MAST6100: Machine Learning and Deep Learning

Final Project

Sarah Lee Lwp

Table of contents

01 Background and Motivation

- Hospitals worldwide are facing increasing pressure on resources
- **Key challenges:**
  - Overcrowding
  - Extended waiting times
  - Rising healthcare costs
- **Major issues in current hospital admissions:**
  - Avoidable/unnecessary admissions
  - Delayed admissions for urgent care

02

Research Question

What are the factors that affects the type of hospital admissions?

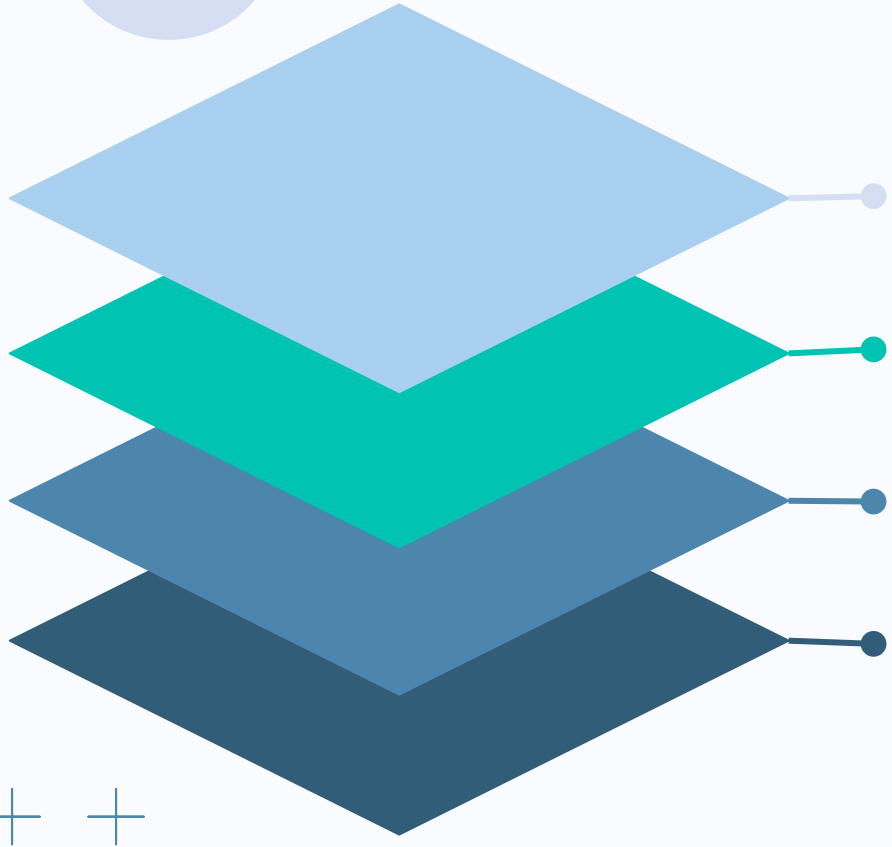
Overview of Data

03

- Data was taken from kaggle.com
- **Response variable:** Hospital admission types
- **Independent variables:**
  - Age (Years)
  - Gender
  - Blood type
  - Medical Condition
  - Insurance Provider
  - Billing Amount
  - Room Number
  - Medication
  - Test Results
- **Limitations of data:**
  - **Data coverage -** Data covers only admitted patients
  - **Test results -** Type of medical test conducted is unknown

04

Methodology



Data Cleaning and Quality Checking

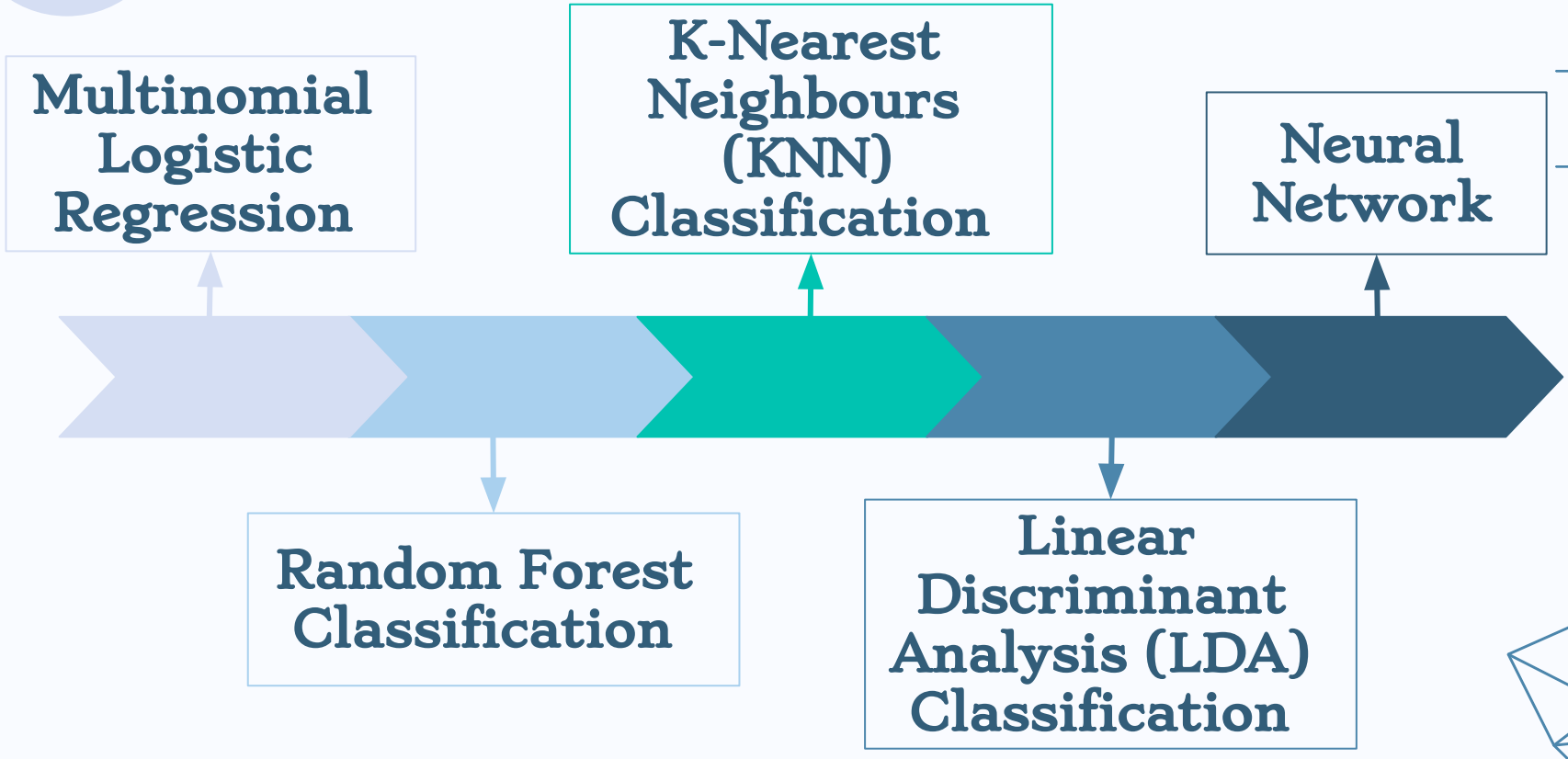
Exploratory Data Analysis (EDA)

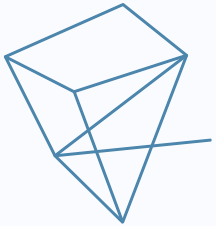
Variable Selection and Regression

Classification and Deep Learning

05

Models


Multinomial Logistic Regression
K-Nearest Neighbours (KNN) Classification
Neural Network
Random Forest Classification
Linear Discriminant Analysis (LDA) Classification



Thank you!