FishSense

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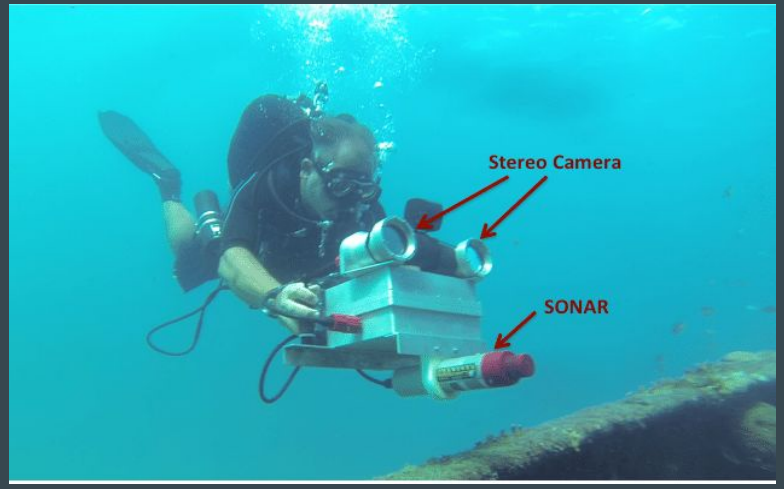
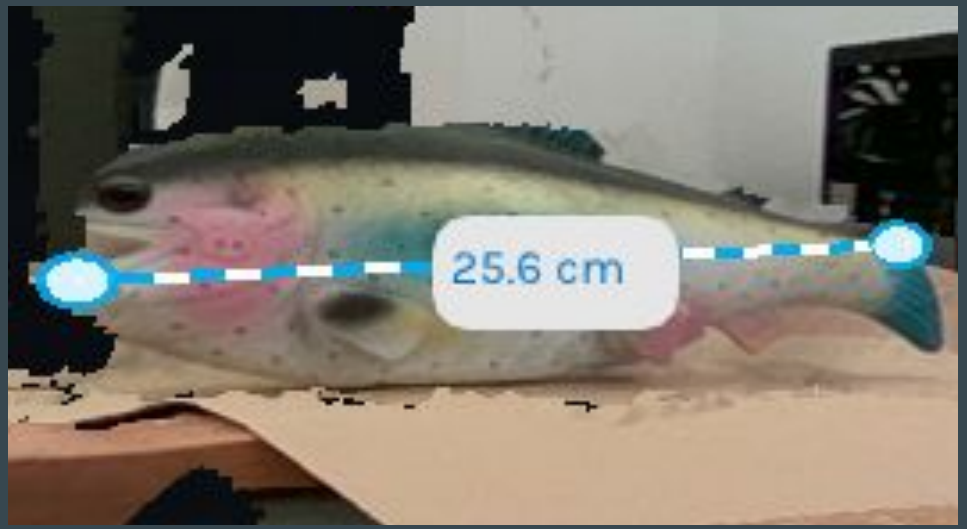
Current Fishery Research Techniques

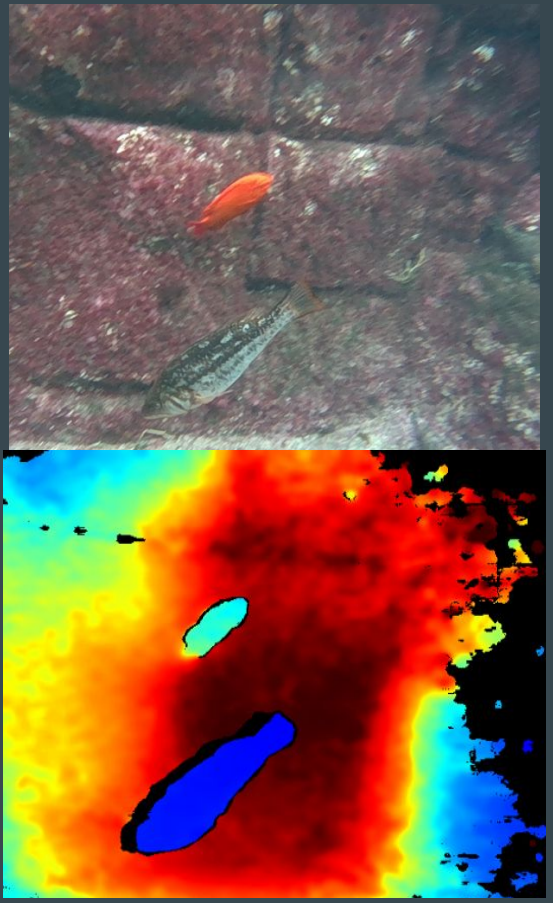


FishSense

- 3D imaging
- AI models

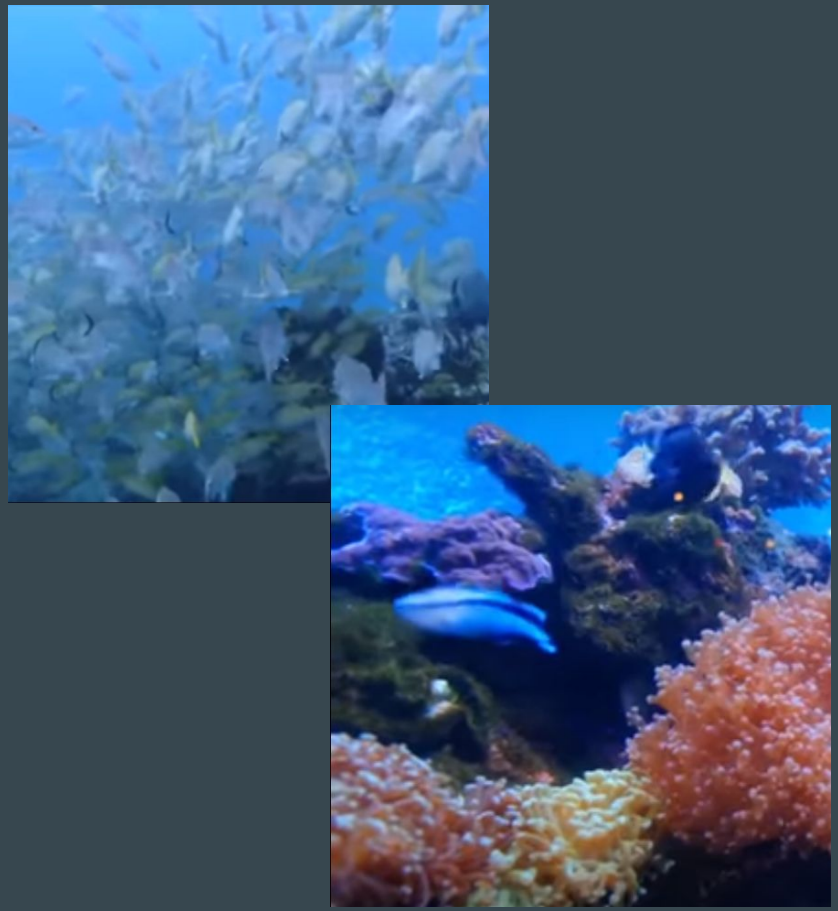
Automated Measurements





Noise Filtration

- Backscattering
- Floating particles
- Other fish
- Gaussian noise



New Fish Detection Technique

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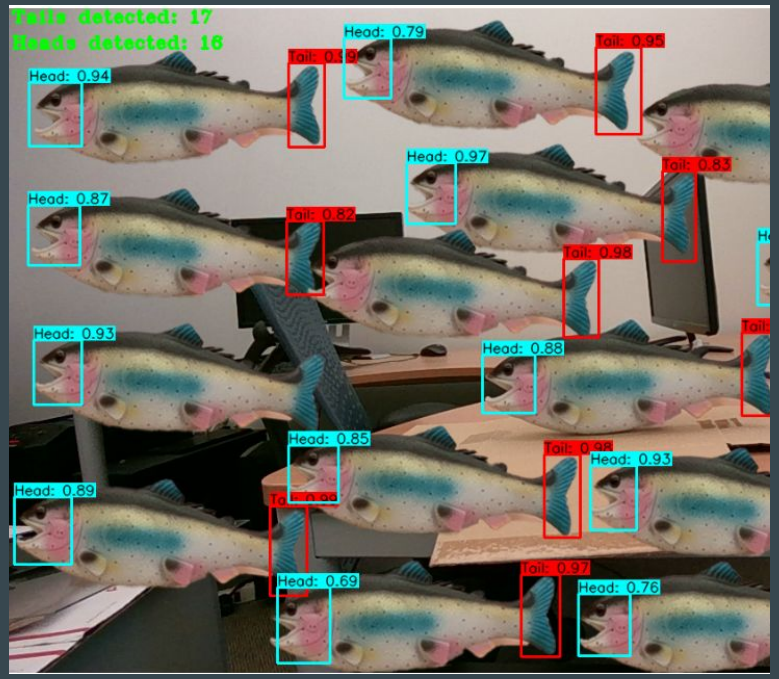
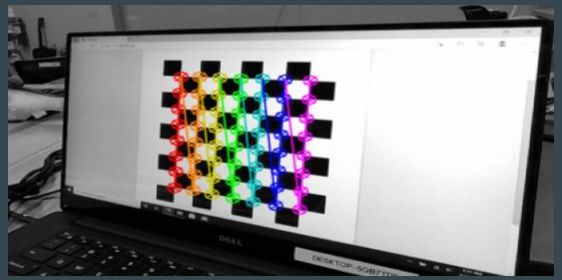
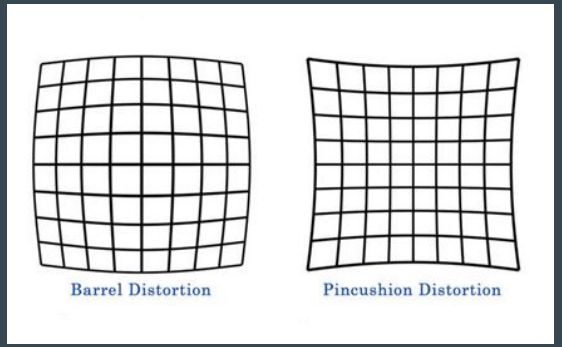
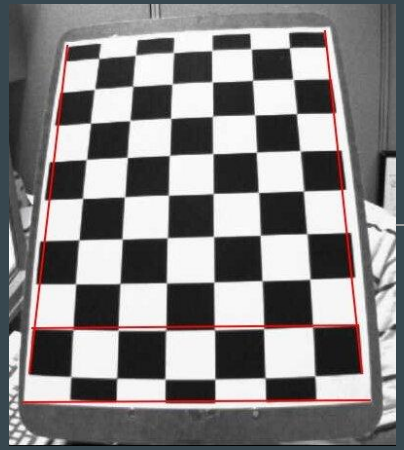


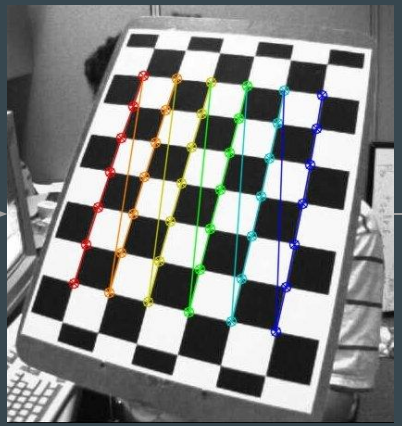
Accomplishment

1. Calibration



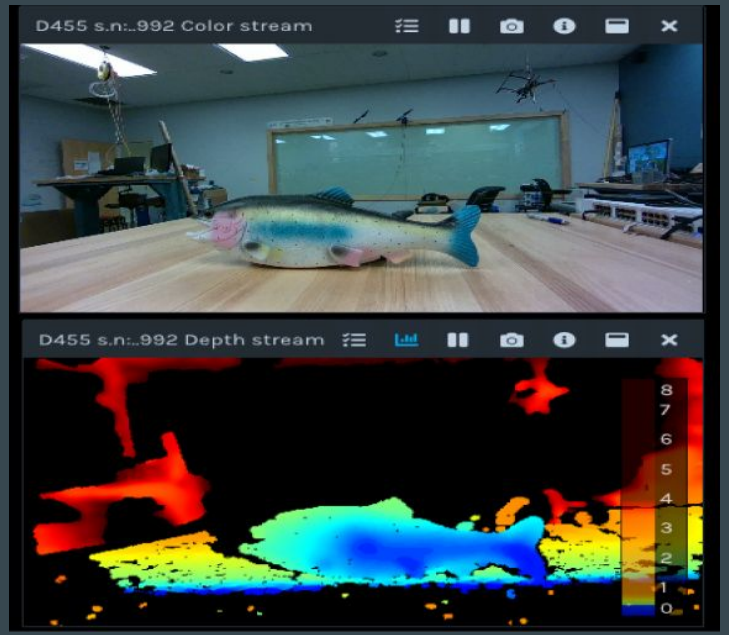






Site from openCV Camera Calibration

2. Align up RGB image & Depth image



(1) Point-to-point mapping (get color/depth frames -> align)

- rs2_deproject_pixel_to_point:

  depth 2D pixel ->depth 3D space

- rs2_transform_point_to_point:

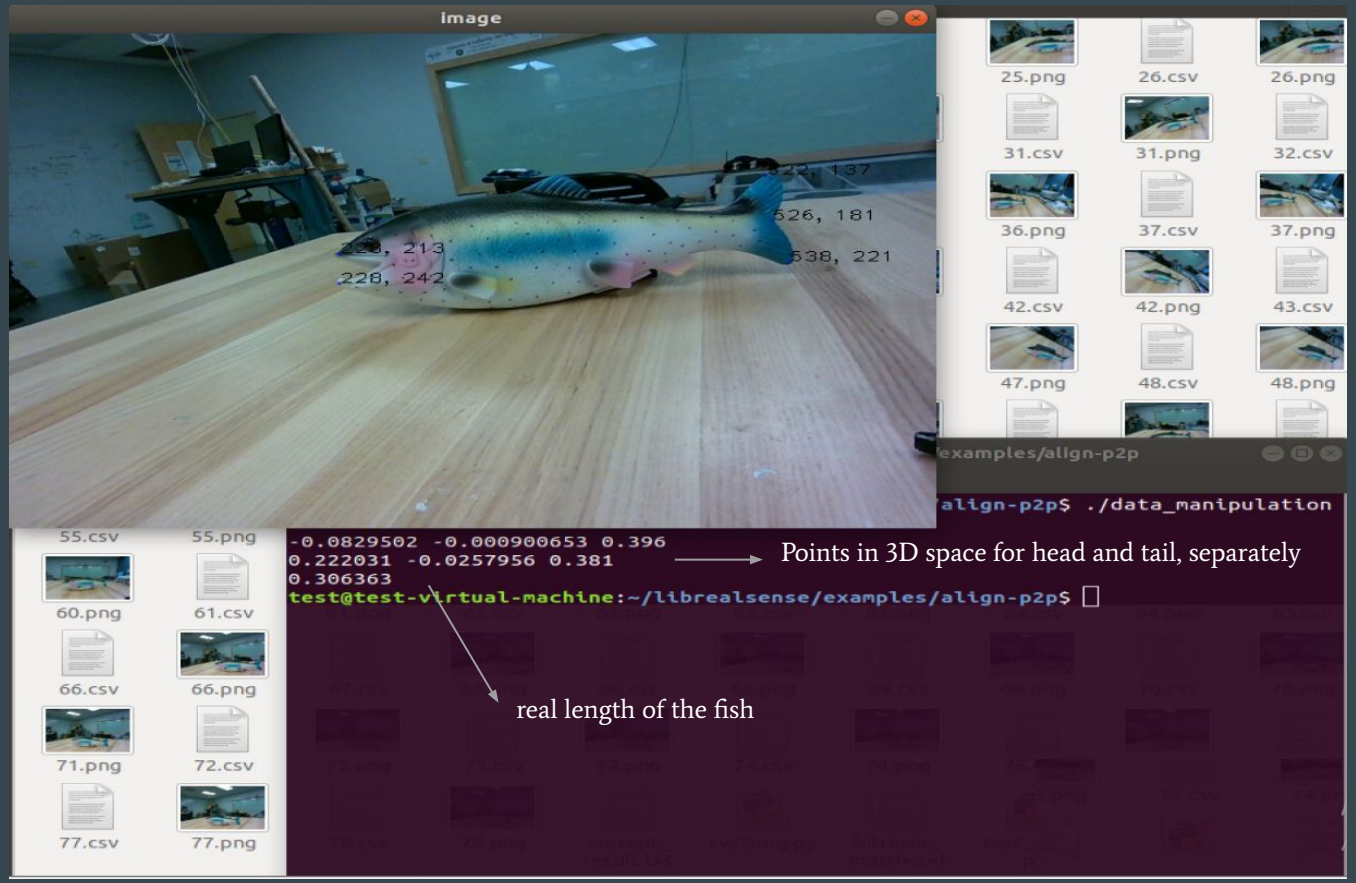
  depth 3D space -> color 3D space

- rs2_project_point_to_pixel:

  color 3D space -> color 2D pixel

(2) Create align filter Alignment between the depth image and the RGB image (aligned frameset ->get color/depth frames)

Sample result of fish length



Quarter plan - Improve performance on different noise level

Setting Up

New fish detection technique, Calibration, Aligning RGB & depth images

MVP

Length detection using images with minimal noise

Noise Filtration

Filter noise to prepare for length detection using underwater images

Final Goal

Length detection using underwater images

Stretch Goals

Real time length detection, Apply ML models

Quarter plan - Length detection in ocean

Questions?