



preset rate as purposed in [3] and [4]. The readings are stored in SQLite database of android application. This information is used to generate reports, anomaly detection, notification or alarm generation for caregivers and patients if necessary.

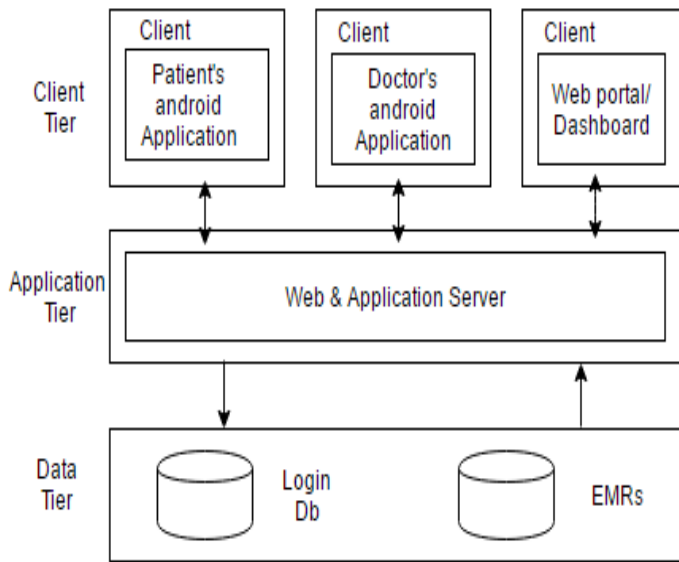


Fig 1: Tier model

The information from SQLite database is further synchronized to database at the central server of healthcare provider over 3G or Wi-Fi. The database saves Electronic Medical Records (EMRs) as well as general information of patient and doctors for login and record purpose.

At the central server, data is used to keep record of patient's history, corresponding caregivers, anomaly detection, pattern and trend detection as well as notification generation. The same data is used for web dashboard to provide visual interface to patients and caregivers. An android application is made for convenience of doctor for prompt monitoring of patients. A notification and alarm system is integrated to both web portal and android applications to handle emergency cases.

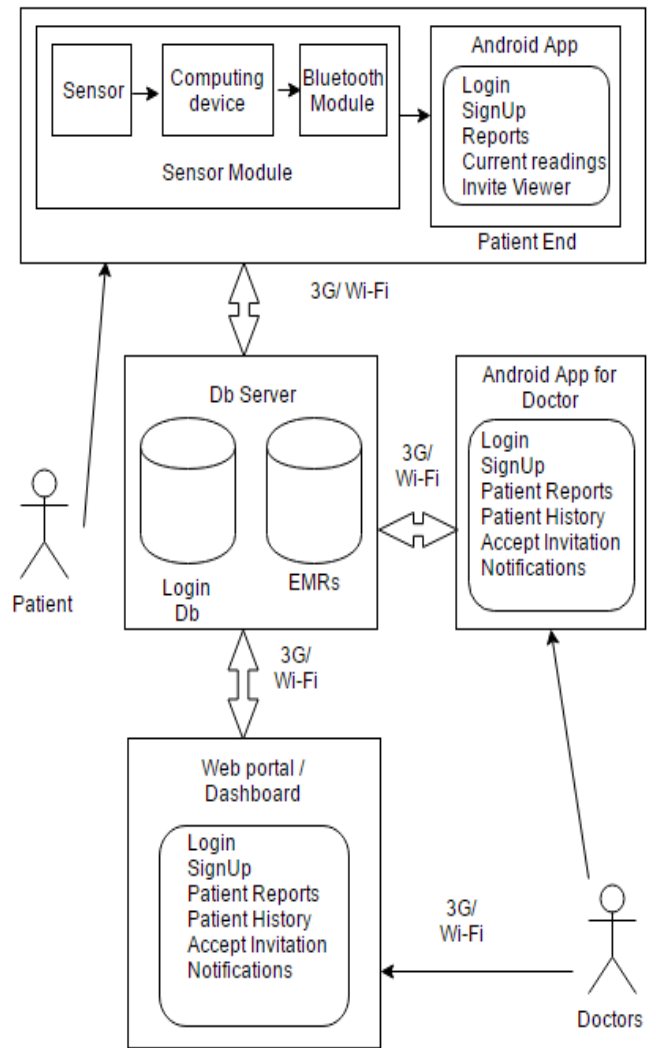


Fig 2: System model for remote patient monitoring

### 3. Problem Statement:

It is challenging era for Healthcare sector to provide to the masses a platform which ensures on time and quality service to health-conscious people and patients. Development of such a system is the need of time which ensures timely diagnosis of disease, secure digital storage of electronic medical records and an interactive User interface for report generation, anomaly detection, notification alert for the patients as well as caretakers and doctors.

#### 4. Applications of system:

Machine 2 Machine (M2M) and Wireless sensor network (WSN) is a kind of technology that integrates several advanced technologies including sensors, embedded systems, modern networks and wireless communication technologies. The WSN has profound influence on areas of medical practice. Following are potential custom applications of system

- Athletes monitoring system: This system can be used for autonomous monitoring of vital signs like heart rate, temperature and speed of athletes during training and actual performance. The monitored data can be used to improve health and performance of athletes.
- Autonomous monitoring of patients' vital signs in hospitals can also be done using the system. Using this system, the problem of lack of nursing staff can be tackled in a cost effective and time efficient way.
- Autonomous monitoring system can be used for monitoring of soldiers during their training for better performance or in warzone to prevent life loss.
- Personal wellness analysis: Since all data measured and sensed is sent to a central server where it is logged and stored. A doctor can open a patient's profile and then by observing the trends in vital signs of patient, the doctor can prescribe a diet plan, exercise and workout plan and necessary precautions for patient.

#### 5. Conclusion and Future Work:

Healthcare industries around the world have the same objective that is provide healthcare services to maximum patients at minimum cost. Machine 2

Machine (M2M) based Telemedicine can decrease the expense of costly doctors' visits by enabling remote communication between specialist and patients.

Remote patient monitoring can reduce or eradicate hospital stays, freeing up rare hospital beds for more severe cases. Machine to Machine technologies and Remote Patient Monitoring have a vast domain. The concept projected in this paper can be greatly improvised by the addition of the more features.

The main problem faced is that electronic medical records have high privacy, security and confidentiality concerns. If security and privacy concerns are taken care of the public can be influenced to use smart patient monitoring system.

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