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## **Progress Report of Semester 1**

*Prepared by:*

**Ishtiyaque Ahmad**  
**1015052042**

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**Department of CSE, BUET**

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## Introduction

I have enrolled in the Postgraduate Program of Department of Computer Science and Engineering in Bangladesh University of Engineering and Technology as a part time student in the semester October, 2015. This was my first semester as a postgraduate student and I have completed 3.00 credit hours of thesis work in this semester. The thesis work is focused on devising and improving remote health monitoring system in Bangladesh and is supported by HEQEP.

## Area of Work

Since this was the first semester of my postgraduate program, I have not started to implement any particular idea yet. My researches and studies were mainly focused in two directions, each of which refer to challenging problems in the field of remote health monitoring:

1. Impact of social networks and relationships on public health.
2. Establishing a remote health monitoring systems using some medical devices available in the market.

Each of these is briefly discussed below.

## Impact of Social Network and Relationships on Public Health

People are inter-connected and so their health is inter-connected too. Inter-personal health effects in social networks provide a new foundation for public health. A person with more friends and social contacts generally has better health than a person with fewer friends and a person at the center of a network is more susceptible to both the benefits and risks of social connection (e.g., for infectious disease) than those at the periphery of a network. People are thus affected by their location in a social network. Moreover, various norms and habits related to health are also propagated among people in the same social group. It is not just how connected a person is, but also who a person is connected to, and what those people are doing, that has an effect. Indeed, social networks affect health through a variety of mechanisms, including: (1) provision of social support, (2) social influence (e.g., norms, social control), (3) social engagement, (4) person-to-person contacts (e.g., pathogen exposure), and (5) access to resources (e.g., money, jobs, information). Various works with social networks suggest that such interpersonal effects extend beyond just those individuals to whom a person is directly connected. Health-related phenomena, whether germs or information or behaviors, can diffuse widely within social networks. In Bangladesh, the extent of social networks have been observing a tremendous growing trend due to the impact of various social networking websites like Facebook, Twitter etc. So, an approach to predict health behaviors of an individual from such available data in social networks can bring up a significant improvement in the field of remote health monitoring. The study of social networks require some pre-knowledge on manipulating and analyzing graph networks, creating and modifying graph databases, visualizing graphs etc. Besides studying various literature on this field, I learned using a graph analyzing tool named *neo4j* which will be a requirement for my future works.

## **Establishing a Remote Health Monitoring System**

In Bangladesh, on average there is only one doctor for around 2500 people. The situation is worse in rural and remote areas. Often unavailability of doctors or medical specialists cause serious damage to the condition of a patient. We are trying to build up a system which aims to minimize the effect of geographic distance between the patients and a doctor. There are many electronic devices available in the market which are capable of measuring the values of vital signs and performing various diagnoses. These instruments can be combined together in our system and then the data acquired by them can be transmitted to the doctor in a distant place over Internet. The acquired data may also contain images, audio clips or even video segments upon request by the doctor. But the limitation in the availability of bandwidth in our country, especially in the rural areas will be a big issue in this system. An efficient and optimized technique will be required to make this system useful for the rural and remote people in Bangladesh. This will not only bring the doctors closer to the patients, but also a patient with serious health condition requiring emergency medical support can be provided instant medical advice by a doctor.

## **Future Works**

Based on the above mentioned scopes, my future work will include deducing a relationship between the health condition of individuals and impact of social networks on them. This may require collecting necessary data from available sources as well as manually by questionnaires.

Another approach will be to interface some medical diagnostic equipment and building up a protocol suitable for data transmission in the rural areas of our country with limited bandwidth.

## **Conclusion**

In modern world, technology has been making its marks on every aspects of life. Health and medical issues are not out of this. By devising proper techniques and applying them, condition of public health in Bangladesh can be improved by a significant extent. Hopefully this will contribute in the remarkable development our country is observing and thus enhancing a healthier and happier future world.