

Custom Vending Machine

EDSGN 581: Studio I

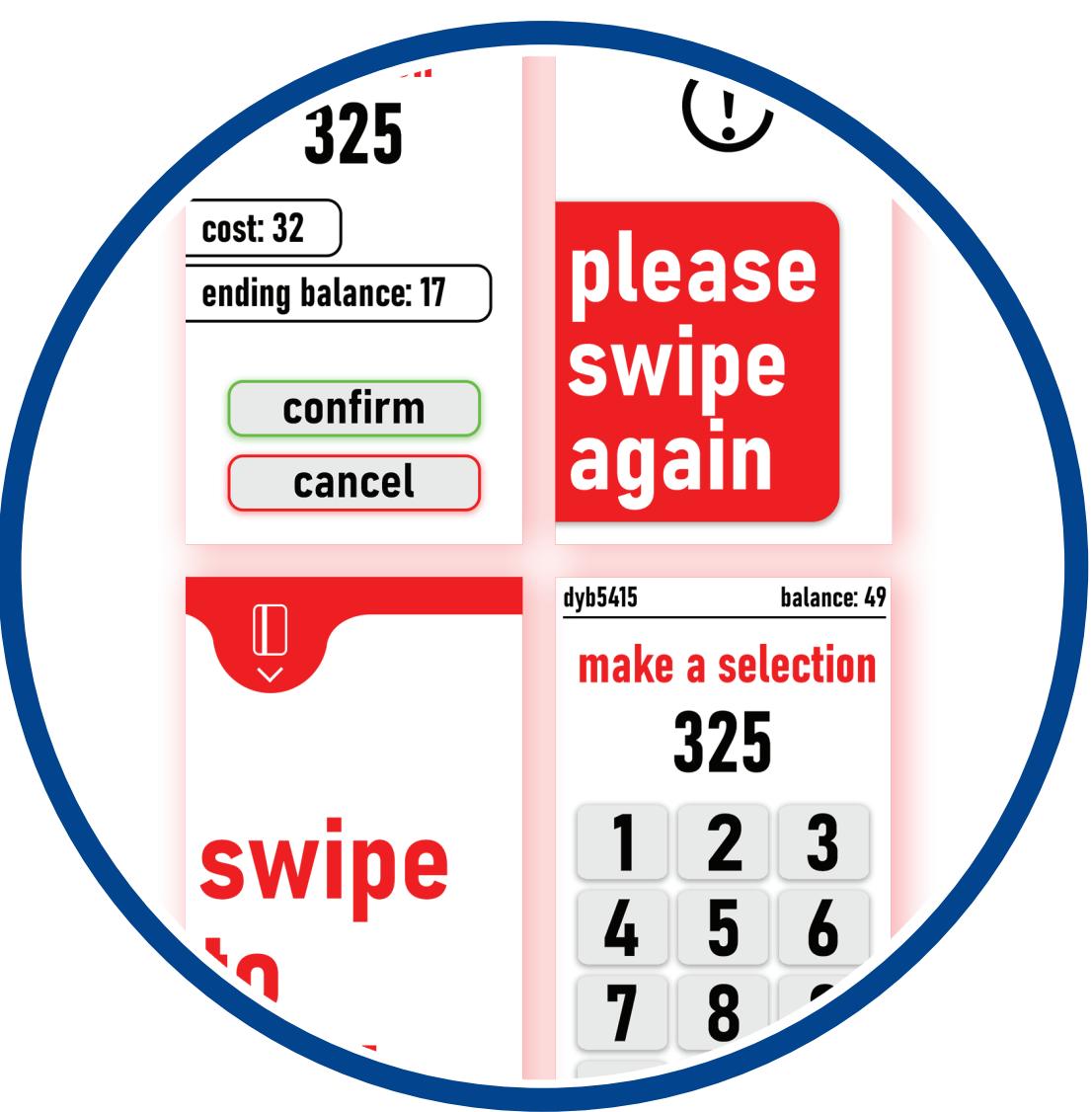
Fall 2021



PennState
College of Engineering

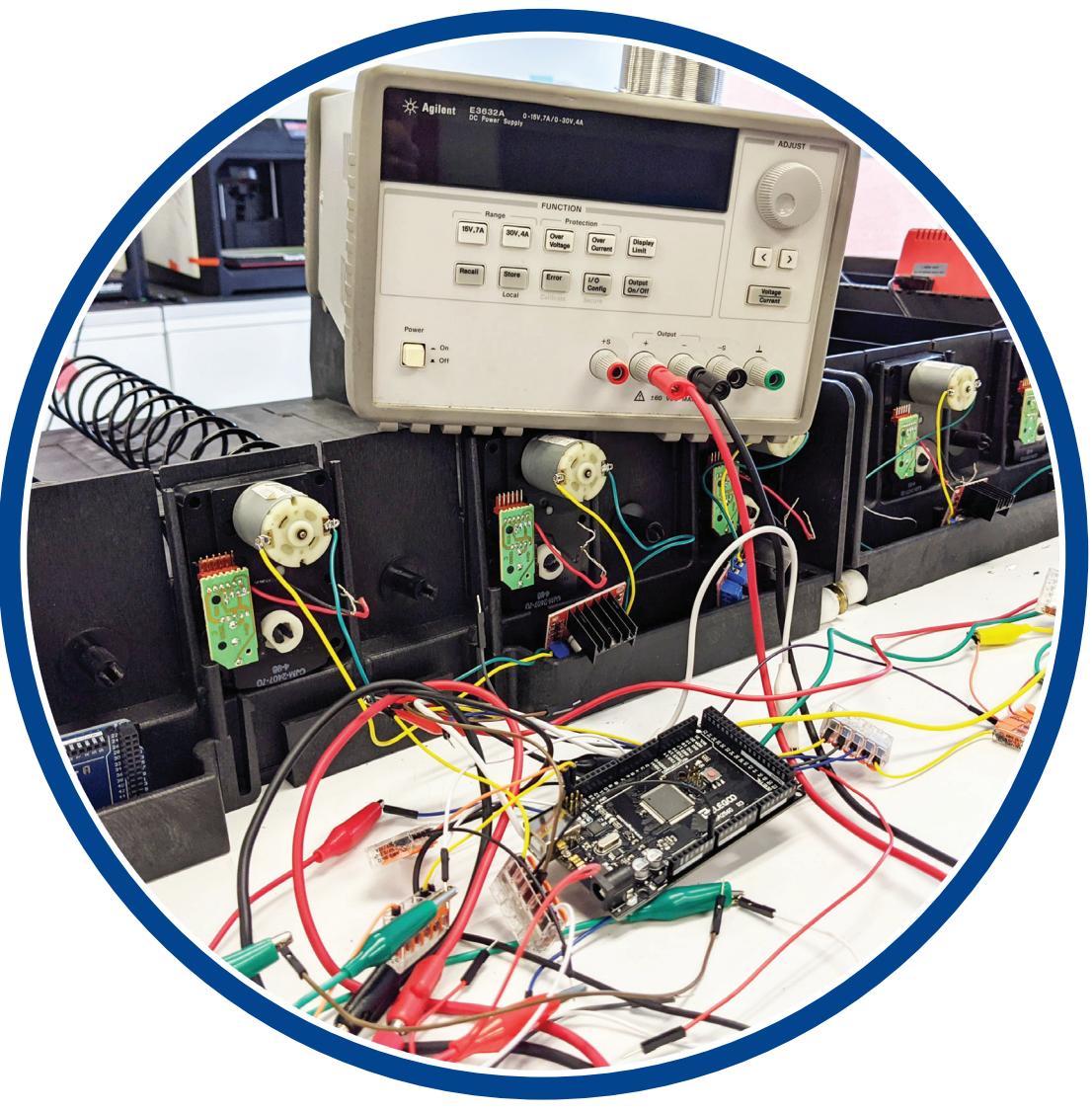
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Our team was tasked with creating a custom vending machine for Penn State's makerspace, The Learning Factory. The objective of the vending machine is to increase student participation by incentivizing visits to The Learning Factory. Students will be eligible to receive points by engaging in various activities at The Learning Factory, and will then be able to redeem those points for goods in the vending machine, which include branded apparel, project kits and components, and much more. The points system works with PSU id+ cards, and our custom software tracks points accumulation and handles transactions on the vending machine POS terminal.



design

The design team oversaw the function, aesthetics, and usability of the vending machine. They guided the development of the machine's functions, developed the outward appearance through user testing, created the GUI, and considered environmental design and adherence to regulations.

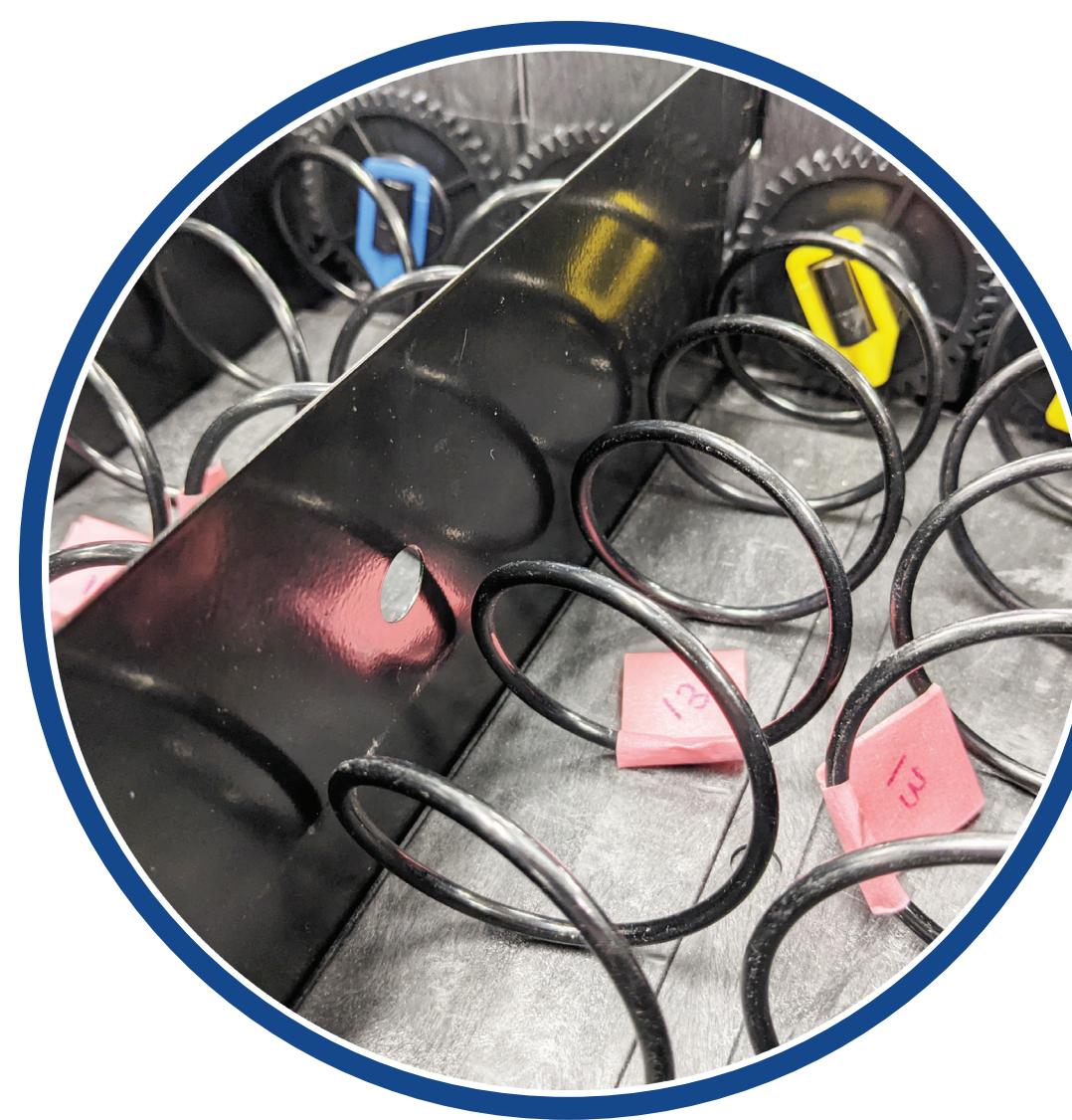


electrical

The electrical team developed the electrical system for the vending machine. Only the chassis and motors were kept from the original machine, with the electrical team wiring the motors to a custom arduino setup, which was wired to a raspberry pi to handle all communications using our custom software.

hardware

The hardware team oversaw physical modifications of the vending machine, working on item placement, dispensing mechanisms, and other internal parts. They also worked with the design team on component placement, and with the electrical team to integrate the electrical system within the machine.



software

The software team programmed the GUI, allowing it to work with PSU id+ cards and communicate with the motors for dispensing. They also established communication protocol with the website that tracks points accumulation, ensuring that transactions are calculated and recorded correctly.



Acknowledgments
Sven Bilén
Ben Fehl
Syed Karimushan
Matt Parkinson

