High Level Design (HLD)

ACI (Adult Census Income)

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Document Version Control

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14/04/2020	1	Initial HLD — V1.0	Shubham karale

Contents

Abstract

Recent trends are to build tall buildings in big cities as a way out of the current housing Overpopulation problem. These new structures unveil problems that if not addressed in time Could cause catastrophes of unimaginable impact. Some of those problems is the incidence of a fire threat happening upstairs in one of those buildings, medical emergencies due to any road accidents or mob that may cause threat to the human kind. This work discusses the implementation of the unmanned ground vehicles to spot the real location of the medical emergencies due to road mishap, mob or illegal activities such as hooliganism, snatching, robbery and the fire emergency and accordingly channelize or route them to the concerned helpline for quick mitigation and avoid disaster.

1 Introduction

1.1 Why this High-Level Design Document?

The purpose of this High-Level Design (HLD) Document is to add the necessary detail to the current project description to represent a suitable model for coding. This document is also intended to help detect contradictions prior to coding, and can be used as a reference manual for how the modules interact at a high level.

The HLD will :

- Present all of the design aspects and define them in detail
- Describe the user interface being implemented
- Describe the hardware and software interfaces
- Describe the performance requirements
- Include design features and the architecture of the project
- List and describe the non-functional attributes like:
    * Security
    * Reliability
    * Maintainability
    * Portability
    * Reusability
    * Application compatibility
    * Resource utilization
    * Serviceability

1.2 Scope

The HLD documentation presents the structure of the system, such as the database architecture, application architecture (layers), application flow (Navigation), and technology architecture. The HLD uses non-technical to mildly-technical terms which should be understandable to the administrators of the system.

1.3 Definitions

Term	*Description*
ACI	Adult Census Income
Database	Collection of all the information monitored by this system
IDE	Integrated Development Environment
AWS	Amazon Web Services

2 General Description

2.1 Product Perspective

The ACI based on census database and it is Supervise machine leaning problem which will be help us to predict whether a person has an income of more than 50K a year or not.

2.2 Problem statement

To create an ML model on census database we implement the following use cases.

- Perform encoding for categorical features
- To detect Null values.
- To detect Outlier in dataset

2.3 PROPOSED SOLUTION

The solution proposed here is an ACI based on censes databased and we find it is a supervise problem, can be implemented to perform above mention use cases in first case, if ACI detects any categorical feature then it will be replace by encoding ,further in the second use case, if ACI detects any Null values it will be replace by mean, median values of respective features and lastly in the final use case of ACI, if it finds any Outlier in dataset then it will be removed by IQR

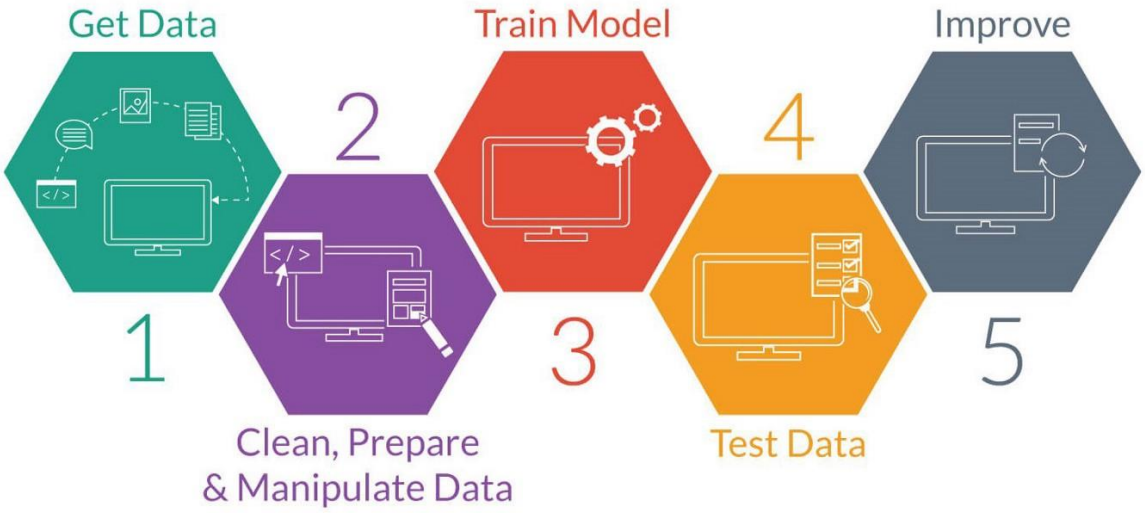
2.4 Tools used

Python programming language and frameworks such as NumPy, Pandas, Scikit-learn, are used to build the whole model.

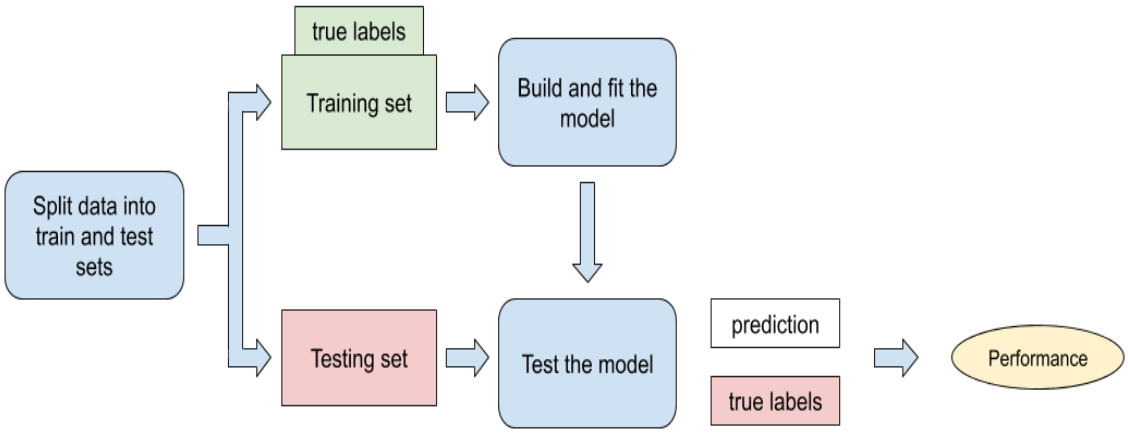
- For visualization of the plots, Matplotlib, Seaborn are used.
- GitHub is used for maintain code on GitHub
- Jupyter notebook for coding

3 Design Details

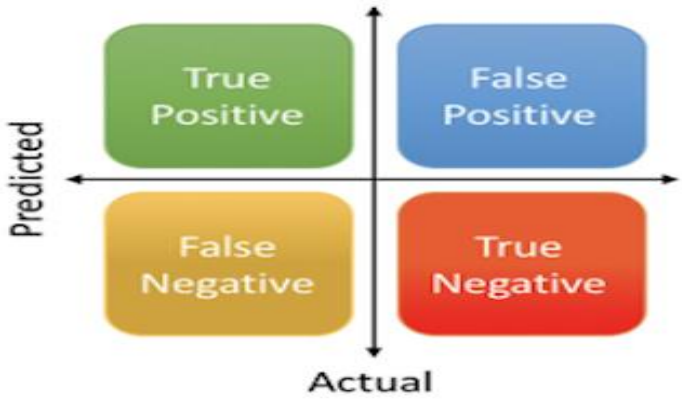
3.1 Process Flow : Process flow for ML model



3.1.1 Model Training



3.1.2 Evaluation : confusion matrix for evaluating ACI



4 Conclusion

The Designed ACI (Adult Census Income) will be to predict whether a person has an income of more than 50K a year for that we train our algorithm, so we can identify the income of person .

5 References

- https://arxiv.org/ftp/arxiv/papers/1810/1810.10076.pdf