Project Research

Slow-Pitch Softball Camera

Problem Statement

Slowpitch softball players are have issues with the consistency of illegal pitch calls.

This inconsistency cause mistakes in their swings because the call was too late, or arguing with the umpire because the call was debatable.

What is our project?

We must develop a system to track the trajectory of a softball during a game of slow-pitch softball.

The system must output the sound “Illegal” when a ball is pitched over ___ ft.

The system will be used by umpires for recreational leagues as an assistant officiating tool.

Similar projects - Pocket Radar

Pocket radar offers a mobile app to view data collected from a radar sensor

- Users report low battery life, limiting their usage.
- The mobile application allows for future development and an interactive user experience.
- The ability to view, download, and export annotated pitches is available to users.

Similar projects - Imaging Tracker 2

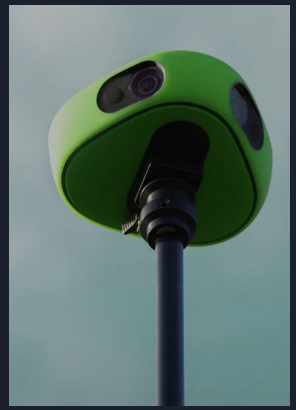
The Imaging Tracker 2 is a professional-grade object detection camera to track moving objects.

- No initialization or calibration is needed for data collection.
- High definition videos yield a small error.
- Large camera and high tech sensors are expensive (>$1000)

Similar projects - Vio 3 Sports Cam

The Vio 3 Sports Cam is a portable, small, high definition camera for object and motion detection for sporting events to track players, balls, and other moving objects.

- Offers a long battery life for extended use.
- Small design makes it very portable.
- High definition camera yields accurate results



Similar projects - Softball/Tennis/Golf Radar

The Softball/Tennis/Golf Radar is an affordable and simple solution to finding speed of moving objects.

- Low grade sensors yield errors in readings.
- Lightweight design makes it portable.
- Large display shows the speed clearly.

Similar projects - Rapsodo Softball Pitching 2.0

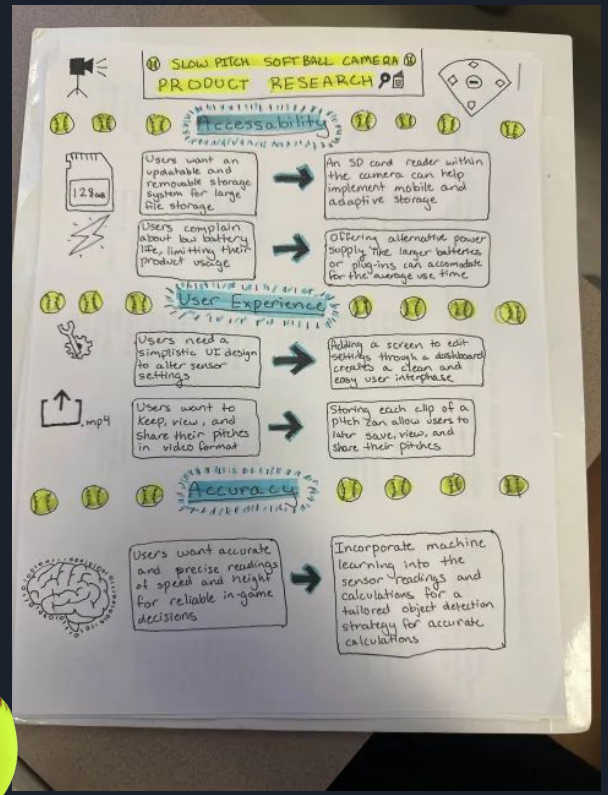
The Rapsodo Softball Pitching 2.0 is a digital camera that connects to a mobile application for radar readings of moving objects.

- Integrated into a mobile application, there are many user options within a dashboard.
- Small design makes the device portable.
- Users complain about low battery life.

Product Research Findings

Customer's concerns fall into 3 main categories

- Accessibility
  - The hardware supports common user needs
    - Long battery life
    - Large data storage
    - Setup and transportation
- User Experience
  - Simplistic sensor adjustments
  - Playback and export of pitch videos
  - Additional features and statistical data
- Accuracy
  - Accurate measurements of object detection



Market Gap

The gap for our product exists because many softball camera are primarily set up for the speed of the pitch rather than the height. In addition, camera that have more advanced metric tracking are very expensive and not accessible to many users. Our solution will aim to provide a cost effective solution to track pitch height with the potential for expansion given user demand,

Potential Prototype - Motion Detecting Camera

Pros	Cons
- High definition videos / more accurate readings	- Models will be difficult to update software - Expensive design - Portability and security of the hardware will be a concern

Potential Prototype - Phone Application

Pros	Cons
- Available to wide range of users - Portable - Easy deployment of future updates - Existing device services (bluetooth, wifi, etc)	- Device specific (Android / iOS) - Varied battery capacity - Varied camera quality

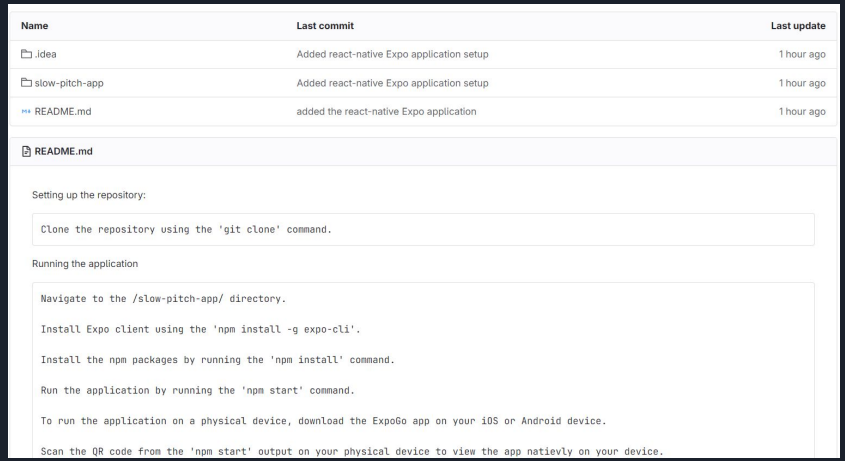
Our Decided Prototype - Mobile Application

Device Compatibility- Android and Apple

- React Native
- Can be tested with emulated/physical devices
- Expo deployments to web and app stores

External Tools

- Bluetooth or wired speakers provide sound output
- High definition lightweight camera
- Opencv
- COCO dataset



Name	Last commit	Last update
.idea	Added react-native Expo application setup	1 hour ago
slow-pitch-app	Added react-native Expo application setup	1 hour ago
README.md	added the react-native Expo application	1 hour ago

README.md

Setting up the repository:

```
Clone the repository using the 'git clone' command.
```

Running the application

```
Navigate to the /slow-pitch-app/ directory.

Install Expo client using the 'npm install -g expo-cli'.

Install the npm packages by running the 'npm install' command.

Run the application by running the 'npm start' command.

To run the application on a physical device, download the ExpoGo app on your iOS or Android device.

Scan the QR code from the 'npm start' output on your physical device to view the app natievly on your device.
```

Conclusion

As a result of our product research, we decided to build an app based approach to track softball pitches. This differs from existing solutions because most softball pitch trackers rely on an external camera that needs to be explicitly brought to the game to be used. We decided that the availability and portability to an app-based solution would be more attractive to users.