

Ubiquitous Adoption of Telemedicine to Extend Patient Care beyond the Office

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ABSTRACT

This is the era of Mobile communications being deployed for many applications. One such is in the area of health science. This paper presents a unique application developed, called e-Health that would help the patients, the doctors, the nurses and also the friends of the patients. It is unique in the sense that it alerts patients periodically for intake of medicines by the patients as advocated by the doctors and if the patient fails to do so, a real-time alert will be sent to the doctor. The sequence of operations taken is also entered into a database ported on e-Health Server for future records. Which patient should take which medicine and at what periodicity can be entered by the doctor into the e-Health Sever.

Keywords: Mobile medication, mobile computing, mobile app, patient compliance, medicine compliance.

INTRODUCTION

This is the era of Mobile communications being deployed for many applications. One such is in the area of health services. We are proposing a unique application called as Smart Health. Android Application can be used in the health domain so that the doctor can take care of the patient and patient can be conscious regarding his health. We present an overview of the Android Application. It provides a platform for doctors and patients at their finger-tip. With this App patient receives alerts for periodical intake of medicines and if the patient fails to do so, a real time alert will be send to the doctor and then doctor will take particular measures being remote from hospital. Patients can confirm appointment with the doctors with the same Application.

Further Application features can be extended to provide service to handle the medical information in case of regular follow up also the patient can get his test reports on his cell phone via this application.

The main aim is to connect the patient with doctor directly when he is on work or on move. The application intends to bridge the gap between the doctor and the patient by just a click.

LITERATURE REVIEW

Health-On-The-Move based on ANDROID Operating System by Rutuja Kulkarni, Ankita Deshmukh, Manjiri Shivankar, Prajakta Gore, Tanmay Patil

The paper we presents an overview of the Android App based on a platform for consumers, doctors, patients and the medical service providers at their finger-tip. The platform is suited for follow-up consultation in chronic disease management or minor ailment, where in person examination is not necessary. The Android application is written in Java using Eclipse; it provides the user to interact with the doctors and the service providers.

Mobile Personal Health Care System for Patients with Diabetes by Fuchao Zhou

Propose a personal diabetes monitoring system which integrates wearable sensors, 3G mobile phone, smart home technologies and Google sheet to facilitate the management of chronic disease - diabetes. The system utilizes wearable sensors and 3G cellular phone to automatically collect physical signs, such as blood glucose level, blood pressure and exercise data like heart rate, breathing rate and skin temperature. It allows users, especially seniors with diabetes, to conveniently record daily test results

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and track long term health condition changes regardless of their locations. It does so without having to ask users to manually input them into the system. The system also utilizes Google sheet to manage Personal Health Records (PHRs), which not only bridges the gaps between patients and different health care providers but enabling accesses to patients' PHRs anywhere and anytime by taking advantage of the universal accessibility of Google sheet. The system further integrates with GPS, Google Search and Google Map functionalities to facilitate the user to find all hospitals near to his/her current location including address, phone number, directions to the selected hospital and street view of the selected hospital.

Patient Monitoring System Using Android Technology by Prema Sundaram

Telemedicine is a rapidly developing application of clinic medicine where medical information is transferred through the phone or internet or other networks for the purpose of consulting and performing remote medical procedures or examinations. Telemedicine can be applied to a greater extend in the field of cardiology where ECG serves as the major tool. This project elaborates the experience; a methodology adopted and highlights various design aspects to be considered for making telemedicine in patient monitoring system effective. In this method, the patient's vital signs like ECG, heart rate, breathing rate, temperature, SpO2 are captured and the values are entered into the database. It is then uploaded into the web based server and sent to the doctor's phone using ANDROID technology. It also enables the doctors to instantly send back their feedback to the nurse station.

PROPOSED WORK

The E-Health Mobile Phone Based Patient Compliance System is an Android application. By this application doctor and patient can communicate online or patient can get online treatment. This application is a part of Telemedicine. By this application patients can take online appointment and also get medicine alert. Doctor can monitor the course of medicine being followed by the patient via this application. An alert is send to patient so that he takes his medicines on time, if he fails to do so a real time alert is send to the doctor. Patient can update his health status & status for the course of medicine time to time via this application. Patient can send test reports asked by the doctor over the time via this Application. And also doctor can prescribe new course of medicine to the patient.

Proposed Methodology

Admin Module

Before using this application the identity of patient and doctor is checked for verification. After installing the application in the mobile the patient and doctor both have to register, once registration done then the patient and doctor both are provided with user name and password for login purpose. By this it is confirmed that the patient and doctor are the real owner of the application and not fake. An important issue is security, by using this application patient can keep his data secure also hospital too. The patient's details are given the greatest priority in this application; hence steps are taken to secure the patient's personal details, details about patient's medicines and his visits.

Patient Module

Patients can request appointment to the doctor by this he save his time. If the patient wants to visit doctor regarding any health issues or general checkup he should first request doctor for an appointment. Also he can get medicines details or any health tips from doctor. The patient can get information about the medicines which doctor has prescribed him. This reduces patient's confusion regarding his medicine intake. Patient can report the problem to the doctor means if the patient is facing problem with the doctor's prescribed medicines, the patient can report a problem to the doctor. For this the patient can send a message to the doctor describing his problem. Patients receive medical alerts on his mobile phone, it alerts patients periodically for intake of medicines by the patients as advocated by the doctors. By this app patient can receives test reports. If the patient has undergone any medical test, then test reports will be available to the patient on the application itself. By this application patient can give his health status to the doctor. The patient can regularly update his health status in the application so that the doctor is also aware about patient's health.

Doctor Module

The doctor can add a patient to the application to treat online from the patient's visiting him. The doctor confirms appointments requested by the patients according to his schedule. If patient fails to

take medicines on the time a real time alert is send to the doctor. Doctor takes some action on the alert that is an auto message is send to the patients describing the consequences of the irregular consumption of medicines. Doctor can ask further details regarding the problem and prescribe other medicines if necessary, else doctor tells the patient to visit him. Our App is going to maintain the confidentiality about patient's information, health formation and course of treatment as per the hospital's principles.

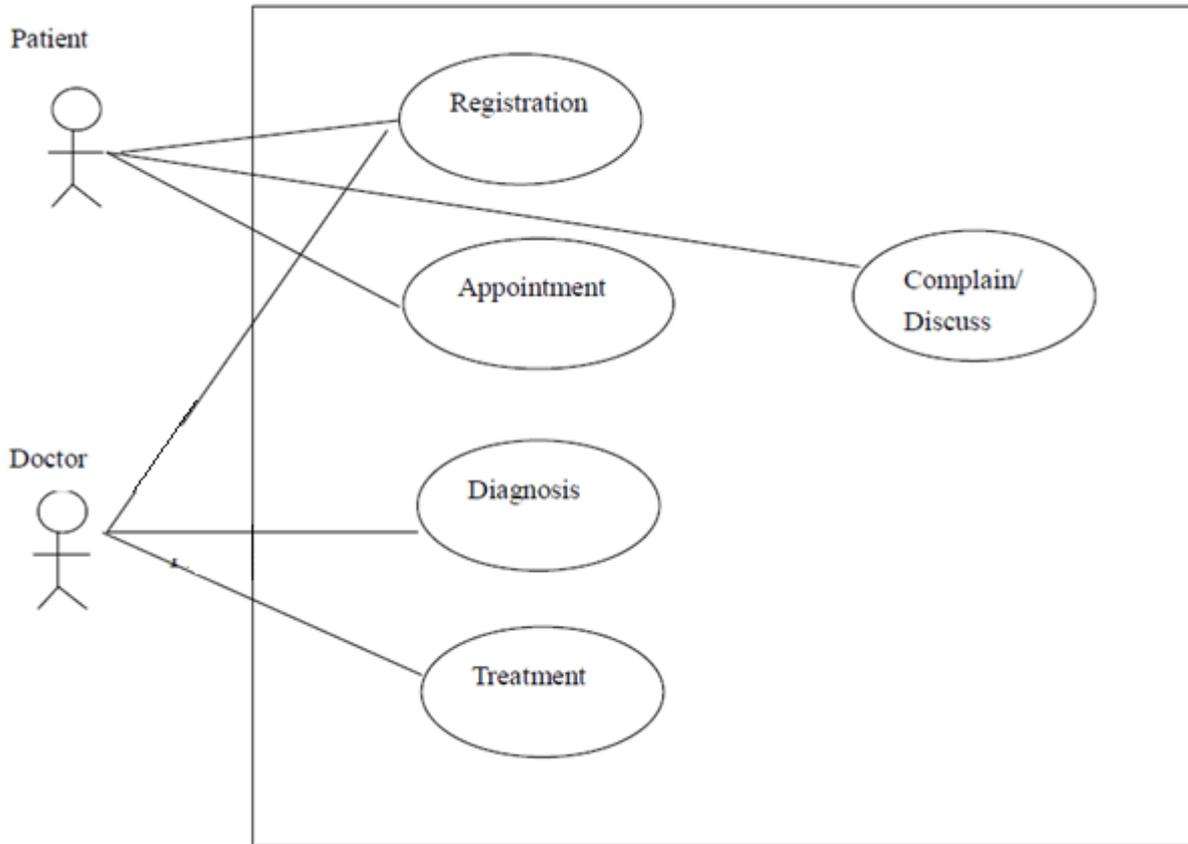


Fig. Use case Diagram

CONCLUSION

- 1) E-Health Mobile Phone based Patient Compliance System is an android application part of telemedicine.
- 2) To identify real user (Doctor and Patient) they must need to login by their provided username and password.
- 3) By this application patient can request appointment to the doctor and doctor can approve those appointments by his schedule.
- 4) Patient can get medicine alert and also get medical reports online by this application. He can get information of medicine that doctor has prescribed.
- 5) Patient can upload his health status time to time, by this doctor aware of his patient health status.
- 6) This application maintains the security of patient's data.
- 7) This helps to improve the relation between doctor and patient. This application reduces the time and money of patient.

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