An Overview oF Machine Learning Applications FOR Instability and Collapse Prevention in Eldercare

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ABSTRACT

This research is based on the enhancement of the medical services by means of the advance intelligence computer software and new base of programming platform. Let discuss about the idea and brief behind the research interest. The global population is the big tremendous growing factor in the world, though we can't say the growth of population is not good or dangerous for the humanity because every people have its own life of right and we can't avoid it. Besides that the improvement in medical science in last 50 years overall the world is very vast. With the medical instruments and pharmacy drugs advancement we are surely saves the life of people even in very dangerous case near about 89-90% accuracy and this is the most reason for the elderly population is growing on because of improvement in medical facilities but still after the age of 60-65 years the naturally human body start the not responding as compared to the age group like 30-50years peoples. Hence at the old age of senior citizen, there is most of deaths occurs by falling the person because old age for the internal reason whatever it may be. According lot of reputed studies this reason are common for the elderly death rather than natural deaths. The senior person who lives lonely or the time when they are lonely then there is no one can taking care if fall occurs of the person like in place toilet ,latrine, at night when get up for drinking water, even in ICUs etc. .So I am interested accordingly to design the system which can robustly find the falling situation of person and get alarm or any alert signal to respective care person so that we can save the life of the elder person if injury is life threatening, even if the injury due to fall is not life threatening but there is always risk of fractures and internal injury. The overall research in on the basis of above health condition so that we can get an advance boost for medical system.

1. Proposed Scenario Of Research

Being this research is approved and we are already published the basics of the research literature survey we are directly discussing the out goal and aim of research and it is clear that we are willing to design a visual based fall detection system with machine learning for elderly peoples.

1.1 Used Platforms

Here we mainly use python platform for machine learning and image because python is a better choice than others for AI and machine learning. Python is an interpreter, object-oriented, high-level programming language with dynamic semantics. The combination of high level built-in data structures with dynamic import and dynamic binding makes it very attractive not only for rapid application development but also as a scripting language or a connector to connect existing components. Learning the syntax emphasizes readability and thus reduces the cost of maintaining the program. Python supports modules and packages, encouraging program modularity and code reuse. The Python interpreter and extensive standard library are freely available in source or binary form for all major platforms and can be freely distributed.

1.2 Unified Modelling Language Diagram

The UML diagram is mainly use to represents how the end user is interacting with the system model ,the diagram showing the user and provider interaction in the form of external and internal systems. In our systems mainly the three types of internal and external systems can say that it is actors namely Developer, Administrator, and Caretaker or caregiver or guardians. The Admin mainly performing the task like caregiver/caretaker registration with new registration, updating new caretaker data, add new caretaker, remove caretaker. Also the administrator also do the task for mapping details of camera locations and caretaker details onto the system and may enabling or disable the system to send alert signal to the respective alert peripherals in case of fall detection.

In addition to that the developer also keep the system update every time to detect the fall or as per the requirement result of the system.

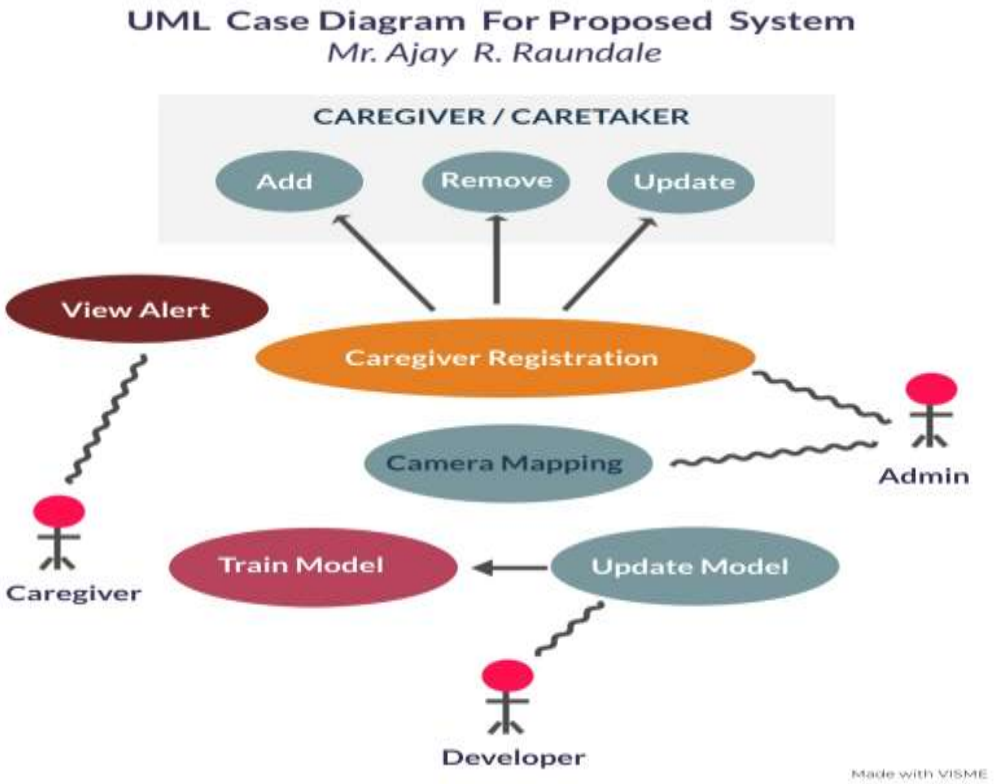

Fig. 1 : Unified Modeling Language Diagram

1.3 Context Diagram

The Context Diagrams some time called as level zero data flow diagram and is made in order to define and clarify the boundaries of the system so that we can brief overview of the data flow system. The fallowing diagram depicts the context diagram of the proposed system.

[*Department of Computer Science at the University of Cape Town https://www.cs.uct.ac.za/mit_notes/software/htmls/ch06s06.html#:~:text=A%20context%20diagram%2C%20sometimes%20called,shown%20as%20a%20single%20process*.]

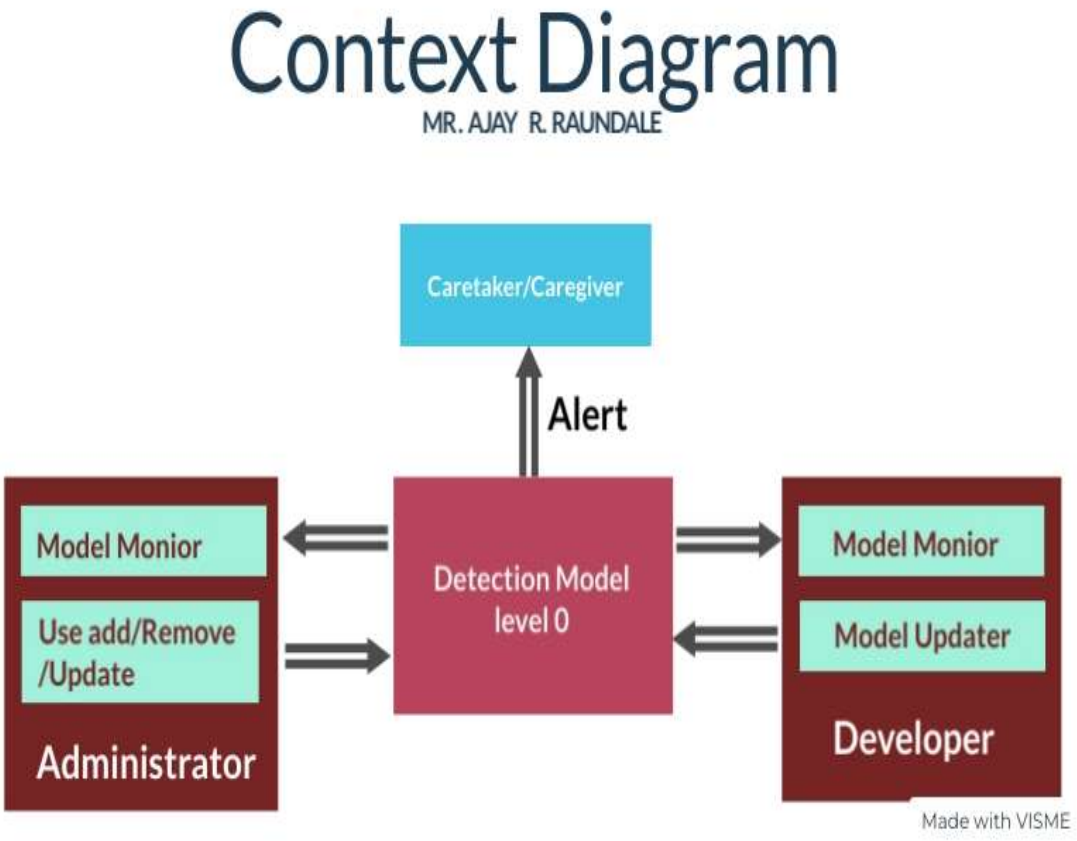

Fig. 2 : Context Diagram

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In order to clearly represent the system data flow process and features the level 0 diagram is drown in support with the context diagram very carefully. Also indicate the processes, entities and data stores in a system, you can see and understand clearly data flow process.

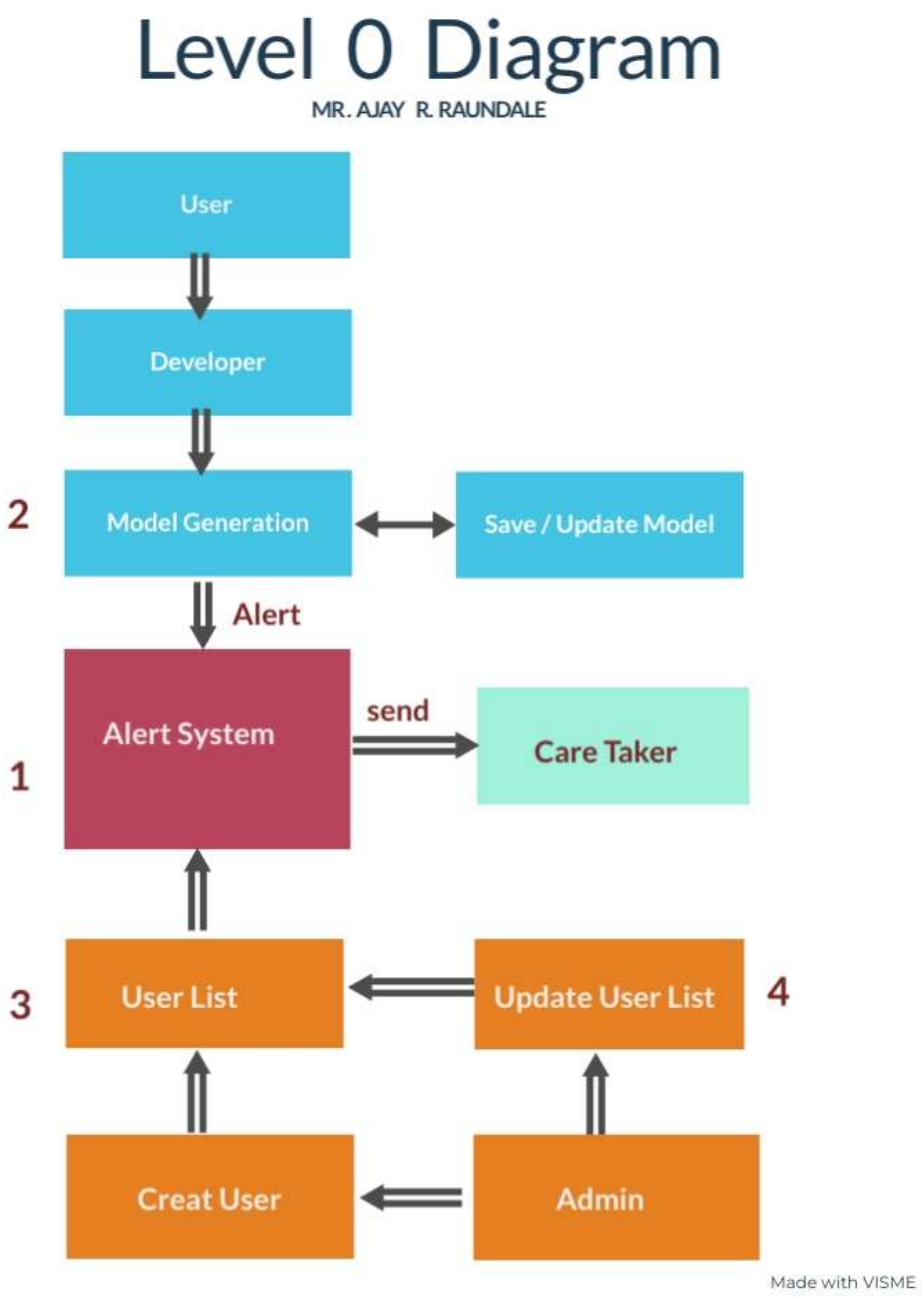

Figure 3 : Level 0 Diagram

1.4 Sequence Diagram and Class Blocks

Sequence diagrams : The interactions is main thing of the data sequence flow diagram

interact with the object and system the fallowing diagram clearly showing the sequence of process of system that how the model works. The fallowing flow showing the fall detection system step wise the developer generate the model for the training the series images inputs from the camera, the image first preprocessed and if confirm the specification then go to further entity .This model save this data in memory and compare with the new series of images to classify the fall and non-fall.

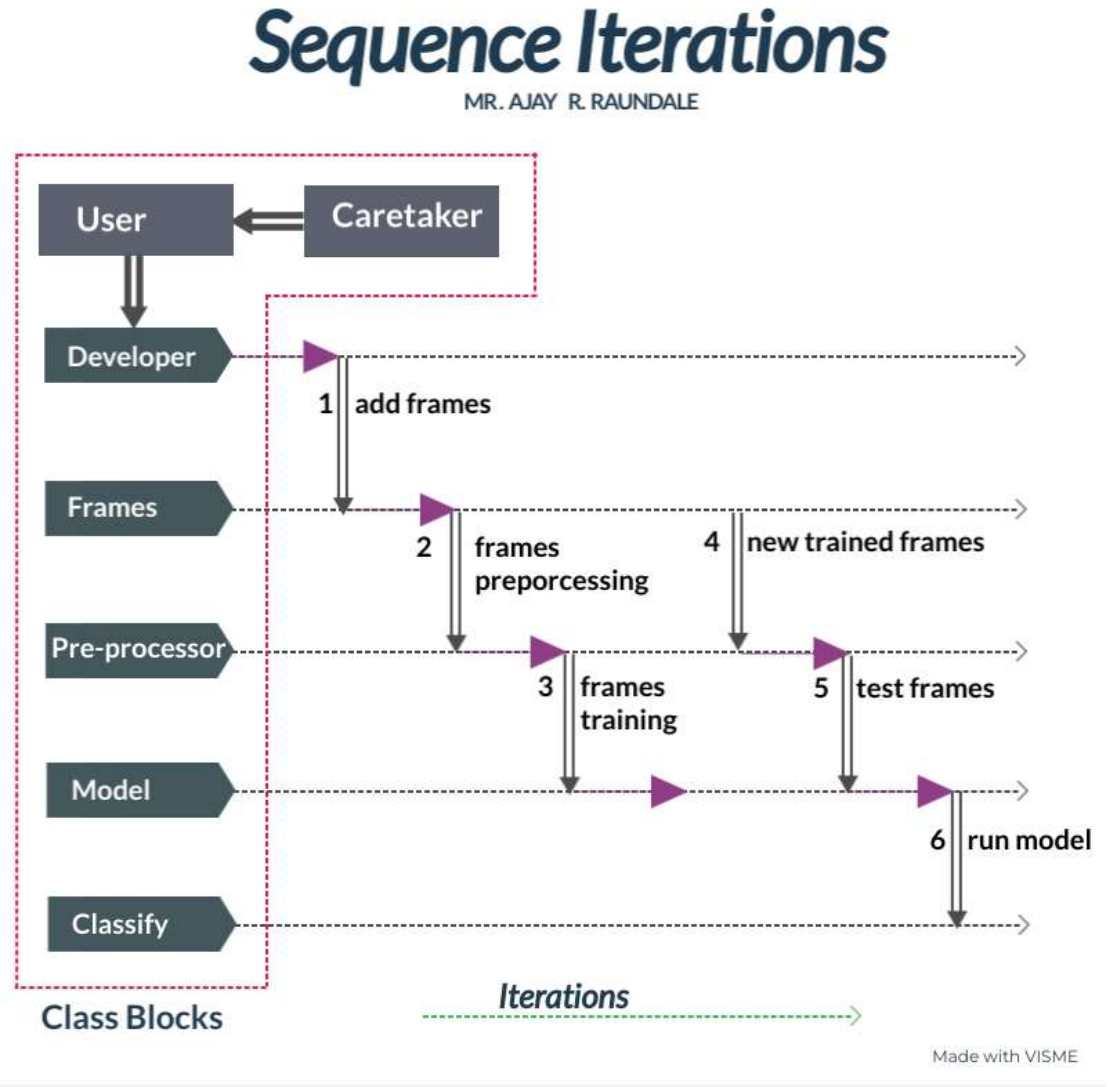

Figure 4 : Sequence Diagram

Class Diagrams : To clarify the overall structure overview of the system the class diagram is used .In this the each class and their interaction with other class is well defined as shown in diagram to ensure that better understanding the system by the developer and designer.

1.5 Data Flow & Database Schema

The data flow is may be defined as the detailing of the process carried out at each entity or iteration or unit according to its flow sequencing step by step. Also during the each

data there is data stored for each individual process in each entity. The study of data flow in the system is better for understanding the system behavior.
A database schema shows the different entities in a system and their relationships that affects the association between them. Furthermore, the schema highlights the constraints placed on the system. The diagram below shows the database schema for the system.

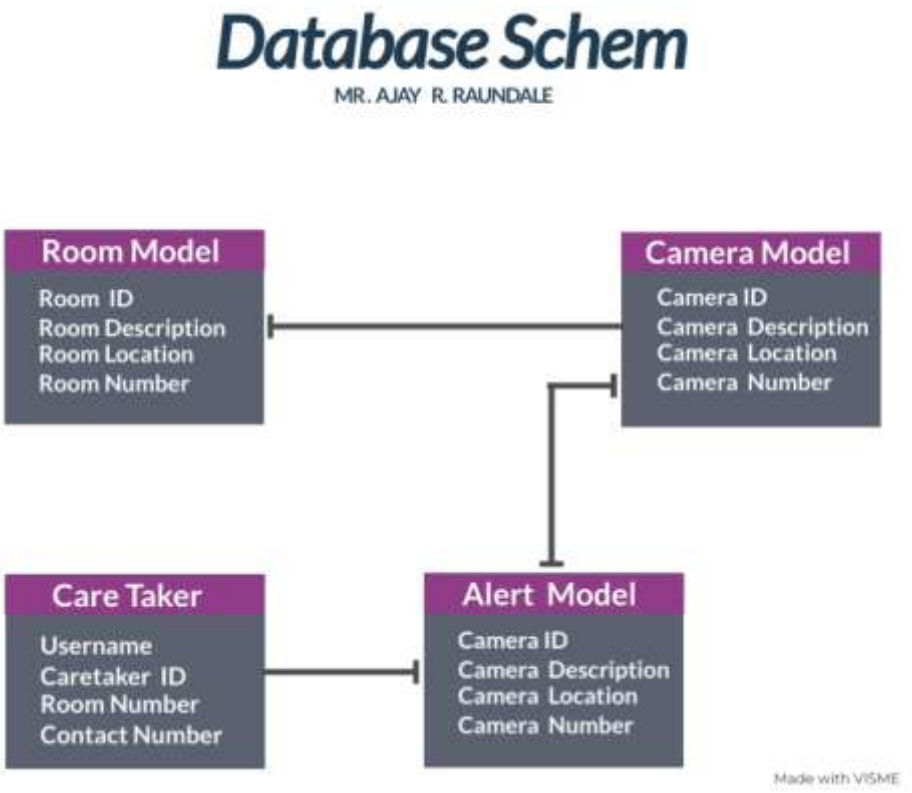

Figure 5 : Database Schema

CONCLUSION:

As we already discussed the data flow framework for the fall detection for eldercare the above research is very beneficial to the places like where lonely peoples are staying, old age home, even in hospital ICUs for emergency alert of fall. And from the above working schema we can build a better and robust fall detection system with high efficiency. This research opens the new area to the intelligent world for further research. The future work may be on focusing on the correction of occlusion in the algorithm. Also we need to find the algorithm for the robust system which can be implemented with the communication system to inform the health care provider automatically.

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