

The background features a green and white diamond-patterned field with a red dirt base at the bottom. Various baseball and softball equipment is scattered around: a pinstriped uniform with blue accents on the left; a baseball at the top center; a red bat with a blue grip at the top right; a red catcher's helmet at the top right; a brown leather glove on the right; a red catcher's chest protector at the bottom right; a white and blue cap at the bottom left; and another baseball at the bottom center.

Weekly Updates

Slow-Pitch Softball Detection | SDMAY25-11

This Week's Progress



C++ Scripts

- Translating python scripts
- Running C++ scripts within Flutter



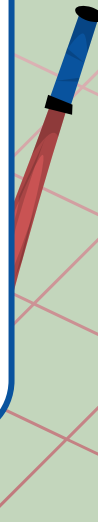
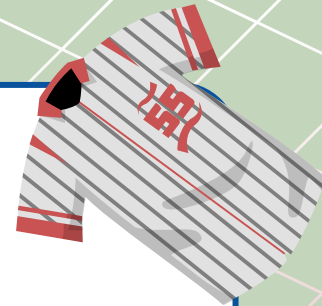
ML vs NML

- MOSSE scripts
- ML detection



Distortion

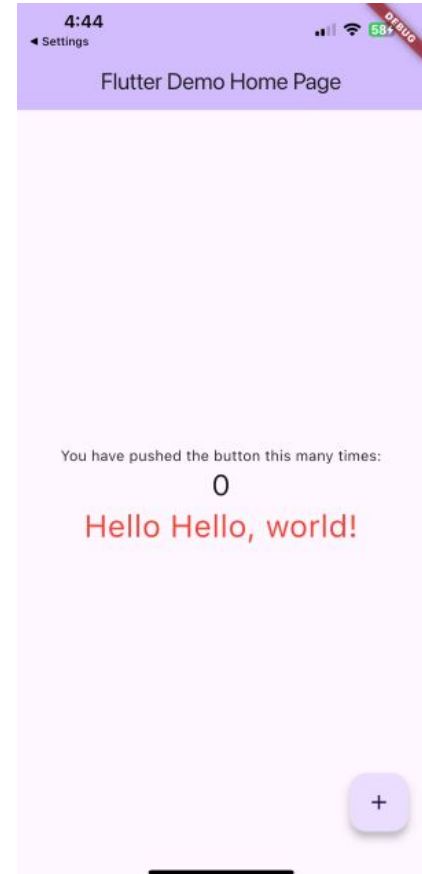
- Undistortion of camera lens
- Calibrate-once method



C++ Scripts

- Translated current Python detection scripts into C++
 - Python scripts are not fully functional
 - Implement OpenCV and camera operations for testing

- Added Flutter capabilities to run C++ scripts on mobile.
 - Can basic cpp "Hello World" files



MOSSE Scripts (NML)

- Minimum Output Sum of Squared Error
- Object tracking using correlation filters to detect patterns and tendencies.
- Create a template and add filters to find an object detection algorithm with the minimum output sum.
- Inconsistent in different lighting. Not as reliable.



Machine Learning vs Non-Machine Learning

Can adjust the
implementation based
on the environment

Slower

Customized training
models

Higher Accuracy

Machine Learning

Difficult handling of
environmental
variables

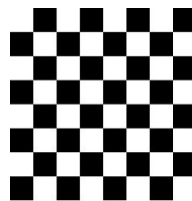
Fast execution

Less Complex

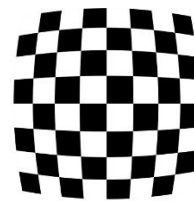
Non-Machine Learning

Lens Distortion

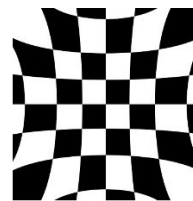
- OpenCV Distortion Detection
 - Uses a checkerboard to find distortive patterns
- Live camera calibration
 - 15 captured photos
 - Side by side display
- File Storage
 - Saves the distortion details locally in a file to be used later.
- Future: Create a CameraManager class to use OpenCV, but automatically undistort with `.read()`



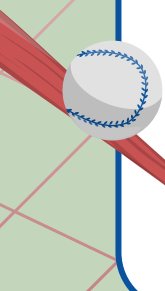
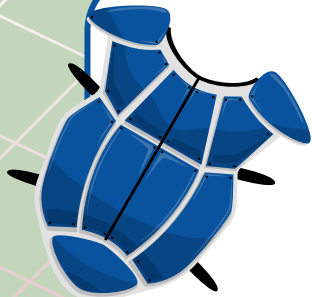
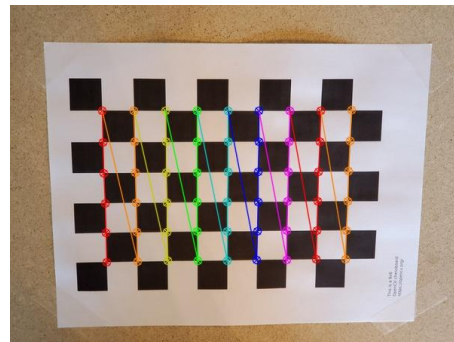
No distortion



Negative radial distortion
(Barrel distortion)

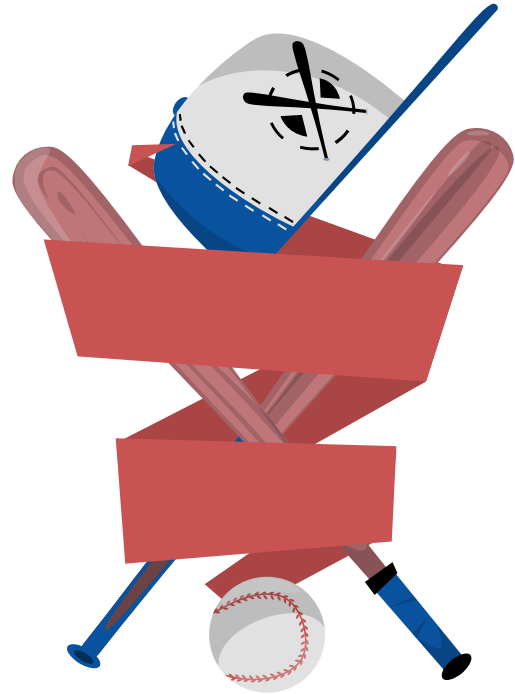


Positive radial distortion
(Pincushion distortion)



Next Week?

- Continue translating visual/camera components in C++.
- Integrate calibration techniques into current object detection script.
- Continue testing/prototyping height detection scripts
- Begin Flutter screen development.





Questions?

[GitHub](#)
[Google Drive](#)