

**A GESTURE-BASED TOOL FOR STERILE
BROWSING OF RADIOLOGY IMAGES**

(TEAM ID : PNT2022TMID34866)

PROJECT REPORT

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ABSTRACT

Crude oil is amongst the most important resources in today's world, it is the chief fuel and its cost has a direct effect on the global habitat, our economy and oil exploration, exploitation and other activities. Prediction of oil prices has become the need of the hour, it is a boon to many large and small industries, individuals, the government. The evaporative nature of crude oil, its price prediction becomes extremely difficult and it is hard to be precise with the same. Several different factors that affect crude oil prices. We propose a contemporary and innovative method of predicting crude oil prices using the artificial neural network (ANN). The main advantage of this approach of ANN is that it continuously captures the unstable pattern of the crude oil prices which have been incorporated by finding out the optimal lag and number of the delay effect that controls the prices of crude oil. Variation of lag in a period of time has been done for the most optimum and close results, we then have validated our results by evaluating the root mean square error and the results obtained using the proposed model have significantly outperformed

1.INTRODUCTION

1.1Project Overview

Crude oil is amongst the most important resources in today's world, it is the chief fuel and its cost has a direct effect on the global habitat, our economy and oil exploration, exploitation and other activities. Prediction of oil prices has become the need of the hour, it is a boon to many large and small industries, individuals, the government. The evaporative nature of crude oil, its price prediction becomes extremely difficult and it is hard to be precise with the same. Several different factors that affect crude oil prices. We propose a contemporary and innovative method of predicting crude oil prices using the artificial neural network (ANN). The main advantage of this approach of ANN is that it continuously captures the unstable pattern of the crude oil prices which have been incorporated by finding out the optimal lag and number of the delay effect that controls the prices of crude oil. Variation of lag in a period of time has been done for the most optimum and close results, we then have validated our results by evaluating the root mean square error and the results obtained using the proposed model have significantly outperformed. We have used HTML, Javascript.CSS, Python, Flask.

1.2 Purpose

Crude oil is one of the most important commodities in the world, accounting for one-third of global energy consumption. It is a starting material for most of the products that we use in everyday life, ranging from transportation fuels to plastics. Crude oil price fluctuations have a far reaching impact on global economies and thus price forecasting can assist in minimizing the risks associated with volatility in oil prices. Price forecasts are very important to various stakeholders: governments, public and private enterprises, policymakers, and investors. According to economic theory, the price of crude oil should be easily predictable from the equilibrium between demand and supply, wherein demand forecasts are usually made from GDP, exchange rates and domestic prices, and supply is predicted from past production data and reserve data. Predicting demand for oil is usually straightforward, however supply is heavily affected by political activity such as cartelization by OPEC to regulate prices, technological advances leading to the extraction of higher amounts of oil, and wars and other conflicts which can affect supply unpredictably.

2.LITERATURE SURVEY

2.1. EXISTING PROBLEM

I. CRUDE OIL PRICE PREDICTION USING ARTIFICIAL NEURAL NETWORK

“ Nalini Gupta, Shobhit Nigam* School of Liberal Studies, Pandit Deendayal Petroleum University, Gandhinagar, India”

Crude oil is amongst the most important resources in today's world, it is the chief fuel and its cost has a direct effect on the global habitat, our economy and oil exploration, exploitation and other activities. Prediction of oil prices has become the need of the hour, it is a boon to many large and small industries, individuals, the government. The evaporative nature of crude oil, its price prediction becomes extremely difficult and it is hard to be precise with the same. Several different factors that affect crude oil prices. We propose a contemporary and innovative method of predicting crude oil prices using the artificial neural network (ANN). The main advantage of this approach of ANN is that it continuously captures the unstable pattern of the crude oil prices which have been incorporated by finding out the optimal lag and number of the delay effect that controls the prices of crude oil. Variation of lag in a period of time has been done for the most optimum and close results, we then have validated our results by evaluating the root mean square error and the results obtained using the proposed model have significantly outperformed.

II. CRUDE OIL PRICE PREDICTION USING ARTIFICIAL NEURAL NETWORK QUANTATIVE (ANN-Q) MODEL

“S. N. Abdullah, X. Zeng, School of Computer Science, The University of Manchester, Oxford Road, Manchester, M13 9PL United Kingdom”

The volatility of crude oil market and its chain effects to the world economy augmented the interest and fear of individuals, public and private sectors. Previous statistical and econometric techniques used for prediction, offer good results when dealing with linear data. Nevertheless, crude oil price series deal with high nonlinearity and irregular events. The continuous usage of statistical and econometric techniques for crude oil price prediction might demonstrate demotions to the prediction performance. Machine Learning and

Computational Intelligence approach through combination of historical quantitative data with qualitative data from experts' view and news is a remedy proposed to predict this. This paper will discuss the first part of the research, focusing on to (i) the development of Hierarchical Conceptual (HC) model and (ii) the development of Artificial Neural Networks-Quantitative (ANN-Q) model

III. ARTIFICIAL INTELLIGENCE OF OIL PRICE FORECASTING

“Neha Sehgal · Krishan K. Pandey Received: 19 September 2014 / Accepted: 8 May 2015 © Springer-Verlag Berlin Heidelberg 2015 “

Artificial intelligent methods are being extensively used for oil price forecasting as an alternate approach to conventional techniques. There has been a whole spectrum of artificial intelligent techniques to overcome the difficulties of complexity and irregularity in oil price series. The potential of AI as a design tool for oil price forecasting has been reviewed in this study. The following price forecasting techniques have been covered: (i) artificial neural network, (ii) support vector machine, (iii) wavelet, (iv) genetic algorithm, and (v) hybrid systems. In order to investigate the state of artificial intelligent models for oil price forecasting, thirtyfive research papers (published during 2001 to 2013) had been reviewed in form of table (for ease of comparison) based on the following parameters: (a) input variables, (b) input variables selection method, (c) data characteristics (d) forecasting accuracy and (e) model architecture. This review reveals procedure of AI methods used in complex oil price related studies. The review further extended above overview into discussions regarding specific shortcomings that are associated with feature selection for designing input vector, and then concluded with future insight on improving the current state-of-the-art technology

IV. Intelligent Prediction of Crude Oil Price Using Support Vector Machines

“Adnan Khashman (Senior Member, SMIEEE) The Intelligent Systems Research Group (ISRG) Near East University Lefkosa, Mersin 10, Turkey E-mail: khashman@ieee.org Nnamdi I. Nwulu (Student Member ,MIEEE) Dept. of Electrical & Electronic Engineering Near East University Lefkosa, Mersin 10, Turkey E-mail: ninwulu@ieee.org”

The price of crude oil is tied to major economic activities in all nations of the world, as a change in the price of crude oil invariably affects the cost of other goods and services. This has made the prediction of crude oil price a top priority for researchers and scientists alike. In this paper we present an intelligent system that predicts the price of crude oil. This system is based on Support Vector Machines. Support Vector Machines are supervised learners founded upon the principle of statistical learning theory. Our system utilized as its input key economic indicators which affect the price of crude oil and has as its output the price of crude oil. Data for our system was obtained from the West Texas Intermediate (WTI) dataset spanning 24 years and experimental results obtained were very promising as it proved that support vector machines could be used with a high degree of accuracy in predicting crude oil price

2.2 REFERENCE

1. CRUDE OIL PRICE PREDICTION USING ARTIFICIAL NEURAL NETWORK
<http://creativecommons.org/licenses/by-nc-nd/4.0>
2. CRUDE OIL PRICE PREDICTION USING ARTIFICIAL NEURAL NETWORK QUANTATIVE (ANN-Q) MODEL
<https://doi.org/10.1109/IJCNN.2010.5596602>
3. ARTIFICIAL INTELLIGENCE OF OIL PRICE FORECASTING
<https://www.researchgate.net/publication/277921251>
4. OIL PRICE PREDICTION USING EML
<https://ieeexplore.ieee.org/document/5738868>

2.3. PROBLEM STATEMENT DEFINITION

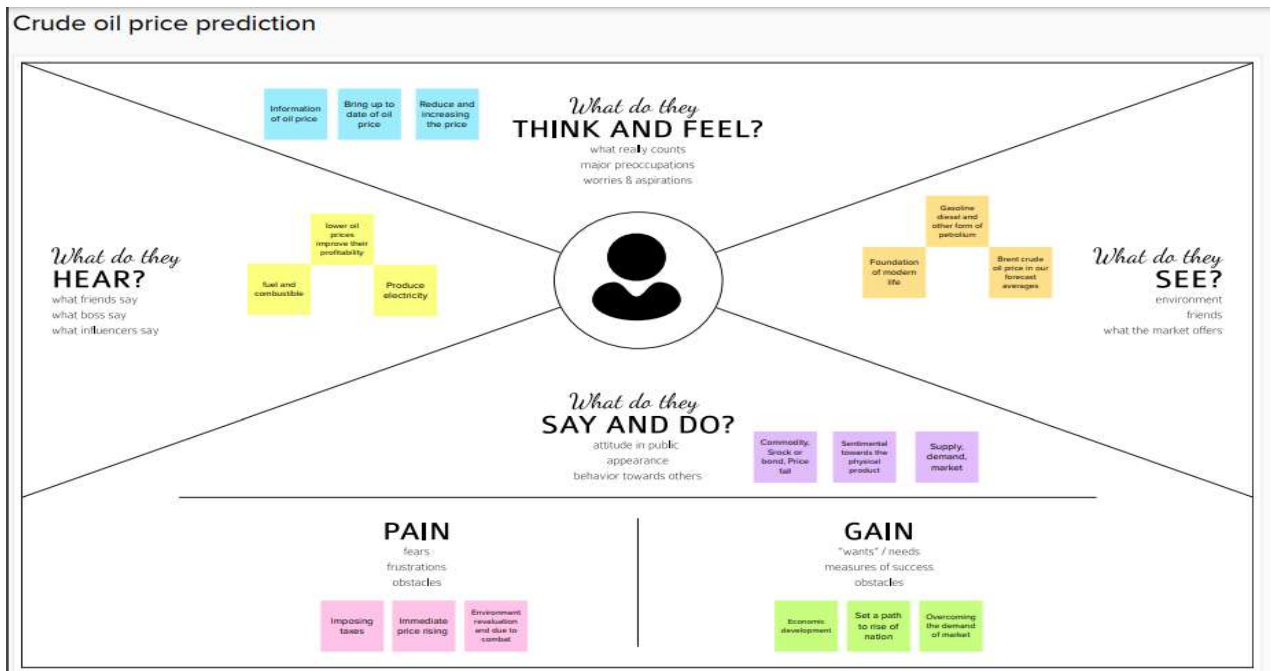
1. Crude oil price fluctuations have a far-reaching impact on global economies and thus price forecasting can assist in minimizing the risks associated with volatility in oil prices. Price forecasts are very important to various stakeholders: governments, public and private enterprises, policymakers, and investors.

2. Unlike most products, oil prices are not determined entirely by supply, demand, and market sentiment toward the physical product oil futures contracts, which are traded heavily by speculators, play a dominant role in price determination.

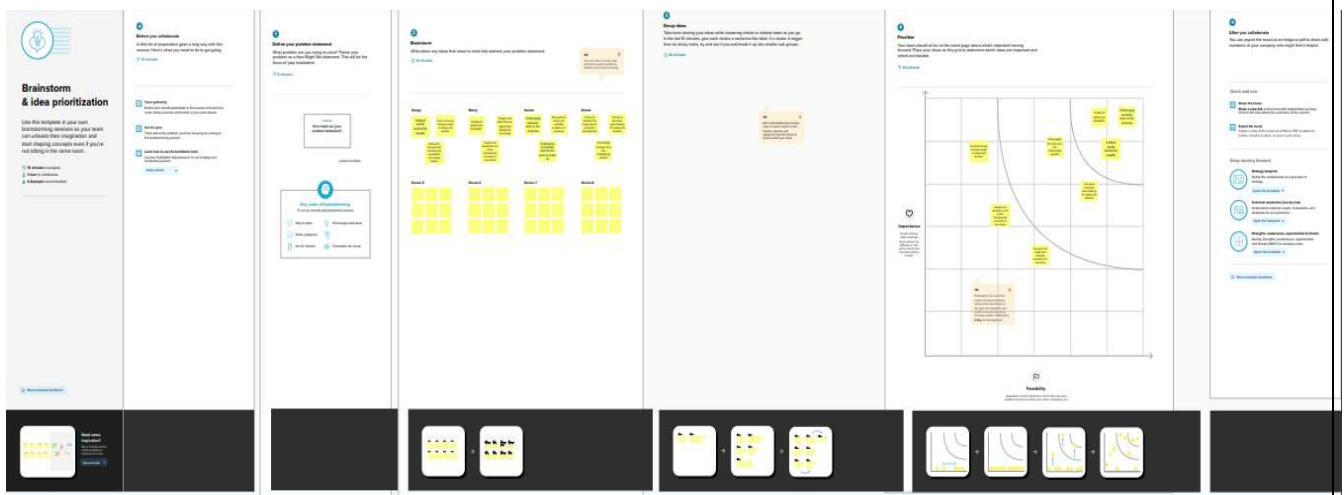
3. Natural gas and electricity prices have soared to new records, incentivizing gas-to-oil switching in some countries. Crude oil is one of the most upstream for world nations.

3.IDEATION AND PROPOSED SOLUTION

3.1. Empathy Map Canvas



3.2. Ideation and Brainstorming



3.3 Proposed Solution

Proposed Solution Template

Date	19 September 2022
Team ID	PNT2022TMID34866
Project Name	Crude oil price prediction
Maximum Marks	

Proposed Solution Template:

Project team shall fill the following information in proposed solution template.

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Oil price increases are generally thought to increase inflation and reduce economic growth. Oil prices directly affect the prices of goods made with petroleum products. As mentioned above oil prices indirectly affect costs such as transportation, manufacturing, and heating.
2.	Idea / Solution description	Crude oil is a raw natural resource that is extracted from the earth and refined into products such as gasoline and petroleum products. Crude oil is a global trade in markets around the world.
3.	Novelty / Uniqueness	Supply, demand, and sentiment towards oil futures contracts, which are traded heavily by speculators play a dominant role in price determination.
4.	Social Impact / Customer Satisfaction	Oil spills can damage the environment and the wildlife and marine life that depends on it they can also cause physical, mental, and financial stress to people as individuals.
5.	Business Model (Revenue Model)	Models general includes information like products or services the business plans to sell, target markets, and any anticipated expenses. There are dozens of types of business models including retailers, manufacturers, fee-for-services, or freemium providers.
6.	Scalability of the Solution	Crude oil prices are determined by global supply and demand. Economic growth is one of the biggest factors affecting retailers. The impact on crude oil prices can name some of them as the US economy, US dollar exchange, supply and demand statistics, and crude oil and petroleum distillates inventory.

3.4. Problem Solution Fit

Project Title: Crude oil price prediction		Project Design Phase-I - Solution Fit Template		Team ID: PNT2022TMID34866	
Define CS, fit into CC	1. CUSTOMER SEGMENT(S) CS Who is your customer? Oil accounts for a third of the world's energy consumption. That is the greatest share for any category of government.	6. CUSTOMER CONSTRAINTS CC What constraints prevent your customers from taking action or limit their choices of solutions? Due to strong chain effects owned by this crude oil market, any changes in the factors involved will have exclusive impact to the price.	5. AVAILABLE SOLUTIONS AS Which solutions are available to the customers when they face the problem or need to get the job done? What have they tried in the past? What pros & cons do these solutions have? There are innumerable ways and approaches which are being used and have been used for predicting the prices of crude oil, one of the common methods is the one based on intuitions wherein the experiences.	Explore AS, differentiate	
Focus on J&P, tap into BE, understand RC	2. JOBS-TO-BE-DONE / PROBLEMS J&P Economic growth is one of the biggest factors affecting petroleum product—and therefore crude oil—demand. Growing economies increase demand for energy in general and especially for transportation.	9. PROBLEM ROOT CAUSE PRC There is only one dependent variable, the closing price of crude oil which has been considered, since it's a time series.	7. BEHAVIOUR BE What does your customer do to address the problem and get the job done? The correct information should be given by the individual.	Focus on J&P, tap into BE, understand RC	

Identify strong TR & EM	3. TRIGGERS TR What triggers customers to act? By seeing our friends and colleagues benefited by this web.	10. YOUR SOLUTION SL A contemporary and innovative method of predicting crude oil prices using the artificial neural network.	8. CHANNELS of BEHAVIOUR CH 8.1 ONLINE Customer has used this web in any time any where 8.2 OFFLINE Non-working days are not predicting the price of crude oil.	Identify strong TR & EM
	4. EMOTIONS: BEFORE / AFTER EM How do customers feel when they face a problem or a job and afterwards? Traipsing for job will be reduced.			

4.REQUIREMENT ANALYSIS

4.1Functional requirement

Project Design Phase-II Solution Requirements (Functional & Non-functional)

Date	08-10-2022
Team ID	PNT2022TMID34866
Project Name	Crude oil price prediction
Maximum Marks	4 - marks

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	User Registration	Registration through Form Registration through Gmail Registration through LinkedIN
FR-2	User Confirmation	Confirmation via Email Confirmation via OTP
FR-3	graph	Showing graph by gaining data from the dataset
FR-4	support	Queries from the users that will be solved by support section
FR-5	News	Oil prices of the information will be updated by the admin
FR-6	Notification	Price message will be send to client
FR-7	Database	All information will be stored by the client

4.2.Non-Functional requirement

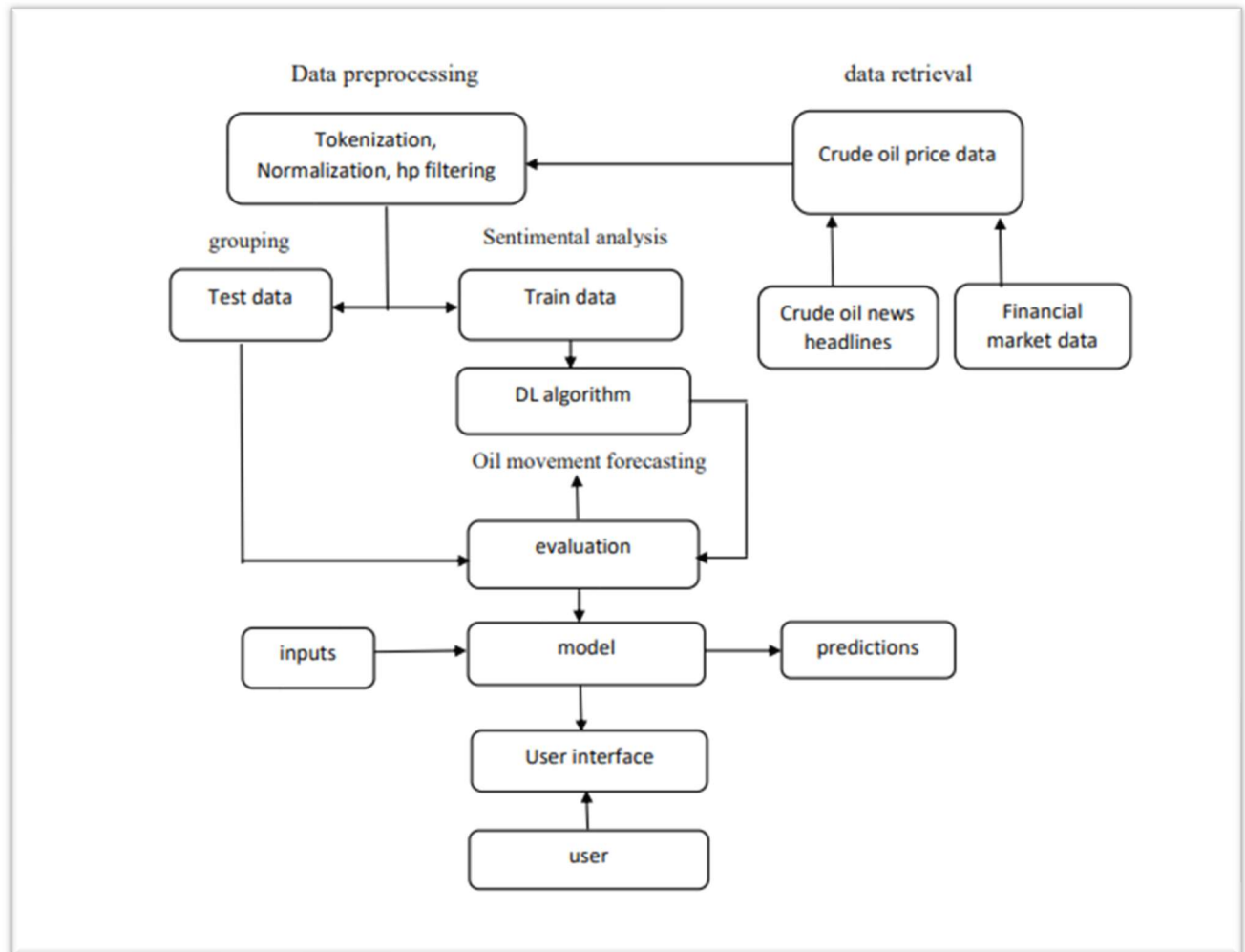
Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

FR No.	Non-Functional Requirement	Description
NFR-1	Usability	It can use by vast verity of client has it is very easy to learn and not difficult to proceed.
NFR-2	Security	We are using login for the user and the information will be confused so that it will be very secure to use.
NFR-3	Reliability	It will be reliable that can update with long time period ,so that the accuracy will be fine.
NFR-4	Performance	It will be perform fast and secure even at the lower bandwidth.
NFR-5	Availability	Prediction will be available for all client but only for additional user news, database and price will be alert by message.
NFR-6	Scalability	It is scalable that we are moving to use data in kb. So that the total amount of storage is requested.

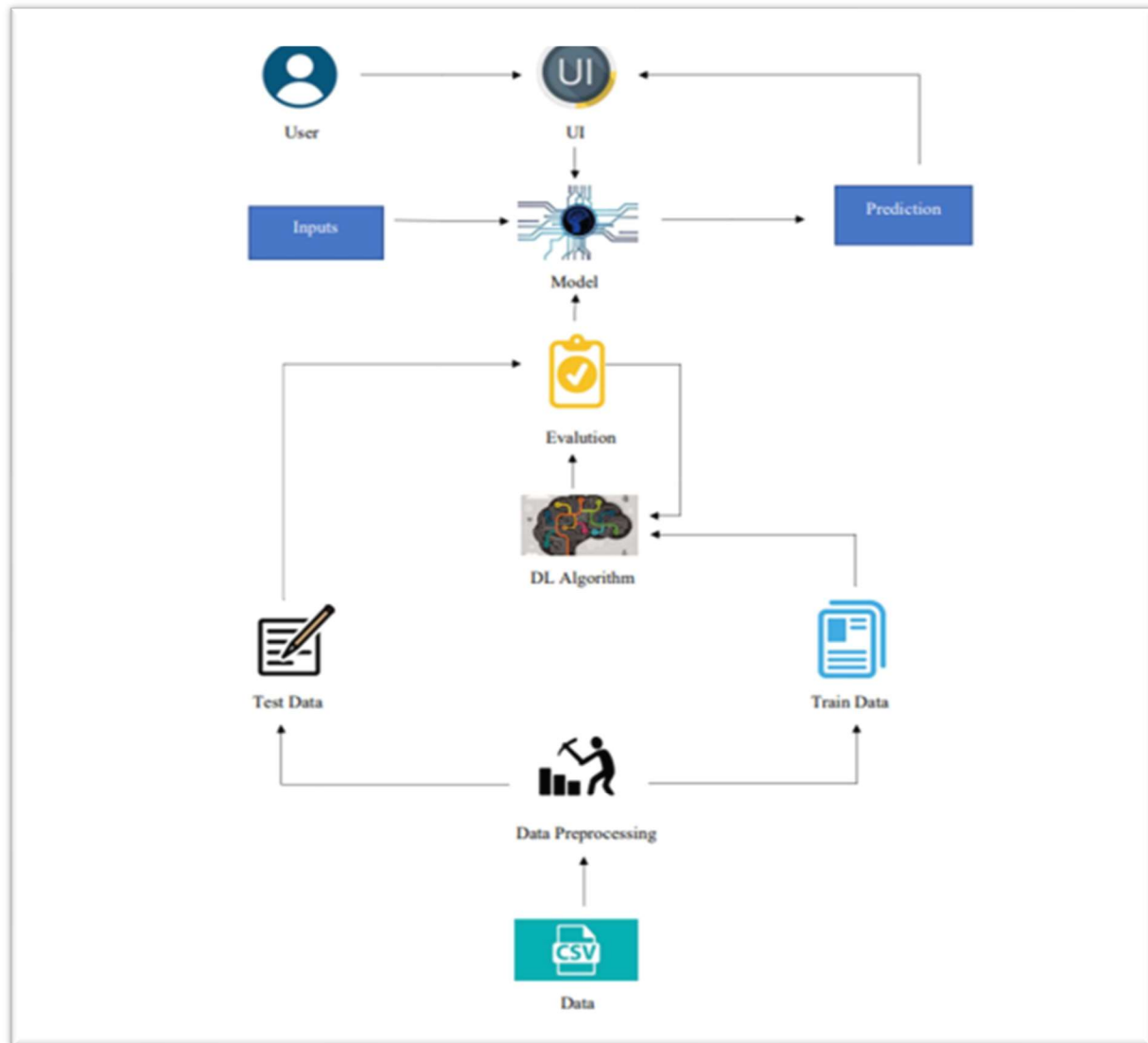
5.PROJECT DESIGN

5.1Data Flow Diagram



5.2 Solution & Technical Architecture

The Deliverable shall include the architectural diagram as below.

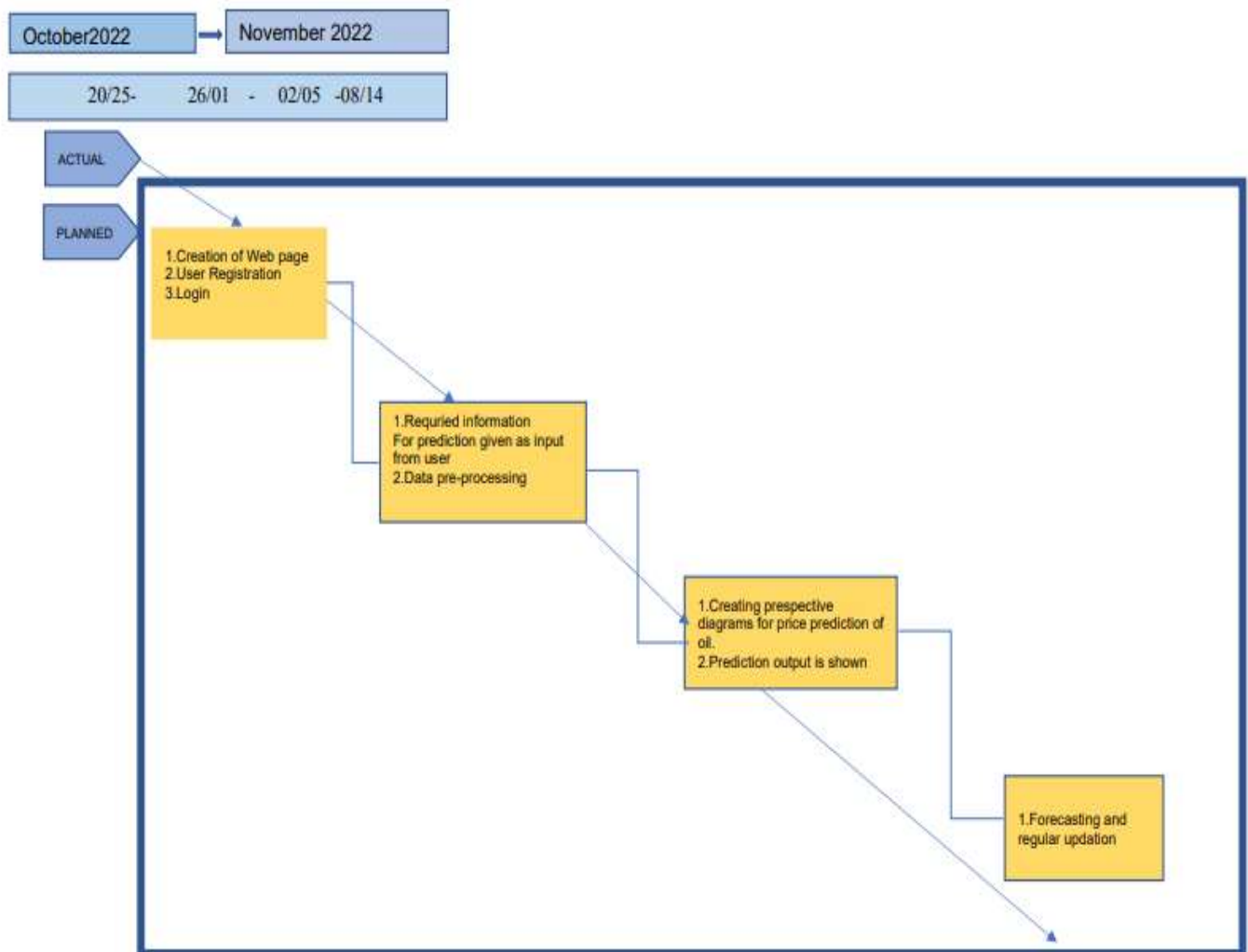


5.3 User Stories

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.

6.PROJECT PLANNING & SCHEDULING

6.1 Sprint Planning & Estimation



Product Backlog, Sprint Schedule, and Estimation (4 Marks)

Use the below template to create product backlog and sprint schedule

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Registration	USN-1	As a user, I can register for the application by entering my email, password, and confirming my password.	10	High	MANOJ M
Sprint-1		USN-2	As a user, I will receive confirmation email once I have registered for the application	10	High	SANJAY S
Sprint-1	Login	USN-3	As a user, I can log into the application by entering email & password.	15	High	SANKAR G
Sprint-2	Input Necessary Details	USN-4	As a user, I can give Input Details to Predict Likelihood of crude oil	15	High	DINESH A
Sprint-2	Data Pre-processing	USN-5	Transform raw data into suitable format for prediction.	15	High	SANJAY S
Sprint-3	Prediction of Crude Oil Price	USN-6	As a user, I can predict Crude oil using machine learning model.	20	High	SANKAR G
Sprint-3		USN-7	As a user, I can get accurate prediction of crude oil	5	Medium	DINESH A
Sprint-4	Review	USN-8	As a user, I can give feedback of the application.	20	High	MANOJ M

6.2 Sprint Delivery Schedule

Project Tracker, Velocity & Burndown Chart: (4 Marks)

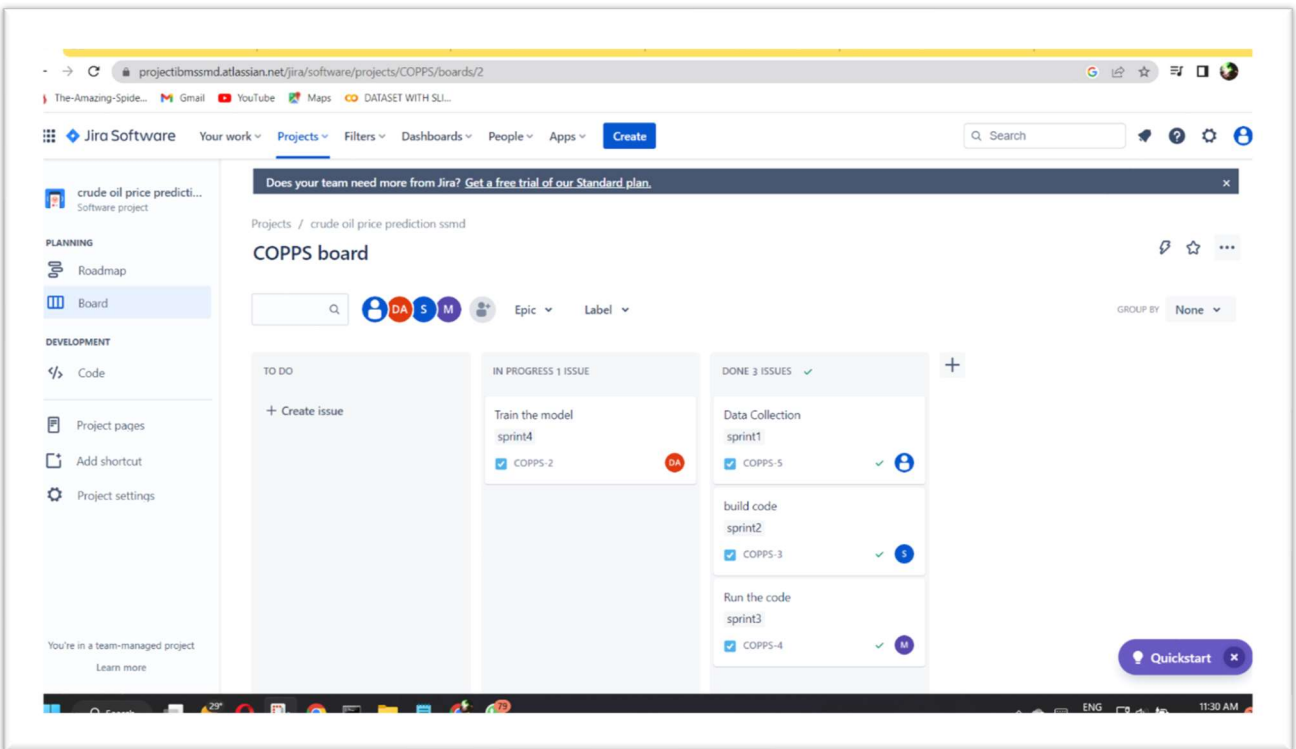
Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	20	6 Days	20 Oct 2022	25 Oct 2022	20	30 Oct 2022
Sprint-2	20	7 Days	26 Oct 2022	01 Nov 2022		
Sprint-3	20	6 Days	02 Nov 2022	07 Nov 2022		
Sprint-4	20	7 Days	09 Nov 2022	15 Nov 2022		

Velocity:

Imagine we have a 10-day sprint duration, and the velocity of the team is 20 (points per sprint). Let's calculate the team's average velocity (AV) per iteration unit (story points per day)

$$AV = \frac{\text{sprint duration}}{\text{velocity}} = \frac{20}{10} = 2$$

6.3. Reports From JIRA



projectibmssmd.atlassian.net/jira/software/projects/COPPS/boards/2/roadmap

The Amazing Spide... Gmail YouTube Maps DATASET WITH SL...

Jira Software Your work Projects Filters Dashboards People Apps Create

Search

crude oil price predict... Software project

ROADMAP

ROADMAP

Board

DEVELOPMENT

Code

Project pages

Add shortcut

Project settings

You're in a team-managed project Learn more

Projects / crude oil price prediction ssmd

Roadmap

Give feedback Share Export View settings

Search

Status category Epic Label

ROADMAP

T NOV DEC JAN '23

COPPS-6 SPRINT 1

COPPS-7 SPRINT 2

COPPS-8 SPRINT 3 DONE

COPPS-9 SPRINT 4

+ Create Epic

Today Weeks Months Quarters Quickstart



7.CODING & SOLUTIONING

7.1 Feature 1

7.1.1 HTML CODE FOR INDEX PAGE

```
<!doctype html>

<html lang="en">

<head>

<title> Crude Oil Price Prediction</title>

<meta charset="utf-8">

<meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no">

<link href="https://fonts.googleapis.com/css?family=Lato:300,400,700&display=swap"
rel="stylesheet">

<link rel="stylesheet" href="https://stackpath.bootstrapcdn.com/font-awesome/4.7.0/css/font-
awesome.min.css">

<link rel="stylesheet" href="static/css/style.css">

<style>

body {

background-image: url("static/images/crudeoilbg.jpg");

background-repeat: no-repeat;

background-position: 0% 0%;

background-size: 100% 100%;

}

</style>

</head>
```

```

<body class="img js-fullheight" >

<section class="ftco-section">

<div class="container">

<div class="row justify-content-center">

<div class="col-md-6 text-center mb-5">

<h2 class="heading-section">Crude Oil Prediction</h2>

</div>

</div>

<div class="row justify-content-center">

<p>

Demand for oil is inelastic, therefore the rise in price is good news for producers because they
will see an increase in

their revenue. Oil importers, however, will experience increased costs of purchasing oil.

Because oil is the largest traded commodity, the effects are guided significant. A rising oil price
can even shift

economic political power from oil importers to oil exporters. The crude oil price movements are
subject to diverse

influencing factors

</p>

</br></br>

<div class="col-md-6 col-lg-4">

<div class="login-wrap p-0">

<div class="form-group">

```

```
<a href="predict" class="form-control btn btn-primary submit px-3">Predict Crude Oil  
Price</a>
```

```
</div>
```

```
</div>
```

```
</div>
```

```
</br></br>
```

```
</div>
```

```
</div>
```

```
</section>
```

```
</body>
```

```
</html>
```

7.1.2 HTML CODE FOR PREDICTION

```
<!doctype html>
```

```
<html lang="en">
```

```
<head>
```

```
<title> Crude Oil Price Prediction</title>
```

```
<meta charset="utf-8">
```

```
<meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no">
```

```
<link href="https://fonts.googleapis.com/css?family=Lato:300,400,700&display=swap"  
rel="stylesheet">
```

```
<link rel="stylesheet" href="https://stackpath.bootstrapcdn.com/font-awesome/4.7.0/css/font-  
awesome.min.css">
```

```
<link rel="stylesheet" href="static/css/style.css">

<style>

body {

    background-image: url("static/images/oil.jpg");

    background-repeat: no-repeat;

    background-position: 0% 0%;

    background-size: 100% 100%;

}

</style>

</head>

<body class="img js-fullheight" >

<section class="ftco-section">

<div class="container">

<div class="row justify-content-center">

<div class="col-md-6 text-center mb-5">

<h2 class="heading-section">Crude Oil Prediction</h2>

</div>

</div>

<div class="row justify-content-center">

<div class="col-md-6 col-lg-4">

<div class="login-wrap p-0">

<h3 class="mb-4 text-center">Enter the crude oil price for first 10 days</h3>
```


7.2 Feature2

7.2.1 FLASK CODE

```
import numpy as np

from flask import Flask,render_template,request

from tensorflow.python.keras.models import load_model

# This is a sample Python script.


# Press Shift+F10 to execute it or replace it with your code.

# Press Double Shift to search everywhere for classes, files, tool windows, actions, and settings.

app = Flask(__name__,template_folder='templates', static_url_path='/static')

model = load_model('predict.h5',)

@app.route('/')

def home():

    return render_template("index.html")

@app.route('/predict')

def home2():

    return render_template("prediction.html")

@app.route('/predicted',methods =['POST'])

def login():

    x_input=str(request.form['year'])

    x_input=x_input.split(',')

    print(x_input)
```

```

for i in range (0, len(x_input)):
    x_input[i] = float(x_input[i])

print(x_input)

x_input=np.array(x_input).reshape(1,-1)

temp_input=list(x_input)

temp_input=temp_input[0].tolist()

lst_output=[]

n_steps=10

i=0

while(i<1):

    if(len(temp_input)>10):

        x_input=np.array(temp_input[1:])

        print("{} day input {}".format(i,x_input))

        x_input=x_input.reshape(1,-1)

        x_input=x_input.reshape((1,n_steps,1))

        yhat = model.predict(x_input, verbose=0)

        temp_input.extend(yhat[0].tolist())

        temp_input=temp_input[1:]

        lst_output.extend(yhat.tolist())

        i=i+1

    else:

        x_input = x_input.reshape((1,n_steps,1))

```

```

yhat = model.predict(x_input, verbose=0)

print(yhat[0])

temp_input.extend(yhat[0].tolist())

print(len(temp_input))

lst_output.extend(yhat.tolist())

i=i+1

print(lst_output)

return render_template("prediction.html",showcase = "the next day predicted value is
:"+str(lst_output))

# Press the green button in the gutter to run the script.

if __name__ == '__main__':

app.run(debug = True,port=5000)

lst_output.extend(yhat.tolist())

i=i+1

else:

x_input = x_input.reshape((1,n_steps,1))

yhat = model.predict(x_input, verbose=0)

print(lst_output)

return render_template("prediction.html",showcase = "the next day predicted value is
:"+str(lst_output))

# Press the green button in the gutter to run the script.

if __name__ == '__main__':

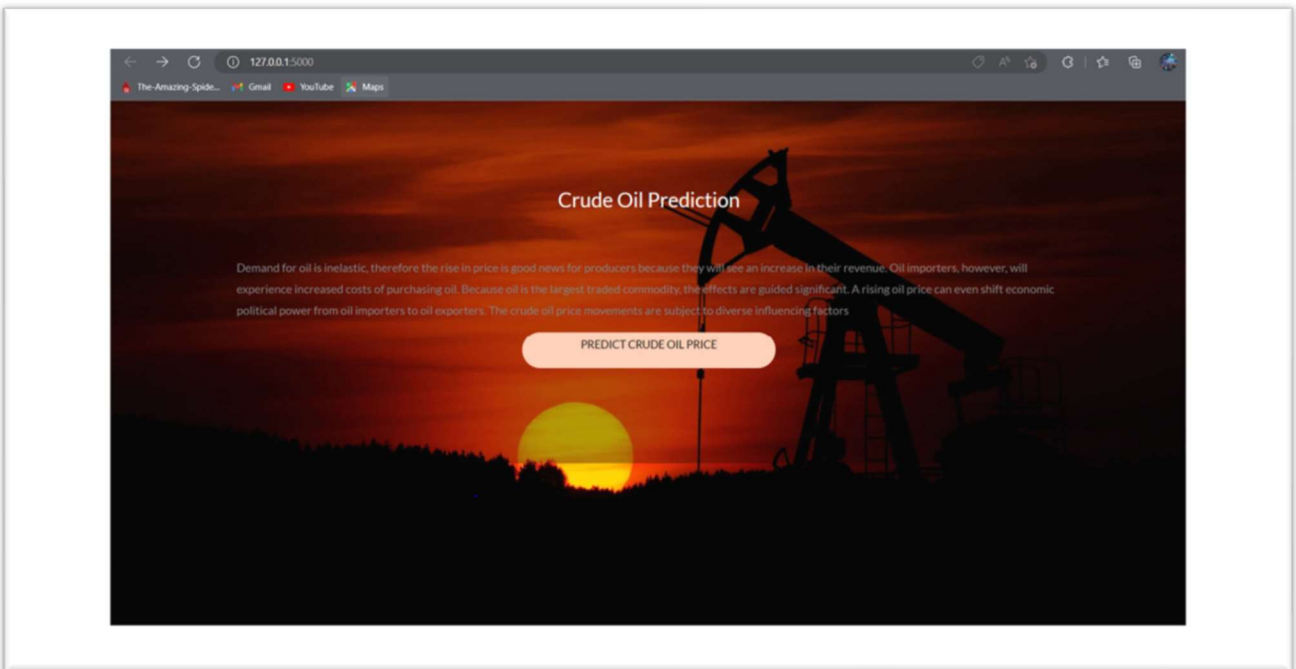
app.run(debug = True,port=5000)

```

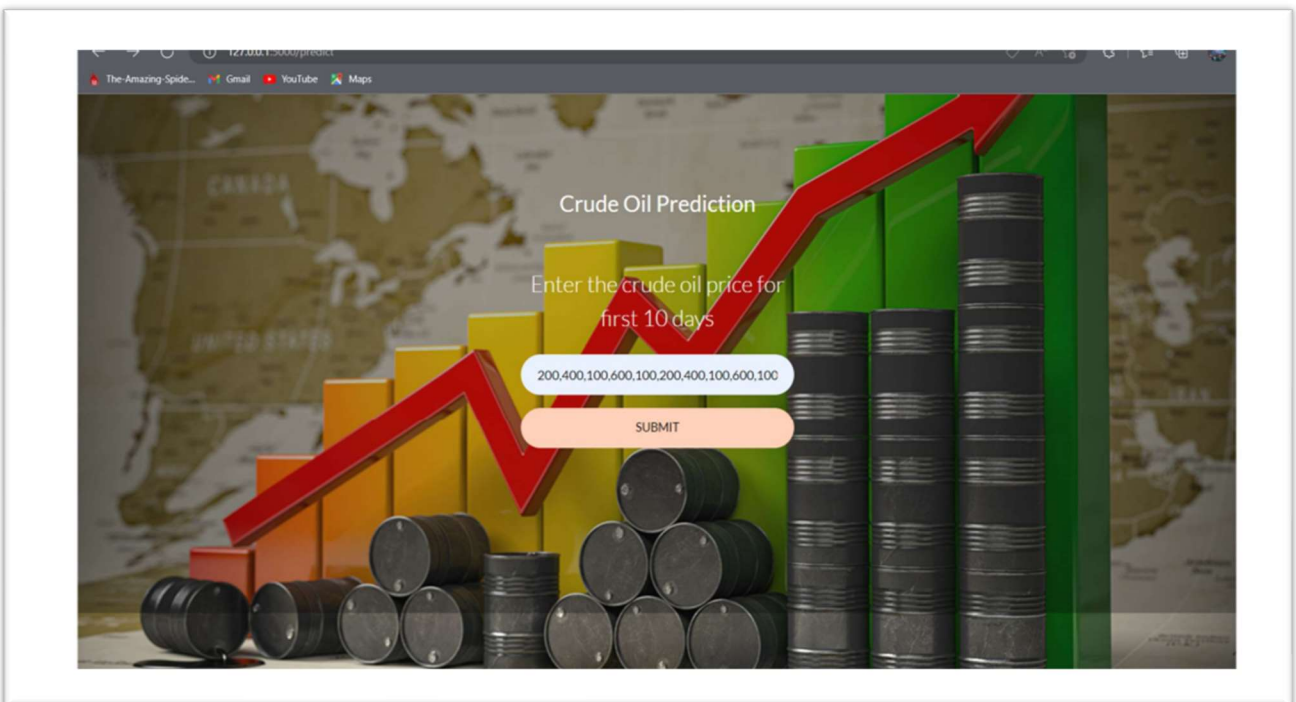
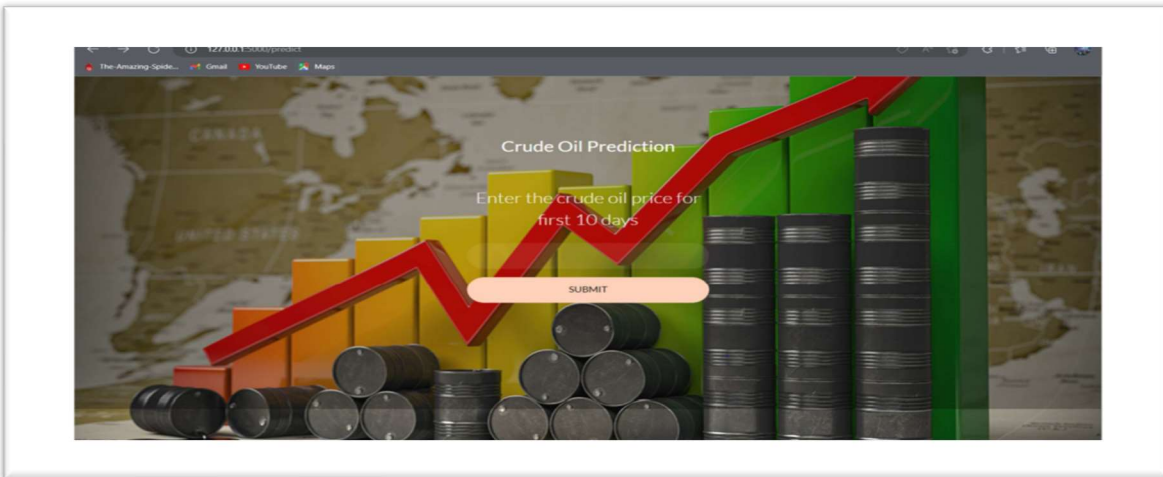
8.TESTING

8.1 Testcase

Testing is the main purpose to detecting and training the code to execute the given output to certain source to analysis the crude oil price prediction to demanding the purpose of the oil calculation to adapt the situation of the trading ,demands and market prices



8.2. User Acceptance



9.RESULT

9.1 Performance metrics

We used two standard performance metrics in the oil price prediction literature for comparing different oil price prediction models. The first metric is Mean to oil price Prediction Error (ANN). ANN of a prediction model measures the average of the squares of the prediction errors. The prediction error is the difference between the true value and the predicted value. Let y_1, y_2, \dots, y_n be the true oil prices and $\hat{y}_1, \hat{y}_2, \dots, \hat{y}_n$ be the predicted oil prices under an oil price prediction model, then the ANN of that model is:

$$AV = \frac{SPRINT\ DURATION}{VELOCITY} = \frac{20}{10} = 2$$

10. ADVANTAGE & DISADVANTAGE

10.1 ADVANTAGE

- The crude oil price is an important indicator of the economy Oil is the most used resource in the world.
- This bullish forecast is driven by the belief that OPEC has a limited capacity to increase oil production.
- Full form of OPEC is organization of the petroleum exporting countries Oil has one of the highest energy Density which means that a small amount of oil can produce a large amount of energy.
- The crude oil makes very useful as its high energy density has made it that preferred choice of use as fuel in automobile

10.2 Disadvantage

- Crude oil prices had been suffering amid news that covid-19.
- Inflection rates were rising in China
- Burning oil produces carbon dioxide gas Lower oil prices means less drilling and exploration activity
- Because most of the news oil driving the economic activity is unconventional and has a higher cost per barrel than a conventional source of oil
- An increase in the price of crude oil means that would increase the cost of production goods. the price rise would finally be passed on to consumers resulting in inflation

11. CONCLUSION

Artificial Neural Network is one of the most important ways to predict a lot of reservoir parameters or functions, as well as search for new sites of infill wells, which is an important use of this technique in conjunction with simulators because of their relationship with development operations and production of oil and gas fields. Both Artificial Neural Network and Data Mask technique gave a good and easy way for the preparation and data management in every phase of prediction and optimization technique. The constructed Artificial Neural Network model (FFNN), had good training and validating Results according to the data sets used in both of training and validation steps, and obtained good behavior after many trials and reflecting high confidence to the prediction or simulation stage. Clear and quite improvement appeared with additional cumulative oil production for the production field sector under the current study, especially with the wells M, O and P, among those elected locations of infill wells. This became a good decision maker to which of the well can we implement for the future production plan and development field strategy view point. ANN used and proved to be an effective tool within prediction and optimization process, especially when dealing with developmental ideas of the oil and gas production, from the standpoint of oil reservoir management and field directorate for future strategic planning

12.FUTURE SCOPE

This work indicates that the ANN model is an effective tool for crude oil price prediction and can be efficiently used for short term price forecasting by determining the optimal lags. The proposed model is powerful and highly suggested because investors can use it not only to initiate trades but also as an effective tool to judge various strategies relating to investments. This work is carried out on the closing price of crude oil; however, there are various other factors which also affect the crude oil prices like change in the prices and quantities (demand and supply), change in the economy and current affairs as shown by the media. The main advantage of this research is in capturing the changing pattern of these prices. In the coming future, fundamental indicators and market trends have been planned to be incorporated into a model which will help the proposed model perform more efficiently.

13.APPENDIX

13.1Source Code

HTML CODE FOR INDEX PAGE

```
<!doctype html>

<html lang="en">

<head>

<title> Crude Oil Price Prediction</title>

<meta charset="utf-8">

<meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no">

<link href="https://fonts.googleapis.com/css?family=Lato:300,400,700&display=swap"
rel="stylesheet">

<link rel="stylesheet" href="https://stackpath.bootstrapcdn.com/font-awesome/4.7.0/css/font-
awesome.min.css">

<link rel="stylesheet" href="static/css/style.css">

<style>
```



```
body {  
background-image: url("static/images/crudeoilbg.jpg");  
background-repeat: no-repeat;  
background-position: 0% 0%;  
background-size: 100% 100%;  
}  
</style>  
</head>
```

```
<body class="img js-fullheight" >  
<section class="ftco-section">  
<div class="container">  
<div class="row justify-content-center">  
<div class="col-md-6 text-center mb-5">  
<h2 class="heading-section">Crude Oil Prediction</h2>  
</div>  
</div>  
<div class="row justify-content-center">  
<p>
```

Demand for oil is inelastic, therefore the rise in price is good news for producers because they will see an increase in

their revenue. Oil importers, however, will experience increased costs of purchasing oil.

Because oil is the largest traded commodity, the effects are guided significant. A rising oil price can even shift

economic political power from oil importers to oil exporters. The crude oil price movements are subject to diverse

influencing factors

</p>

</br></br>

<div class="col-md-6 col-lg-4">

<div class="login-wrap p-0">

<div class="form-group">

Predict Crude Oil Price

</div>

</div>

</div>

</br></br>

</div>

</div>

</section>

</body>

</html>

HTML CODE FOR PREDICTION

<!doctype html>

```

<html lang="en">

<head>

<title> Crude Oil Price Prediction</title>

<meta charset="utf-8">

<meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no">

<link href="https://fonts.googleapis.com/css?family=Lato:300,400,700&display=swap"
rel="stylesheet">

<link rel="stylesheet" href="https://stackpath.bootstrapcdn.com/font-awesome/4.7.0/css/font-
awesome.min.css">

<link rel="stylesheet" href="static/css/style.css">

<style>

body {

    background-image: url("static/images/oil.jpg");

    background-repeat: no-repeat;

    background-position: 0% 0%;

    background-size: 100% 100%;

}

</style>

</head>

<body class="img js-fullheight" >

<section class="ftco-section">

<div class="container">

<div class="row justify-content-center">

```

```

<div class="col-md-6 text-center mb-5">

<h2 class="heading-section">Crude Oil Prediction</h2>

</div>

</div>

<div class="row justify-content-center">

<div class="col-md-6 col-lg-4">

<div class="login-wrap p-0">

<h3 class="mb-4 text-center">Enter the crude oil price for first 10 days</h3>

<form method="post" action="predicted" class="signin-form">

<div class="form-group">

<input type="text" class="form-control" id="year" name="year" required>

</div>

<div class="form-group">

<button type="submit" class="form-control btn btn-primary submit px-3">Submit</button>

</div>

</form>

<br></br>

<div class="social d-flex text-center">

<p class="w-100 text-center">{{showcase}} </p>

</div>

```

</div>

</div>

</div>

</div>

</section>

</body>

</html>

Feature2

FLASK CODE

```
import numpy as np
```

```
from flask import Flask,render_template,request
```

```
from tensorflow.python.keras.models import load_model
```

```
# This is a sample Python script.
```

```
# Press Shift+F10 to execute it or replace it with your code.
```

```
# Press Double Shift to search everywhere for classes, files, tool windows, actions, and settings.
```

```
app = Flask(__name__,template_folder='templates', static_url_path='/static')
```

```
model = load_model('predict.h5',)
```

```
@app.route('/')
```

```
def home():
```

```
    return render_template("index.html")
```

```
@app.route('/predict')
```

```

def home2():

return render_template("prediction.html")

@app.route('/predicted',methods =['POST'])

def login():

x_input=str(request.form['year'])

x_input=x_input.split(',')

print(x_input)

for i in range (0, len(x_input)):

x_input[i] = float(x_input[i])

print(x_input)

x_input=np.array(x_input).reshape(1,-1)

temp_input=list(x_input)

temp_input=temp_input[0].tolist()

lst_output=[]

n_steps=10

i=0

while(i<1):

if(len(temp_input)>10):

x_input=np.array(temp_input[1:])

print("{} day input {}".format(i,x_input))

x_input=x_input.reshape(1,-1)

x_input=x_input.reshape((1,n_steps,1))

```

```

yhat = model.predict(x_input, verbose=0)

temp_input.extend(yhat[0].tolist())

temp_input=temp_input[1:]

lst_output.extend(yhat.tolist())

i=i+1

else:

x_input = x_input.reshape((1,n_steps,1))

yhat = model.predict(x_input, verbose=0)

print(yhat[0])

temp_input.extend(yhat[0].tolist())

print(len(temp_input))

lst_output.extend(yhat.tolist())

i=i+1

print(lst_output)

return render_template("prediction.html",showcase = "the next day predicted value is
:"+str(lst_output))

# Press the green button in the gutter to run the script.

if __name__ == '__main__':

app.run(debug = True,port=5000)

```

13.2 GitHub & Project Demo Link

GitHub Link

[IBM-EPBL/IBM-Project-26137-1664017171](https://github.com/IBM-EPBL/IBM-Project-26137-1664017171)

Project Demo Link

https://drive.google.com/file/d/1inGFfCNjhzyx8s8DRtgw8AK8aR4rrsL/view?usp=share_link