**Synopsis**

**Title**-Medical Professional Remote Assistant System

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**1.Abstract**

As technology continues to advance every aspect of health care, software incorporating artificial intelligence (AI), and specifically the subset of AI known as machine learning (ML), has become an important part of an increasing number of medical devices. One of the greatest potential benefits of ML resides in its ability to create new and important insights from the vast amount of data generated during the delivery of health care every day.As advancement in technologies i.e. IoT, Machine Learning & AI, Big Data and High Performance Computing Technologies have opened the doors to act smartly in public health sector at large scale simultaneously with use of limited human resources. Now technology can help us to diagnosed people remotely from hundreds of kilometres and can be provided expert consultations from different available medical practices i.e allopathic, homeopathic and Ayurvedic. This project will also provide strong research foundation for Ayurvedic concepts of Nadi Gyan with available data of pulse patterns of patients. It will also help to keep monitoring of epidemic type of diseases well in time and may be controlled within time in a limited zone.

**2.Introduction**

A sound health is one essential part of life which brings opportunities for happiness and prosperities. Now Health index of any country will reflect their strength in economy, science, defence and social harmony. As per definition of health “absence of diseases”, there is much more importance of detection and prediction of diseases well in time and an appropriate action is desired to be taken to maintain a fair amount of health index in any demographic reason. As a country India is full of versatility in its heterogeneous nature of demographic weather conditions, echo-socio characteristic of huge population.

Our health sector is not enough capable to perform all standard clinical practices to predict and detect diseases in advance and so take appropriated actions. Machine Learning/Deep Learning techniques can be efficiently used to classify patients with same type of symptoms on scale and it will again help in providing consultation at large. In the rural areas we have dearth of quality doctors to care of our population. Globally half of the population lives in the rural area and to provide quality healthcare facilities is a real challenge.

Challenge is for every developed countries as well. Skilled and motivated healthcare professionals in sufficient numbers has grown due to increase in the population world over.

**3.Architecture**

In this section we will elaborate on our proposed architecture of the system with its capabilities, advantages, and limitations. Our architecture has the basis of developing a smart technology that can be a digital assistant for doctors to be deployed in rural areas.

The system will be used to initially diagnose the patient, with the help of medical assistant. The data will be gathered and sent to a remote doctor. The doctor then by analysing the different input parameters will suggest medicine. The data will be saved inside the disk and later sent to cloud for remote storage and learning by different ML/DL Algorithms. . After the models have been trained, the data will then be sent to the MPRAS module for assisting doctors. The module will work even at the time when doctor is unavailable or module could not able to connect due to connectivity issues. We will require an explainable machine learning model, for better assisting the human assistant.

**4.Methodology**

The whole concept of this project is based on collection of data using simple IoT devices and analysis of data with machine learning/deep learning of artificial intelligence. Mainly external symptoms of person i.e., change in colour of skin, change in voice, temperature, pulse rate, colour of tongue, images of eyes retina and behavioural response based on well established medical concepts. Further we can add more symptoms collected from community clinical pathology if further required.

**5.Outcome**

Screening of people will be required through images captured by camera, pulse rate, speech patterns and videos of some reactions. These information of screening would be sent to server where our trained deep learning based algorithms will operate and out put would be the prediction of diseases and detection of existing disease, mall nutrition, anxiety, depression and other disease and simultaneously users would be asked to get consultation online of their choices i.e. allopathic, homeopathic and ayurvedic. Our system will also provide information regarding same type of past treatments along with success rate with feedback from others while maintaining privacy of all users or may be choice-based selection of privacy.