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| Room Occupancy Measurement using Image Processing | | |
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# Project statement

The purpose of this project is to count the number of people in a room using image processing techniques. This application could be used to monitor the elderly people in their homes. The reason for monitoring them could be for example to detect a fall. To detect people in a room, a raspberry pi NoIR camera will be used. This camera will be combined with super bright infra red LED's to shine light on the room making people visible. Once an image has been captured, the result will be posted to a web server. The web server will display the image of the room and the number of people in the room. The image and result posted to the server will be stored in a database until the end of the next day.

# What research has been done and what are the outputs?

## Background research

## Alternative existing solutions to the problem you are solving

(Focussing on the architecture and user/functional requirements

## Technologies researched

What candidate technologies did you examine? What criteria did you use for selection? What experience you have in the chosen technologies? If new to you, what have you done to familiarise yourself with the new technology?

## Other relevant research done

e.g. interviews/ surveys

## Resultant findings/requirements

For example, a list of requirements for your solution – based on your research and analysis

## Bibliography (research sources)

# Analysis: Describe clearly what your solution will do

# Approach and Methodology

What is your approach to this project? Are you using any particular software methodology? Eg. Are you delivering design/ code in phases, or are you completing all design up front, followed by all coding? Have you some sections lower priority if time runs short?

# Design

## Technical architecture diagram:

Insert the architecture for your solution

## Other design documents

Insert other design artefacts that explain your system: e.g. Use cases/ ERDs/ Class diagrams

# Prototyping and Development

The camera I am using for this project is the raspberry pi NoIR camera. The reason for choosing this camera is that it has no infrared filter attached. The lack of an IR filter allows the taking of lowlight and infrared images. For this camera to take infra red(IR) images, IR LEDS must be shined onto the target area.

https://www.raspberrypi.org/blog/infrared-camera-you-asked/

https://www.amazon.co.uk/Raspberry-Pi-1080p-Camera-Module/dp/B01ER2SMHY

# Testing

Explain your planned testing approach: For example: who will be involved, what test scripts are planned, how will the testing be executed.

# Issues and risks

Explain the main issues / challenges that are unresolved on your project. – and your suggested approach to solving them. This is a critical part of your report to show that you understand what is required to complete the project.

# Plan and future work

What are the key deliverables and date for the remainder of the project?

# Conclusions

Identify interim conclusions viz. summary of findings thus far, plausibility of the proposed system and personal development conclusions.