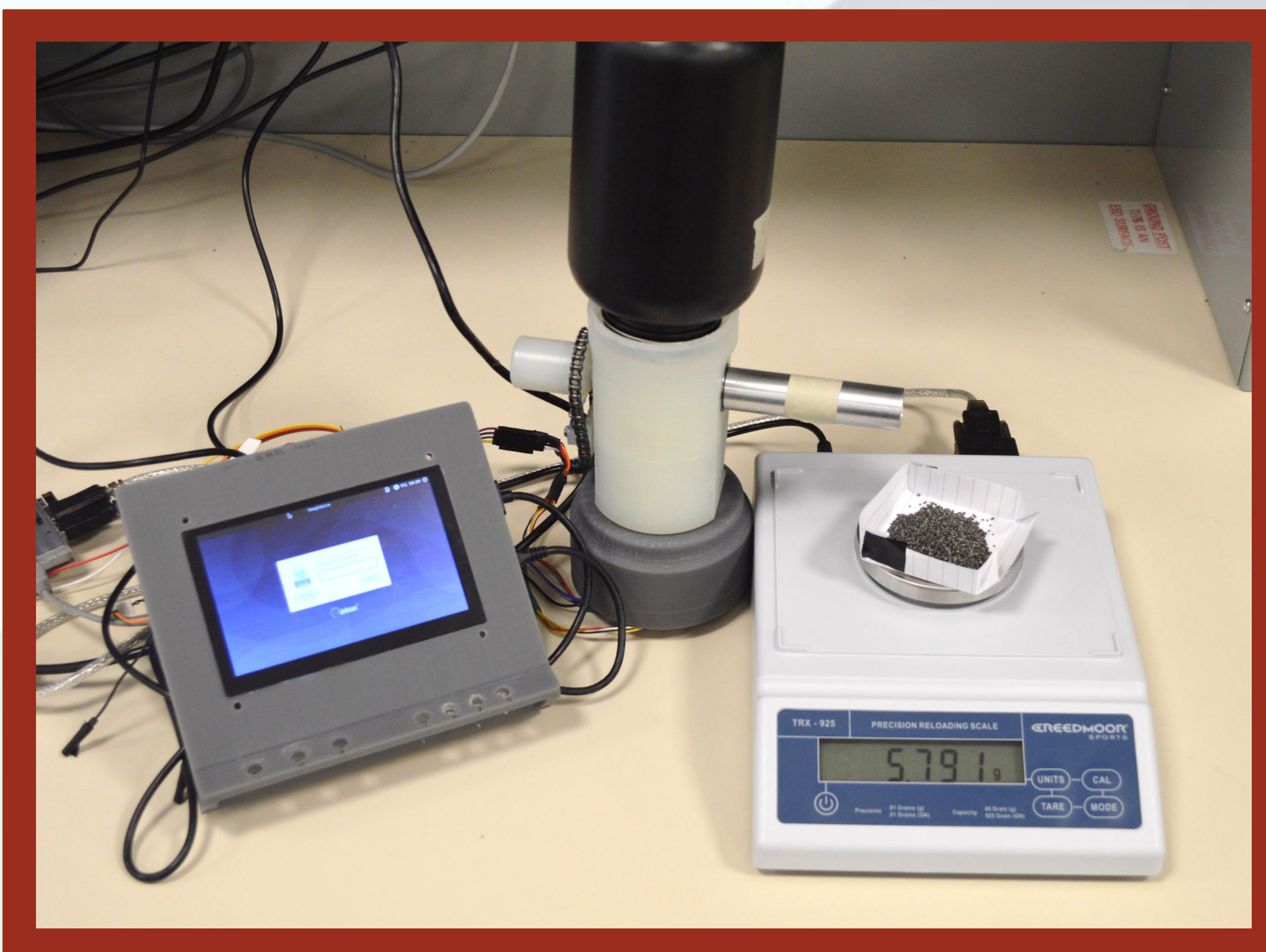
ECEN 499 | Senior Project – Winter 2022

Austin Stecklein, Colby Hatton, Dale Andreoli, John Stinger, Jonathan Phillips

Abstract

Creedmoor is a sporting company that has specialized in precision firearm products since 1979. We were approached by Creedmoor and had the opportunity to help them in their quest for excellence by designing a brand-new product.

The goal was to create an automatic powder dispenser with a fully integrated, touch-screen GUI that could communicate with a digital scale to ensure the easiest and most precise reloading experience.

Project Description

Immediately, we divided the project into two categories: hardware and software. The software was then subdivided into frontend and backend. The frontend covered the touchscreen layout and interface, while the backend focused on machine level programing to support an operating system and to allow the touchscreen, the powder dispenser, and the scale to all work together.

The hardware world consisted of designing an entirely new circuit board that could both operate everything mentioned already as well as being ready as a prototype for a commercial product. This included the redesign of a BeagleBone board and the full integration of motor drivers for the dispenser.

Results

While the all the goals were not achieved within the timeframe of the semester, amazing progress was made. The circuit board was fully designed. Communications between a stand-in BeagleBone, the touchscreen, and the scale was a success. The final board design did not come to fruition as there is still a shortage of electronic components. Yet, more importantly, we all grew individually as individuals and as a group.

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