



Product Research sdmay25-33

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Project Overview

- Create an interactive application for CPRE 2880 students to better understand the concepts
 - Will contain HWs and quizzes with randomized questions and autograding
 - Use emulator tools to simulate microcontrollers
 - Potentially have an emulated Cybot robot interface
- Use the Prairie Learn Framework to host the application
- Utilize Python, JavaScript, C and other programming languages for the project development
- Hope to inspire other professors to build similar interactive tools for their students

HW1.1. Embedded Systems Applications

Which of these appliances/products use an embedded-processor?

Drag from here:

Acoustic guitar

Basketball

Calculator

Printer

Screwdriver

Shovel

Vending machine

Washing machine

Construct your solution here: ?

Save & Grade Single attempt

Save only

Additional attempts available with new variants ?

Problem Statement

- CPRE 2880 students currently don't get enough practice of the concepts via their HWs
 - Also don't get enough feedback on HW submissions
- Not every student gets time to practice programming the microcontroller on the Cybots since there are a limited number of them
- The professor and TAs are only available so much via their office hours, making it hard for students to get extra learning of the course material
- Besides the lecture notes and datasheets, there is no other course material for students to use for their learning



Related Products: Coursera

- Big catalog of courses that are mostly free
- Many diverse programs
- Have to pay for feedback on assignments
 - Assignments aren't graded without a paid membership
 - Can't get any certifications or degrees without a paid membership
- Limited interaction with course questions
- Questionable credibility for certifications and degrees obtained
- Barely any hands-on training with the content



coursera



Related Products: Zybooks

- Interactive exercises
 - True/False, Multiple Choice, Coding
- Large textbook catalog
 - Some Customization
- Students are familiar
 - CPRE 185, COMS 227, etc
- Paid product
- Autograding with Canvas
- Student Activity reports

zyBooks



Related Products: LinkedIn Learning

- Heavy focus on career growth and real world applications
- Content is professionally developed
- Not tailored for university classes
 - E.g., not made for COMS 227
- Paid product
 - Paid for by the university
- Not very customizable or interactive
- Limited content



Related Products: Quizlet

- Variety of learning methods
 - Flashcards, matching games, quizzes, writing practice
- Easily customizable and shareable
- Study sets can be personalized for the user
- Paid product
 - To access full features
- Material published by other users may be incorrect



Market Gap

- Price
- Instructor Customization
 - Questions that will look like the test
- Course-specific content
 - Instructor Approval
 - Not pre-made and generic
- Quick, detailed feedback
- SSO integration
 - Auto-grading
- Question type variety



Innovations

What PraireLearn offers:

- Free to Students and Instructors
- Fully customizable
 - Open Source
 - Instructor dictates questions and topics
- Intuitive interface similar to other products
- Auto-randomization for continued practice



Conclusion

Due to the complexity and specificity of CPRE 288 content, PrairieLearn provides the best platform to host assignments while eliminating textbook costs and time spent grading.



Any Questions or
Suggestions?