

# Human Fall Detection and Emergency Alert System

## Cloud Computing - Project Proposal

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## Project Outline

For this course project, we decided to implement a human fall detection system driven by image/video recognition on the cloud using IoT devices and artificial intelligence. The project is roughly built up by three parts.

### Part I: Human body outline detection.

In this part, we will implement a server side application deployed on AWS which communicates to an IoT device such as a camera or a smartphone with a camera running a client application which uploads a live feed. The server will receive video and image streams uploaded through the client IoT devices. By implementing a body outline detection algorithm and get a bunch of training data, the server application will automatically indicate the outline of any human activities in the stream.

### Part II: Fall detection algorithm.

In this part, we will implement artificial intelligence based fall detection algorithms/apis highlighting a certain period of stream during which the person is most likely to fall down. We will collect real world scenarios and train the labels to achieve the best result.

### Part III: Follow up notifications and help measures.

In this part, if any signs of fall is detected, our server based in AWS cloud would send a series of notifications to the individual's IoT device. The help notifications will be deployed in multiple stages. Early stages of notifications include messages prompting the user to respond to show that he is conscious/okay. If the user disregard these messages, the server will initiate higher stages of alert, including calling the user's friends/families, ring the user's phone, etc. If all the

other measures taken showed no signs of response, we will regard the person fell down as seriously injured, and the server shall dial stress calls to 911 or 112.

## Project Structure Diagram:

Link:

<https://drive.google.com/file/d/12pE-XK3yzpWvfxQD8iSgRCFJ85C-vM5r/view?usp=sharing>

