JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

DETECTING ELDERLY BEHAVIOURS BASED ON DEEP LEARNING FOR HEALTH CARE

Mrs. Susmitha M N Assistant Professor, department of Electronic and Communication Engineering, MVJCollege of Engineering, Bangalore, Karnataka, india.

Veena M V, Vidyashree T C, Varshini Yenduri, Shalini K naik. Students, Computer science engineering,MVJ College of Engineering, Bangalore, Karnataka, india

Abstract-: Machine learning has been employed by the healthcare sector to develop smart gadgets. to improve elderly people' lives better in society. Caring for the elderly in society is a important task that involves automation. Some many researchers have created deep learning algorithms to systems which help. intelligent technologies that can identify geriatric behaviours to enhance healthcare for the elderly. Despite the improvements. To the best of the best knowledge of the researcher, deep learning algorithms have been used in senior healthcare systems. In this work, we provided an extensive current development on the innovations, strategies, and real-world applications on making smart devices for detecting senior behaviour for usage in smart homes, smart clinics, smart hospitals, and smart elderly nursing homes for old person's healthcare. Theories of deep learning algorithms, new developments about the use of deep learning in systems that offer healthcare to the elderly, and case studies were all covered. To assist with trying to identify regions that demand greater attention, a taxonomy is developed based on the data retrieved through the use of deep learning algorithms in elder healthcare systems. The research community has given convolutional neural network design and its variations a great deal of attention, as the article illustrates. in order to aid future development.

IndexTerms- Face verification, Face authentication, fall detection, Sending messages

I. INTRODUCTION

As a consequence of technological advancements in medicine, the number of aged persons in society has grown. By 2050, it's predicted that 20% of the world's population would be seniors. almost all There is an increase in the proportion of elderly people in all countries. Thus, it is crucial to get ready for the economic and social issues associated to the old in hopes of ensuring development progress. The natural loss in cognitive and memory abilities that older adults suffer causes them to constantly feel insecure in system is a key task. Hence, it is vital to just provide emergency care and improve welfare for the elderly through the creation of innovative and broad smart technologies. Smart home, smart healthcare, smart environment monitoring, and smart homeland security are the consequences of the wireless sensor network's applications. The internet of things (IoT), who enables the integration of common objects to the internet for simple real-time and ubiquitous monitoring, is formed through the interaction of wireless sensor networks and internet protocol. Some many wireless sensor networks, such active assisted living technologies and smart dwellings for the aging, have already been developed to aid the elderly. Help avoid issues that elderly adults frequently encounter, including such accidents, medical problems, psychological illnesses, and aspects of society. The monitoring of senior patients' medical conditions has undergone a revolution because to cutting-edge technology like the Internet of Things and deep learning algorithms. As a result, several academics are working to create smart gadgets that use algorithms based on deep learning to observe the activity of older people in order to better provide healthcare and purpose to increase. As an illustration,

a smart technology for the detection of an old person falling, depression, body posture, expression, and hand.

II. PROCESS OF ELEDERLY BEHAVIOURS OF PERSON

1. The authenticated person's image will be captured using a web camera in the first phase.
2. image processing utilizing filtering algorithms to eliminate the noise.
3. Recognize patterns via deep learning and image processing.
4. The fall is categorized depending on the values collected, and an alert is sent.

The main goal of the system's development is to develop a system that can use the Inception V3 CNN model to reduce the extensive number of steps of traditional image processing systems whereas achieving the highest level of accuracy conceivable using a wide range of extensively used fall datasets, including the URFD (UR Fall Detection Dataset) and FDD (Fall Detection Dataset). As was already noted, the wearable technologies and ambience sensor-based systems have a few drawbacks that make them unsuitable for use in daily life. The CNN model, which is based on the Inception model, helps to increase the accuracy of things that tend. In this way, the technology might be used to eliminate false alerts, cut down on false positives, and much more.

PHASES IN DETECTING ELDERLY BEHAVIOUR

1. **Image processing**

   Using Web Camera capture the images. Based on the camera quality it can verify and authenticate the person. we are using face verification for security purpose. First thing is to give id for a person to store the sample of there faces and make differ from other persons. For each second it takes approximately twenty pictures of a person

2. **Image processing**

   Once if it captures the picture then it should read the faces of a person. Maximum it can read about fifty marks on face so that the person can be detected easily as soon as he fall . Once after reading the marks of a person then it will keep in its memory.so that as soon as it detects the fall of such particular person.

3. **Fall detection of a person**

   In this already we have trained the system with few fall however we want. If a person falls then the camera analyse the images in a live and then if it's a fall then it will send a alert notification to a caretaker.

4. **Sending notification to a care taker**

   As soon as the fall occurs then a notification is sent to a care taker in telegram. We are using telegram because it is more secure compare to other applications.

Methodology

The main goal of the system's design is to develop an imaging system that can use the Inception V3 CNN model to reduce the significant number of steps typically involved in image processing systems and achieve innovative accuracy using a variety of widely used fall datasets, such as the URFD (UR Fall Detection Dataset) and FDD (Fall Detection Dataset). As was already mentioned, wearable sensors and ambiance sensor-based systems have a number of limitations that make them suitable for use in daily life. The CNN design, which is based on the Inception model, helps to increase the accuracy of behaviour detection. In this way, the technology might be used to eliminate false alerts, cut down on false positives, and extra.

ADVANTAGE

1. Improved accuracy
2. Early detection.
3. Objective and non-invasive.
4. Time-efficient.
5. Cost-effective

DISADVANTAGE

1. Technical challenges
2. Privacy concerns.
3. Lack of interpretability.
4. Limited generalizability

FUTURE SCOPE

We will expand our methodology to the framework to include additional future occurrences in order to increase the scope of its identification of all human actions. We would also like to collect information about home ultrasonography in the future. We also want to reduce the computational burden on our fall detector via parameter-pruning our memory-efficient CNN algorithms.

RESULT AND CONCLUSION

In order to recognise images using landmarks, the algorithm utilises video to identify human movement. This paper suggests a deep learning architecture for recognising human falls from still photos taken by a single camera. Utilising physical joint locations and segmentation information, our technique constructs human propositions. For Fall Net, a model CNN that uses highly selective embedding features and modality-specific holistic layers for fall verification, such ideas are constructed and translated into multimodal visual representations. Additionally, include a dataset of human falls that was built systematically using information on human posture and segmentation under various perspectives from the camera. Experiments on complex public fall data sets show that our qualified system gets good accuracy and recall scores for fall recognition using only a single training set. This provides new potential for increasing privacy while maintaining highly beneficial human fall detection in health information technology. We will expand our technique to the framework for further future occurrences in order to increase the scope of its recognition of all human actions. We are additionally seeking to reduce the computational strain on our fall detector by parameter-pruning our memory-efficient CNN algorithms.

CONCLUSIONS

Video is utilised by the technology to determine human movement, while Deep Learning is used to identify photos using landmarks. The purpose of this study is to present a deep learning architecture for automatically recognizing human falls from still photographs taken by a single camera. Using segmentation data and the locations of internal joints, our framework develops human ideas. Such ideas are refined and converted into multimodal visual representations for Fall Net, a model CNN that utilizes the use of modality-specific multimodal layers and highly discriminative embedding features for fall recognition. likewise give a dataset of human falls made up of computer-generated information about human balance and segmentation at various

camera angles. Experiments on large public fall data sets show that our qualified system gets high recall and accuracy scores for fall recognition despite just using synthetically generated posture data to generalize to new situations. Our image is incredibly durable to changes in size, appearance qualities, and camera angles because it was solely trained on synthetic data. This creates new potential for enhancing privacy while preserving significant benefits human fall detection in health information technology. We shall extend our technique to the framework for more future occurrences in order to increase the scope of its identification of all human actions.

REFERENCE

[1] Brownsell S, Hawley MS" Automatic fall detectors and the fear of falling", 2004, Journal of Telemedicine and Telecare.Amuzuvi, C. K., & Addo, E. (2015).

[2] Rui-dong Wang,Yong-liang Zhang ,Ling-ping Dong, Jia-wei Lu , Zhi-qin Zhang, XiaHe ,

[3] 2015, "Fall detection algorithm for the elderly based on human characteristic matrixandSVM",15th International Conference on Control, Automation and Systems (ICCAS). [3] Zhen-Peng Bian, Junhui Hou, Lap-Pui Chau, Nadia MagnenatThalmann," Fall Detection

[4] Based on Body Part Tracking Using a Depth Camera", 2015, IEEE Journal of Biomedical and Health Informatics (Volume: 19, Issue:

[5] Human Shape and Multi-class Support Vector Machine", 2008, Sixth Indian Conference on Computer Vision, Graphics and Image Processing.

[6] Chih-Yang Lin, Shang-Ming Wang, Jia-Wei Hong, Li-Wei Kang, Chung-Lin Huang," Vision-Based Fall Detection Through Shape Features ",2016, IEEE Second International Conference on MultimediaBig Data.

[7] Caroline Rougier, Jean Meunier, Alain St-Arnaud, and Jacqueline. 2, March 2015).

[8] Zhen-Peng Bian, Junhui Hou, Lap-Pui Chau, Nadia MagnenatThalmann ," Fall Detection

[9] Suneung Kim, Myeongseob Ko, Kyungchai Lee, Mingi Kim, Kwangtaek Kim, "3Dfall detection for single camera surveillance systems on the street" , 2018, IEEE Sensors Applications Symposium (SAS).

[10] Homa Foroughi, Alireza Rezvanian ,Amirhossien Paziraee,"Robust Fall Detection Using