

Chapter 8

Concoction of Ambient Intelligence and Big Data for Better Patient Ministration Services

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ABSTRACT

The term Ambient Intelligence (AmI) encompasses other technologies such as ubiquitous communication, pervasive computing and ubiquitous computing. Hospitals can improve their working by monitoring the health of the patients and performing automatic analysis of various and health parameters inside the room. Security mechanisms can also be enhanced by only allowing authorized hospital staff and attendants in the ward. With the advent of Ambient Intelligence and the congenial political environment, the focus is now shifting to providing better healthcare at homes than at traditional medical centers. In this paper, we implemented an algorithm in which we consider a specific room of a hospital as the environment, with a patient monitored for health and security reasons. If anything is not allowed for the particular patient or there are some unwanted variations in the health parameters of the patient, the alarm was rang and the patient's assistants were notified.

INTRODUCTION

In computer science jargon, Ambient intelligence (AmI) is an emerging field which deals with environment that is responsive and sensitive to the presence of humans. The term Ambient Intelligence encompasses other technologies such as ubiquitous communication, pervasive computing and ubiquitous computing. The objective Ambient Intelligence is to aid people in carrying out there day to day activities with the help technology including but not limited to the sensors and information generated through these sensors

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connected over networks. It aims to make people's lives more comfortable, simpler and easier by carrying out their day to day activities (Augusto, 2007). AmI is intimately related to the idea of having an intelligent system which technologies, capable enough to automate a platform at same time embedding the other necessary services- anticipatory, personalized, adaptive etc. An example of an ambient intelligent system could be an automated home system also known as the smart homes. By smart homes we mean, a house that is fitted sensors and makes use of technology to provide advanced services to its users. For example, a room can be fitted with a motion sensor which detects when a person leaves or enter the room and the AmI system turns on the lights accordingly. Additionally, several other items present in the homes can be fixed with sensors and wired over a network to track their usage. Household appliances such as refrigerators, televisions, washing machines, geysers etc can all be connected over a network and made to work in sync with each other. For example, a person enters his wake-up time in the AmI system the system will calculate the time needed to him get ready and will switch on the geyser automatically on his behalf and similarly pre-heat the microwave which can be stuffed with food in the night, thus any individuals can save a lot of time and effort which they usually spend in these mundane tasks.

Other applications of the ambient systems and the environments in which they can work upon include (Augusto, 2007):

- Health sector related applications: Hospitals can improve their working by monitoring the health of the patients and performing automatic analysis various and health parameters inside the room. Security mechanisms can also be enhanced by only allowing authorized hospital staff and attendants in the ward (Augusto, 2007). With the advent of Ambient Intelligence and the congenial political environment, the focus is now shifting to providing better healthcare at homes than at traditional medical centers, Ambient technologies are being leveraged to treat patients in their homely environment but if in some grave circumstance the patient has to be taken to the hospital there also AmI comes in handy. Imagine a system in which a person wears health bands which monitors its key cardiac parameters. At a particular moment suppose the data from the band shows that the person is about to develop a heart attack the system immediately calls the ambulance on the patient's behalf.
- Public transport can also benefit in a large way from ambient technologies, vehicles can be fitted with GPS trackers so that they can be tracked at any moment of time, traffic analysis could be done. Thus, helping in maintaining the law and order in the city and at the same time keeping the public transport related crime under check (Augusto, 2007).
- Education institutions can track their students' progress, attendance, frequency of turning in assignments, their habits and health charts so that they can tender to each student more intimately, responding to each student based on their individual need.
- Emergency response teams can be better prepared to fight with calamities and emergency situations if AmI can be used to prepare the optimal route map to reach the place of accidents, reducing the response time, and also prepare a line of action strategy to tackle a situation. All this can save precious few minutes which can be like gold dust in hours of crisis (Augusto, 2007).

RELATED RESEARCH WORK AND MOTIVATION

To manage the growing demands, there is a need to increase the capacity and performance of tools and methods employed for analysis of data. Chen et al. (2014), in their work "Big data: A survey" focused

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