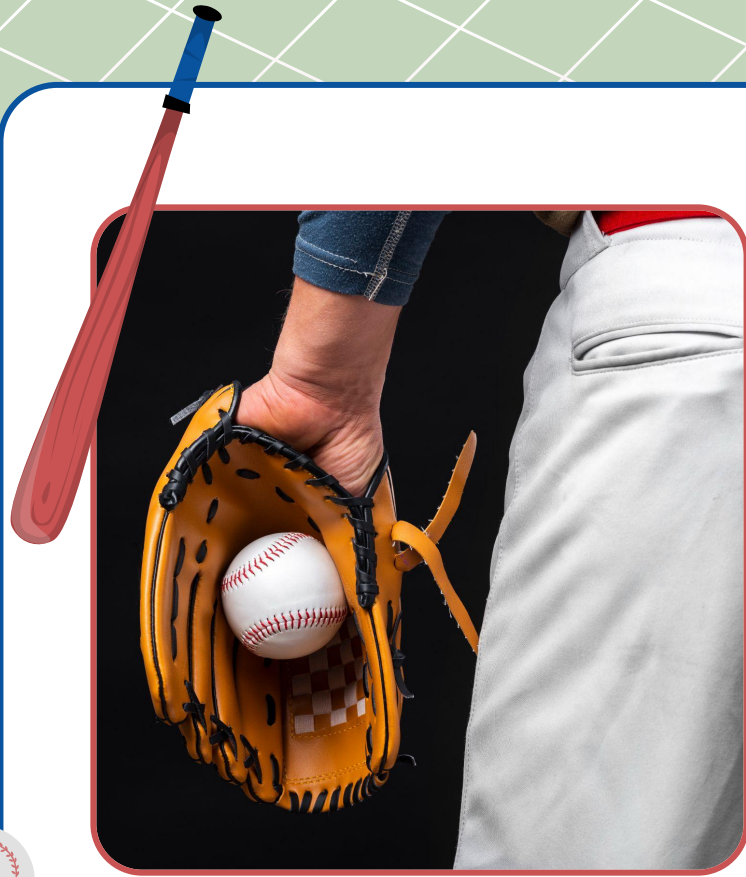


The background is a stylized illustration of a baseball field. The infield is green with white grid lines, and the outfield is a solid reddish-brown. Various baseball equipment is scattered around: a pinstriped jersey and pants on the left, a baseball, a bat, a catcher's mask, a glove, and a catcher's chest protector on the right, and a cap and another baseball at the bottom.

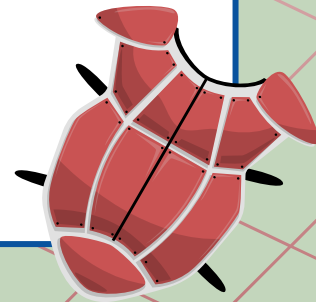
Project Planning

Slow-Pitch Softball Detection | SDMAY25-11



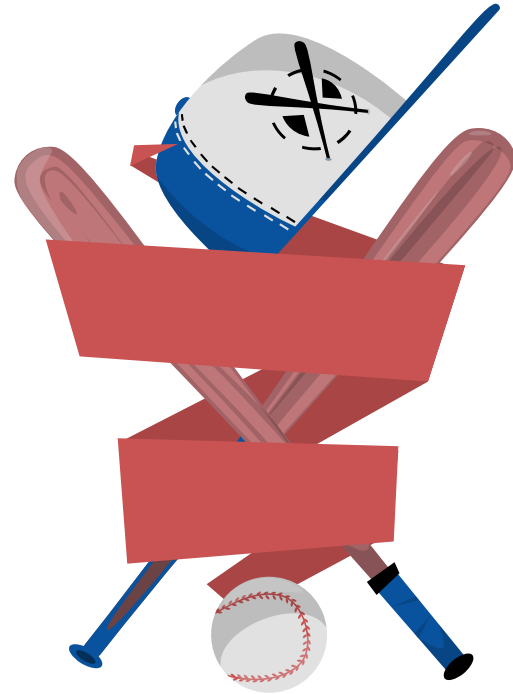
Our Project

- We are tasked to create a tracker for slow-pitch softball pitches.
- The device will need to track the height of the ball and determine where it falls between a certain height range.
 - Typically 6-10 ft.
- If the ball is not in that range, it will give an audio cue that the pitch was illegal.
- This will help assist umpires call illegal pitches and improve the flow of the game by reducing the number of disagreements on rulings.
- Deliverables
 - An executable application



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.

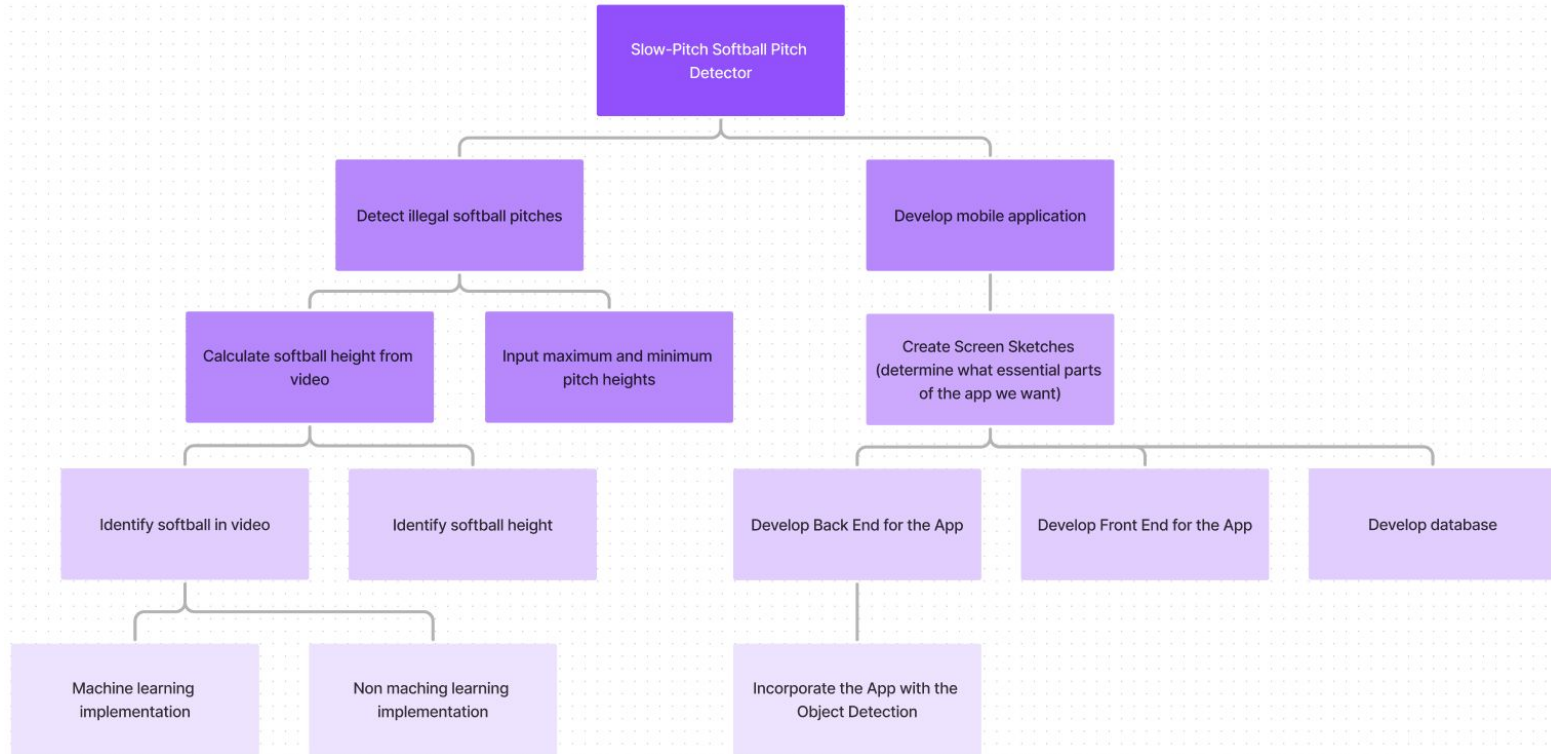


Task Decomposition

- Our two distinguishable parts of our project is the C++ object detection and the Flutter application for mobile devices.
- Separating our task into manageable subgroups helps our team's contributions to be specialized, focused, and organized.



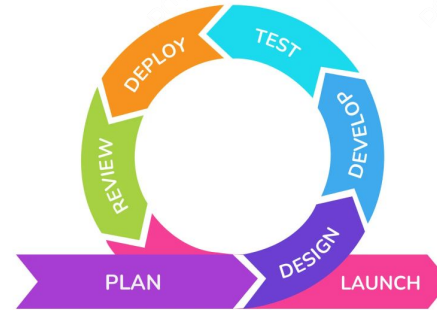
Task Decomposition



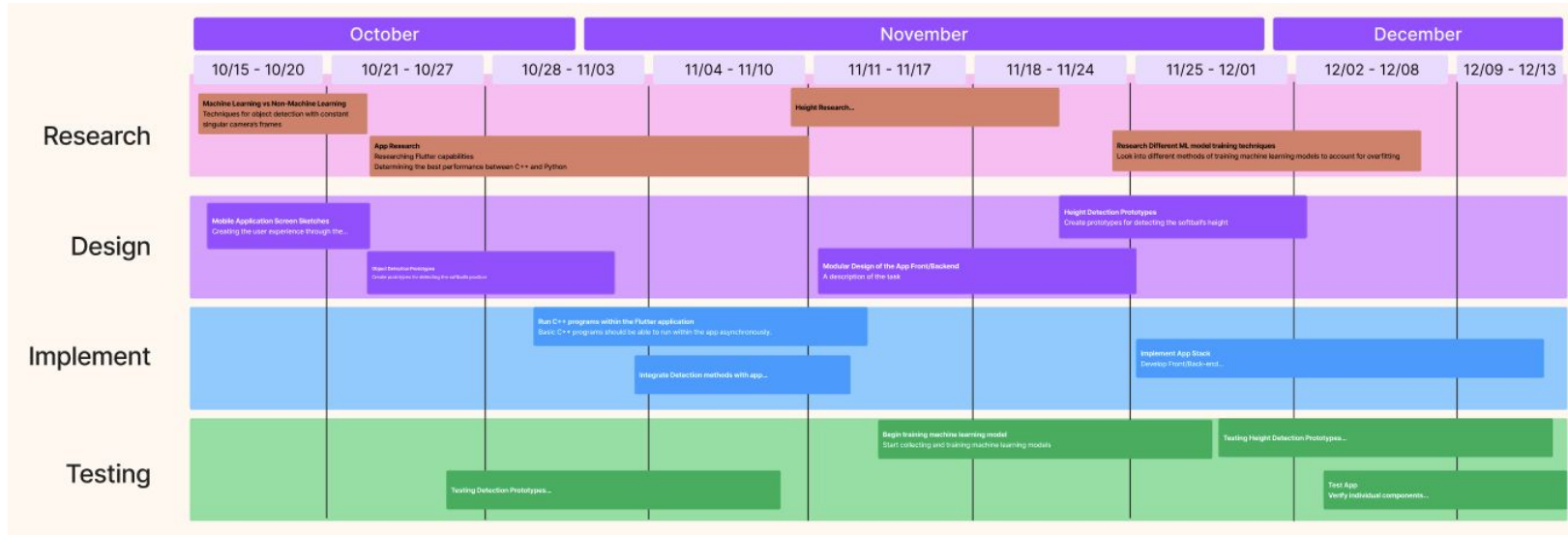
Our Management Style

AGILE

- Organize a weekly standup mentioning our progress, setbacks, and goals.
- Follow the AGILE workflow of Planning, Design, Implementation, and Testing
- Use GitHub branches and GitHub Issues board to showcase progress and individual work.



AGILE Inspired Gantt Chart



Our Key Milestones

Python Detection

A Python script should be fully operational and tested to detect a softball's location and its height through a camera feed.

C++ Detection

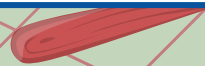
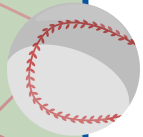
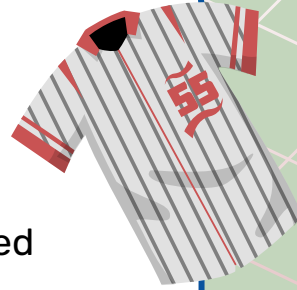
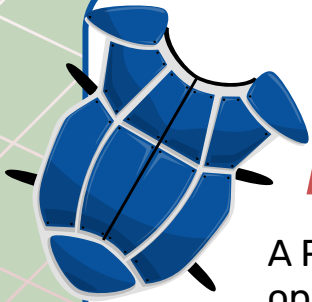
A C++ script should be translated and functional from the completed python script.

Flutter Screens

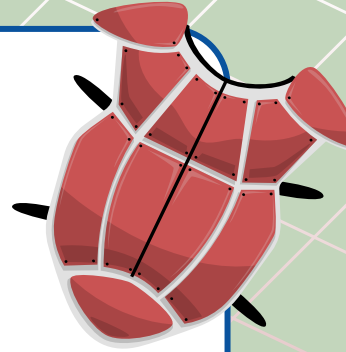
Each flutter screen should be navigationally functional and aesthetically pleasing

Detection Integrated App

The Flutter app should have a C++ object detection backend that can record the height of a softball on a mobile device.



Our Key Setbacks/Risks



Environmental Differences

- Camera height, field metrics, lighting, and camera angle all vary from field to field.
- Rules of maximum height and minimum height may vary.

Our Solutions

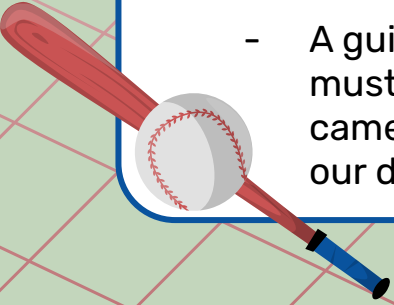
- A guided and extensive calibration must be included to collect field, camera, and ball data to initialize our detection.

OS Variation

- The application should be able to run on a variety of iOS and Android mobile devices.
- Varies camera quality and system sensors.

Our Solutions

- Coding our application in Flutter.
- Can output application in multiple platforms.
- Use C++ for all optical imagery.





Conclusion

- Splitting our project into manageable tasks between object detection and app development can increase specialization and productivity within the team.
- Managing our individual contributions with AGILE's techniques can help our team's organization, communication, and collaboration.
- Identifying our milestones and setbacks helps plan the feasibility of checkpoints and a project timeline according to AGILE's core foundations.