Chapter 1
Mobile Health Care:
A Technology View

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ABSTRACT

This chapter gives a high-level view of the technology involved in the solution of Mobile Health Care with Cloud Computing as back-bone. It emphasizes on Hardware elements, Computation requirements when the solution covers huge scope of medical problems at the mega scales across wide areas. This chapter discusses sub-systems of the solution, that include Smart Phones, Computation Engines, High End Transportation Systems, Multi-Specialty Hospitals, Smart Phones/Digital Personal Assistants used by Medical Practitioners. Discusses on the accuracies, bandwidth requirements and latencies present in the systems, also emphasizes on the required accuracies as the problem area is Human Life. To address the challenges that arises when the solution gets high degree of maturity, this chapter proposes review of the current day protocols in the systems. Also proposes to integrate intelligent applications and different eco-systems like Big Data, Data Analytics and Internet of Things, and best adaptability of these areas with Nano-technologies to result in increased average life time of humans.

1. INTRODUCTION

Technology became a must for human beings in many ways over last 50 years. Starting from micron nodes to today's very advanced nodes of nanometer (Nano Technology) scales, technology has been impacting human life to make it more and more safer and speed. Along with its software models, technology has been delivering so

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much value proposition in Computational Mathematics for all engineering fields, Medical Innovation, Educational Research, Defense Organizations, Automobiles, Mass Communications, Consumer Electronics. And especially in last decade electronics became a social need in the form of mobile devices. These mobile devices are embedding much computation power into it adding intelligence day by day. This added intelligence will help people to improve the productivity in multi fold.

This chapter, gives a hypothesis of Mobile Health Care, that means how a mobile device can be best used for the taking care of our health. And all the sub-systems involved into it from a preliminary view to high-end application usage.

In a simple view of this system, each user of mobile phone is connected with a health care center for immediate medical treatment and first aid. But there are multiple complex sub-systems take part in making it real.

This has been in practice in a very minimal level as pharmacy people keep enquiring us if we need any general medicine for seasonal diseases like cold and cough and also the regular medicine which we keep using as per prescription. Same model can be used for little more complex medical problems with the request initiated from an end user in the usage model. As per the criticality of the situations, medical conditions either first aid can be given or respective specialist can visit the patient with automated means of message processing systems.

2. HIGH LEVEL VIEW OF THE SOLUTION

Figure 1 is the pictorial view of the Mobile Health Care System, which shows all sub-systems, groups participating in the model. Each system on its own is again a complex system which needs accuracy and guaranteed service delivery model.

The system can be viewed as below:

1. End Users
2. High End Servers sitting cloud
3. Physicians and Hospitals
4. Mobile Services connected to hospitals or groups of hospitals.

End Users

All individuals who generates the requests for consulting services on different health problems. The requests either can be generated manually by the user or automatically by the sensors embedded into the mobile devices they carry. The sensors and respective intelligence embedded into the devices will continuously monitor dif-