**Hospital Readmission Prediction of Patients using Deep Neural Networks**

Problem Statement submitted in partial fulfillment of the requirements for B.Tech Project

By

**GROUP NO.:-** 23

**GROUP MEMBERS:-**

Chahes Chopra (2014IPG-031)

Shivam Sinha (2014IPG-082)

Shubham Jaroli (2014IPG-085)

**SUPERVISOR:-**

Prof. Anupam Shukla

**BACKGROUND**

A Hospital readmission is an episode when a patient who had been discharged from a hospital is admitted again within a specified time interval. Readmission rates have increasingly been used as an outcome measure in health services research and as a quality benchmark for health systems.

Previously baseline classification models were used to estimate the Hospital Readmission Rates. Then Deep Neural Network (DNN) came into picture. A Deep Neural Network (DNN) is an Artificial Neural Network with multiple hidden layers between the input and output layers. Similar to shallow ANNs, DNNs can model complex non-linear relationships. It has been widely used in fields including computer vision, speech recognition, natural language processing, audio recognition, social network filtering, machine translation and bio-informatics where they produced results comparable to and in some cases superior to human experts

**MOTIVATION**

For Medicare patients, hospitalizations can be stressful, even more so when they result in subsequent readmissions. A number of studies show that hospitals can engage in several activities to lower their rate of readmissions, such as clarifying patient discharge instructions, coordinating with post-acute care providers etc.

We choose this project because deep neural networks which can work effectively to predict the result can be utilized here to avoid unnecessary hospital readmissions.

**OBJECTIVE**

Our Objective is to predict hospital readmission of patients using deep neural networks. Hospital readmission occurs when a patient is admitted again within a certain interval of time after getting discharged from the hospital. If we predict accurately the no. or percentage of patients readmitted this can be used as an important measure in health services research and as a quality benchmark for health systems like hospitals.

Key goals of this project are:-

•To find correlations between data features and readmission of patients to hospital.

• Build a predictive model for this based on deep neural networks

**PROJECT SCHEDULE**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | **S.NO** | **TASK** | **Start Date** | **End Date** | **Duration(Days)** |
|  |  | 1. | Literature Review and Research | 5/15/2017 | 5/30/2017 | 16 |
|  |  | 2. | Planning and Methodology | 5/31/2017 | 6/15/2017 | 16 |
|  |  | 3. | Algorithm Design | 6/16/2017 | 6/25/2017 | 10 |
|  |  | 4. | Coding and Implementation | 6/26/2017 | 7/21/2017 | 26 |
|  |  | 5. | Testing | 7/22/2017 | 7/30/2017 | 9 |
|  |  | 6. | Code Review and Optimization | 7/31/2017 | 8/12/2017 | 13 |
|  |  | 7. | Documentation | 8/13/2017 | 8/26/2017 | 14 |
|  |  | 8. | Thesis Report and Paper Work | 8/27/2017 | 9/26/2017 | 31 |

**GANTT CHART**

