

Life Expectancy after Thoracic Surgery

Under the supervision

Of

Dr. Charu Gupta

Assistant Professor, CSE Deptt.

And

Dr. Deepali Virmani

HOD, CSE Deptt.

By

Dev Gaur, 114.

Harshit Abrol, 115

Nowsheen Ishtiyag Mufti, 121

Riya Goyal, 102

Department of Computer Science & Engineering

Bhagwan Parshuram Institute of Technology

PSP-4, Sec-17, Rohini, Delhi-89

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Chapter 1: Introduction

Operative death rates have been a subject of great interest among specialists, patients, legal counsellors, and wellbeing strategy executives. Postoperative respiratory complications are the most widely recognized casualty following any kind of thoracic medical procedure. Before the surgical operations some of the patients already suffer from blood pressure, diabetes etc. which might impact their condition after undergoing such a major surgery and we would like to understand how these conditions drive the complications.

As a computer science student, we aim to use machine learning techniques to analyse how such conditions impact the surgical procedure and what would be the life expectancy of a person post the operation. The thirty-day mortality rate is one metric that has been used to measure mortality rates in the past. This metric, however, may not be fully reliable since many patients die or become very frail shortly after this time frame, requiring them to be moved to another hospital before passing away. As a consequence, a large number of these deaths go unreported. The aim of our study is to look at patient mortality over the course of a year after surgery. More precisely, we're looking at the patients underlying health conditions, which may be a strong indicator of surgical-related deaths.

Chapter 2: Problem Statement and Feasibility Study

Problem Statement

The main objective of our project is to determine the life expectancy of a person post an operation on organs that are housed in the chest such as lungs.

Datasets

The data is available on Kaggle. We will implement machine learning algorithms on the same and study the dataset. Our dataset comprises of the following factors such as weakness before surgery, smoking, age at surgery. These factors will help us to figure out if or not they are responsible for the death of a patient.

Introduction to method

Initially, we simply ran SVM, and Logistic Regression to obtain a better understanding of our data. We trained our algorithms on the full data set and obtained our testing values using various regression algorithms. We will implement the machine learning algorithms to study the dataset and we will then train our obtained models, which will help us to obtain predictions and then we will take an average of those predictions to obtain a final prediction. We will analyse data sets of various sizes to see if the size of the data set influenced our accuracy and recall.

Feasibility Study

- Contribution to the health administration.
- The model is user-friendly, reliable and flexible.
- Awareness about the complications caused by the factors such as smoking.
- Maintenance of the project is easy.
- Reduced manual work.
- Timely Re generation.

Above mentioned are some of the advantages of the proposed model, which makes the project workable and low maintenance.

Chapter 3: Hardware and Software Requirements

4GB Ram

Graphics card

Programming language Used: python

Presentation layer: MATPLOTT, Pandas

Network Layer: TCP/IP

Technology used: Anaconda, Machine Learning

Operating System: Windows

Chapter 4: Workload Matrix

Title	Name	Time (in hours)
Algorithms Tuning	Dev, Harshit, Nowsheen, Riya	19 - 20
Data Pre-Processing	Nowsheen , Dev , Harshit, Riya	6-7
FLASK and algorithms	Dev	5
HTML/CSS	Harshit, Riya	4
Dataset Compilation	Nowsheen	2

Total Time = 38 approximately (including studying and testing)

REFERENCES

1. <https://keras.io/>

2. <https://towardsdatascience.com/introduction-to-artificial-neural-networks-ann-1aea15775ef9>
3. <https://www.udemy.com/course/machinelearning/>

MAJOR PROJECT CSE - B (2017-2021)

S.NO.	G.No.	Student Name	Project Title	Guide Allotted	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1.	10	Dev Gaur	Recyclable Item Detection	Mrs. Charu Gupta	3	2	2	3	2	2	3	3	3	2	1	3	2	3	2
2.		Harshit Abrol			3	3	2	2	1	2	3	3	3	2	2	3	2	3	2
3.		Nowsheen Ishtiyag Mufti			3	3	1	2	1	2	3	3	3	3	2	3	2	3	3
4.		Riya Goyal			3	3	1	2	1	2	3	3	3	2	2	3	2	3	2

Percentage: 80.7%

Guide Signature:

Student Signature: Dev Gaur, Harshit Abrol, Nowsheen Ishtiyag Mufti