INDIVIDUAL PROJECT IDEA

Automated Darts Scoring system.

WHAT AND HOW?

A system that automatically keeps track of your dart game's score via cameras and triangulation of the darts. The program calculates the dart's position and subtracts the thrown score. This could be paired with multiple extra functionalities like Bluetooth control. A web bases scoring screen etc.

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Why this project and not some of the other ideas?

This project idea was chosen because of its simplicity in design, but still providing a good challenge while building it. There can definitely be a prototype after 3 weeks of working on the project and it could provide good fun in during the process of making it. It also can be combined with other creative solutions to create a unique and cool dart experience.

The projects that didn't make the cut where not chosen because of the complexities they provide; the time constrains for the individual project would cause those projects to not be realized enough to show a proper prototype or demo to give everyone a good impression of the idea.

Those projects where:
- A Smart storage system (Know what you have in your storage, automatically scans you taking things out of your storage cabinet or cellar.) This would include object identifying via camera's, knowing when something is taken out and a way to scan store receipts to fill up the stock again. To recognize the objects there should probably also be a way to take a photo of your products and recognize the products in storage based on those photographs.

- A restaurant assistant that would make reservations and use google voice technology to recognize people's reservation and would list their allergies, with the allergies listed the system would inform the Chef of the restaurant and provide details about the allergy and could possibly give recipe ideas for the chef to make. This would make the experience of people that have allergies way better, since the kitchen is informed in a timely manner and given proper info and even helped making a dish, because the assistant would provide them with a recipe that can be made.

What is the idea behind the automated darts scoring system?

A lot of people like darts, but counting and keeping score is a small nuisance, especially during tournaments with multiple players. To simplify the dart scoring and even spice it up a automatic dart scoring system would be a great solution. The scoring system should work based on 2 webcams triangulating the position of the dart in the board and calculating the score based of the darts. This idea could easily be expanded and contain an app, Bluetooth connection to reset the game and override scores. A web based score tracker to show on a monitor above or next to the board.

Project planning

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 1 **22nd of February** **–** **26th of February**	Brainstorming	Research & summarize project.	Make a small requirements list. Think of all the parts of code that need to be written as well	Do some small stuff with OpenCV to get familiar	Try some more stuff with OpenCV and think of the needed calculations for the project to work
Week 2 **1st of March** **–** **5th of March**	Built prototype	Built prototype	Built prototype	Test prototype and make list of shortcomings.	Polish prototype
Week 3 **8th of March** **–** **12th of March**	Rebuilt from scratch with knowledge from prototype	Rebuilt from scratch with knowledge from prototype	Rebuilt from scratch with knowledge from prototype	Make something to visualize the project working.	Make a small demo to showcase the projects progress.

What do I need to make and how?

Tech needed

- Raspberry PI (hardware)
- 2 webcams with same specs (hardware)
- Something to encase the PI and the cameras (hardware)
- OpenCV for python (software)
- Code that recognizes throw score (software)
- Code that calculates score left (software)
- Code that manages the current game (software)

How?

- Find out the best spots to place the cameras for detection and ease of use.
- Find out how to use OpenCV to detect darts, (multiple ways possible, that I know)
- Find out how to programmatically run a darts game
- Make an easy way to reset and test the system, visualize the score, have a debug log.

What?

An automated dart scoring system, based on OpenCV recognition using 2 cameras, and automatically run a game of darts with the scoring detection.