Vijayakumar kurup

**This document Project which predicts the Thyroid Problems**

**Thyroid Problems prediction**

Python version

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## Introduction:

"This Capstone project is created for predicting the thyroid issues for the customers. The dataset used for this project is a comma separated file called “Thyroid.csv with”. Three algorithms are used.

### Included with the project:

This project includes the input dataset, the Jupyter notebook, the necessary python packages, and a client implementation.

## Getting Started:

The data set has the following features

'age', 'TSH', 'T3', 'TT4', 'T4U', 'FTI', 'sex\_F', 'sex\_M','on thyroxine\_t','query on thyroxine\_t','on antithyroid medication\_t','sick\_t', 'pregnant\_t', 'thyroid surgery\_t', 'I131 treatment\_t','query hypothyroid\_t', 'query hyperthyroid\_t', 'lithium\_t', 'goitre\_t','tumor\_t', 'hypopituitary\_t', 'psych\_t', 'TSH measured\_t','T3 measured\_t', 'TT4 measured\_t', 'T4U measured\_t', 'FTI measured\_t','binaryClass\_P'

.

## Pre-requisites:

To run this project and evaluating the algorithms, some basic computer knowledge along with knowledge of running a python project, and knowledge of prediction logics and HTML client application.

## Installation:

Install the following packages

import streamlit as st

import pandas as pd

import joblib

from sklearn.ensemble import RandomForestClassifier

from keras.models import Sequential

from keras.layers.core import Dense, Activation, Lambda, Reshape,Flatten

import scikitplot as skplt

from sklearn.metrics import precision\_recall\_fscore\_support as score

from sklearn.metrics import confusion\_matrix

from sklearn.metrics import accuracy\_score

from sklearn.metrics import matthews\_corrcoef

from sklearn.metrics import mean\_squared\_error

or use the requirement.txt for the installation if IDE like PyCharm is used.

## Usage:

From any command prompt like conda with environment where all the above packages given in the installation section, are installed and then run the following command

“streamlit run Throid\_prediction.py”

### Input File:

There are two aspects of this project.

1. Create the prediction model.

To do this Jupyter notebooks are provided for the prediction logic. It takes the input data set and create the required model file called “XXX.pkl”. XXX denotes the output file related to the kind of model used for this purpose. It also creates the scaler file gives the details about how the inputs are scaled before fitting the models.

1. Use the prediction model

Using the model and scaler file (created by the Jupyter notebook) predict the house prices from various models used.

### Implement the code :

**Jupyter Notebook:**

1. Load the data from Thyroid.csv

2. Preprocess the data by removing the missing values, null values.

3. Find correlation between the features for the selection of features.

4. split the data train vs test 70-30 ratio.

5. It doesnot do any regularization

6. Another deviation is to perform various modelling algorithms like Random Forest Regression, Random Forest classification and sequential neral network. Similar ones are grouped in one notebook.

7. Save the pickle file for the client to use for the predictions from user inputs.

8. The client application is created using streamlit and the requirement file with the details in the session Installation.

9. How to make it work::

Copy following files and do as per section usage of this document

**Command Prompt and Python file:**

Refer Usage section of this document how to use client application.

### Output

**HTML page using the local host. (A typical output)**

**![A screenshot of a cell phone

Description automatically generated]()**

## Enhancements:

The client application will be upgraded for publishing the application on Heroku server website. In that case we don’t need to copy or download the files from the GitHub.

## Contact:

Any questions Please contact [Vijayakumar Kurup](mailto:vkkurup@gmail.com)