Computer Vision
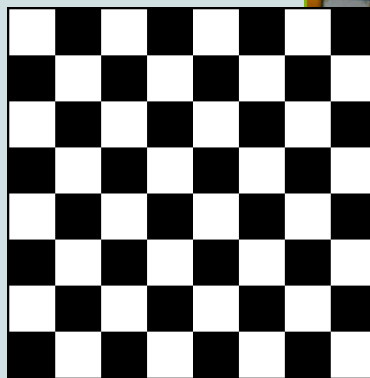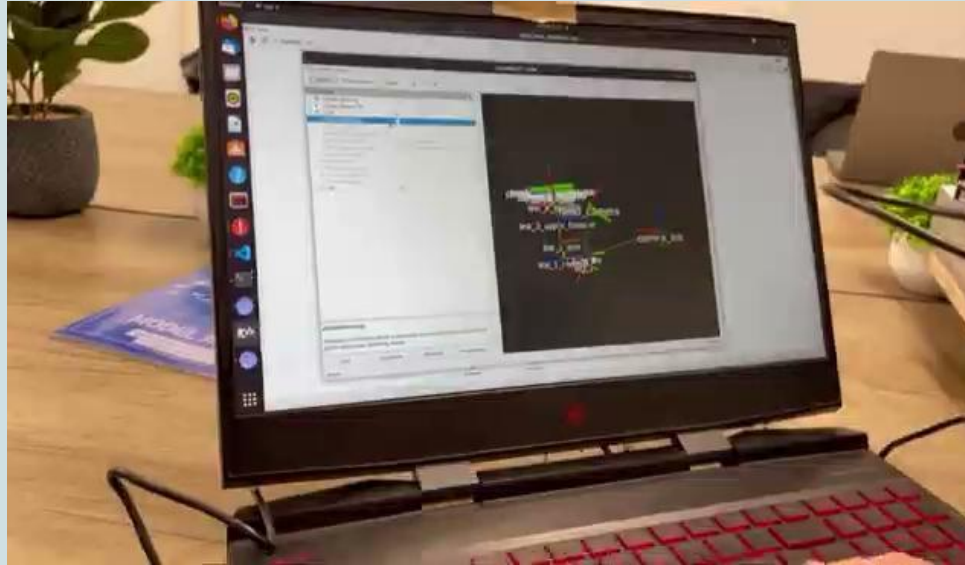
Gabriel Palacios

CURRENT MODULES

1. AprilTag node

2. Monocular Camera node

3. YOLO node

4. Camera Calibration Node

5. Grid node
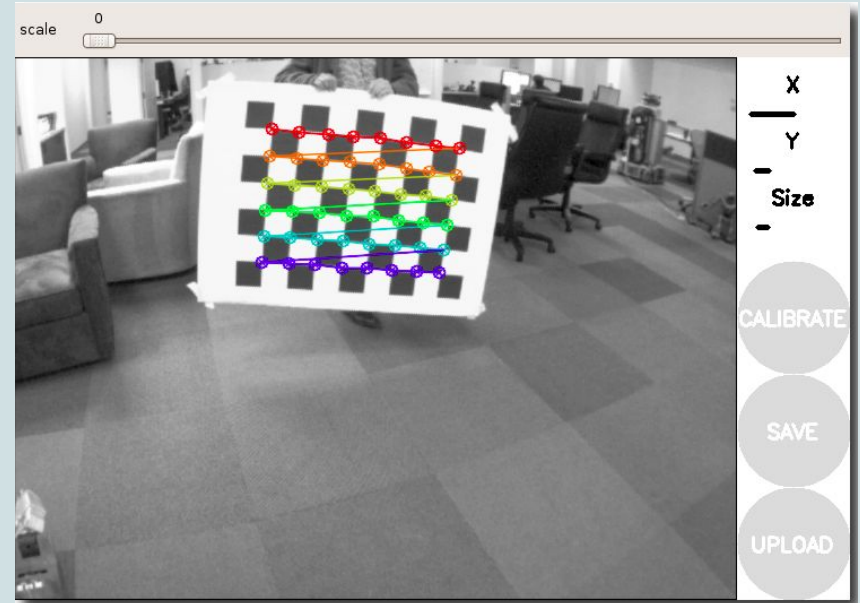
Camera Node + Apriltag Node

Grid Node

- Make a grid localizing the pixel coordinates of the intersections in the chessboard

- Send out dictionary relating the pixel coordinates to the position on the board. Ex. {"A3":[top_left, top_right, bottom_left, bottom_right]}
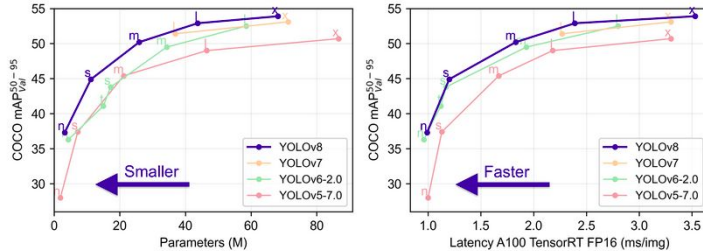
Object Detection

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YOLO Nodes

Individual Chess Position

- The node will give a preliminary order on the pieces depending on the chess piece position in which the pieces were found and if one are next to another

Piece Position Sorter

- The node will do the final sorting of pieces in the special cases in which the

Apriltag Nodes

Measure Chess Board Node

- This node listens to the Apriltag Node and gets the position of the camera with respect to the apriltags, from this information assumes the width and height of the chess board, and the dimensions of the internal squares. The output is the position of all the squares in cm and the position with respect to the camera.

Apriltag to cm Node

- The node will give a preliminary order on the pieces depending on the chess piece position in which the pieces were found and if one are next to another

Apriltag Nodes

Translator node

- Listens to Piece Position Final Filter Pixel Chessboard Node and Measure Chessboard node. This node estimates with this information the position in cm of the chess box with respect to the camera.

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