4th Year IoT Project  
Aquarium Monitoring System: HCFF

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# Introduction and context

# Completed work

## Hardware

### Raspberry Pi

### Temperature

### Brightness

## Image Recognition

### Initial Idea

One feature we wanted to work on was image recognition. This was first intended as a way to count and detect the different fish and show them according to their species, also allowing to analyze in detail their behavior to alert of any signs that could warn the user of potential health problems.  
However, to be able to recognize the fish this accurately, we would have needed to use TensorFlow, a very detailed and thus quite complex machine learning platform and use a custom library of data (a large amount of images of the fish with boundary boxes and labelled according to their species). This path was very interesting but could have been a complete AI project, and we did not have the time or resources to go through with this idea in its entirety.

OpenCv  
We thus opted for simpler image recognition, using a Python library called OpenCv, which is a basic yet powerful too that can be used in a variety of ways with images and videos. It enabled us to detect fish movement in short videos and have an approximate count of the number of fish visible on camera during that video.

#TODO add Screenshots

## Android App

### Figma

### Android Studio

## Data collection and linking

### Rest Client

#### Android

#### Raspberry Pi

# Project perspective

## Planned additions

## Challenges

# Conclusion