**Final Year Project Proposal**

| Sr# | Student Name | Roll Number | Signature |
| --- | --- | --- | --- |
| 1 | Javairia Rehman | P19-0020 |  |
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**Suggested Supervisor**:

Faculty Member’s Name: \_\_\_\_DR Hafeez Ur Rehman\_\_\_\_

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date (07 September 2022)

**Project Details**

| **Project Title** | Health Monitoring System for Senior citizens | | |
| --- | --- | --- | --- |
| **Project Area of Specialization** | IoT, Computer Vision, Deep Learning, Cloud | | |
| **Project Start Date** | 2022-08-23 | **Project End Date** | 2022-06-30 |
| **Project Summary (less than 2500 characters)** | If you are at work somewhere and no one is present with your parents, they have some diseases like heart disease. Whenever their condition worsens, and no one is present there to notify you or the hospital.  Human Activity Recognition (HAR) is considered one of the most promising assistive technology tools to support the elderly's daily life by monitoring their cognitive and physical function through daily activities using videos.  So, using Human Activity Recognition, there will be an IOT device that monitors the human through video and, if found any critical/worse activity/behavior in the human user will get notified of that situation. | | |
| **Project Objectives (less than 2500 characters)** | 1. Detection of health-sensitive human activities. 2. Alert the relatives/ attendant/ doctors. 3. Keep activity log/ analytics. | | |
| **Project Implementation Method (less than 2500 characters)** | Using scrum, we will iteratively implement our project. We will identify requirements for our project as well as we will work on our project iteratively. The project will be split into modules. At every assessment, there will be a gathering of some requirements as well as progress in the application. | | |
| **Benefits of the Project (less than 2500 characters)** | 1. As it is an assistive tool, you can use it to identify if employees are doing their work or not you will get notified in case they are found in another activity. 2. Continued monitoring and recognition of physical activity can potentially assist to manage and reduce the risk of death/much worse health conditions. | | |
| **Technical Details of Final Deliverable (less than 2500 characters)** | The project is divided into 4 modules.   1. **IoT Device (Hardware)**:   It consists of multiple sensors i.e., Camera, etc., and a processor. The IoT device is connected to the internet using Wi-Fi. The live feed will be analyzed by the Deep learning model at the server, which will be deployed on the cloud.   1. **Deployment of the model on the cloud:**   Convolutional Neural Network (CNN) and Recurrent Neural Networks (RNN) models will be used for real-time activity detection/classification. Also, analyze the behavior of humans. These models are trained by appropriate examples, then the model is deployed on the cloud. If there is irregular behavior, the video clip of that behavior will be stored on the cloud server. This is because of privacy concerns also the cloud is expensive. The irregular behaviors will also be used to train the model again.   1. **User Application:**   A mobile application for Android/IOS is developed for the health care staff/Attendants for their assistance. Users can get the following features on the application:   * Live feed * Sensors readings * Log/History * Notifications/ Alerts | | |
| **Final Deliverable of the Project** | Deliverables are:   1. **Hardware at the patient end**   An IoT device consists of the following components:   * Raspberry pi * Camera  1. **Mobile Application:**   A working mobile application for both Android and IOS has the following features:   * Live feed * Sensors readings * Log/History * Notifications/Alerts | | |
| **Type of Industry** | Health Care | | |
| **Technologies** | Python, OpenCV, Deep learning, PyTorch, Keras, Raspberry pi, Azure, React Native   * Sockets, Pytourch,Python,Azure,React Native,Kinect 360,Google Colab | | |
| **Sustainable Development Goals** | 1. This application will give their users, peace of mind as if they are not there to whom they want to look after. there is someone who is there to assist. 2. Health care staff is very expensive in the developed world. In some cases, there is no need for active 24/7 assistance. 3. Human effort will reduce as computer vision have the potential to serve in healthcare. | | |

**Project Key Milestones**

| **Elapsed time in (days or weeks or month or quarter) since the start of the project** | **Milestone** | **Deliverable** |
| --- | --- | --- |
| Quarter 1 | Requirement Analysis for Deep learning Model | Requirement document for Model |
| Quarter 2 | Real-time activity detection/classification | A trained model that classifies and detects human activities |
| Quarter 3 | * Deployment of the model at cloud. * Requirement Analysis for Hardware device | * Deployed model on the cloud. * Requirement document for Model. |
| Quarter 4 | * Development and deployment of the mobile application * Building IoT device and configuration with server | * A working mobile Application. * Configured IoT device |

**Project Equipment Details**

| **Item Name** | **Type** | **No. of Units** | **Per Unit Cost (in Rs)** | **Total (in Rs)** |
| --- | --- | --- | --- | --- |
| [Raspberry Pi 4](https://electrobes.com/product/raspberry-pi-4-model-b-4gb-computer-development-board/) | Equipment | 1 | 40000 | 40000 |
| Raspberry Pi Camera v2 | Equipment | 1 | 9000 | 9000 |
| Others | Miscellaneous | 1 | 11000 | 11000 |
|  |  |  | **Total in (Rs)** | **60000** |