ECONOMY OF TELANGANA FROM DIFFERENT SECTORS

A Course Project report submitted

in partial fulfillment of requirement for the award of degree

BACHELOR OF TECHNOLOGY

in

COMPUTER SCIENCE & ENGINEERING

by

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Department of Computer Science and Artificial Intelligence

Department of Computer Science and Artificial Intelligence

CERTIFICATE

This is to certify that this project entitled **"ECONOMY OF TELANGANA FROM DIFFERENT SECTORS**" is the bonafied work carried out by **JANJARLA S.V.MOULYA(2003A51021),ESLAWAT YADLAXMI (2003A51005), GADDALA DIVYA SREE (2003A51006), ADUPE SATHWIKA (2003A51015)** as a Course Project for the partial fulfillment to award the degree **BACHELOR OF TECHNOLOGY** in **COMPUTER SCIENCE & ENGINEERING** during the academic year 2021-2022 under our guidance and Supervision.

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We wish to take this opportunity to express our sincere gratitude and deep sense of respect to our beloved Dean, School of Computer Science and Artificial Intelligence, **C. V. Guru Rao**, for his continuous support and guidance to complete this project in the institute.

Finally, we express our thanks to all the teaching and non-teaching staff of the department for their suggestions and timely support.

ABSTRACT

We have prepared a dataset which gives the information regarding the contribution of different sectors help in raise of economy of Telanagana . In day to day life we are evolved with online shopping and public transportation which helps in increase the contribution of service sector though Telangana has more labour force for agriculture but its share very less compared to service sector it is due to lack of technology usage in agriculture.Many countries are using newly developed technological mahcines for agriculture but we are very backward in agrotechnology if we use more technology both in industries and agriculture sector there is a possibility of increasing their share in contribution.There are many sectors which are backward due to lack of technical use if we provide them a good technology then there is a possibility of increasing our economy as they also contribute there share in economicsal.Our telanagana government also trying to provide more tourist places for its economical growth.Telanagana government also ttying to give some more irrigsation for agriculture. If we include some more main key sectors in our economy development there is a possibility of increasing our rank too in the whole country.that is only possible when we do show our special interest in technology not only in agriculture industries also need a very good technical mschines for more production of items.We also need new technology for IT industries too.

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LIST OF TABLES

LIST OF ACRONYMS

ATTRIBUTES:

COA	Contribution of agriculture
COI	Contribution of industries
COS	Contribution of services
GGRP	Growth gain raise product

1. INTRODUCTION

1.1 OVERVIEW

Telangana is one of the fastest-growing states in India posing average annual growth rate of 13.90% over the last five years. Telangana's nominal gross state domestic product for the year 2020-21 stands at ₹12.05 lakh crore (US$170 billion). Service sector is the largest contributor to the Telangana's economy with a share of about 65% in the year 2018-19. Growth in services has largely been fuelled by IT services with the State holding leading position in IT & ITeS in the country in terms of production and exports. Agriculture also form a backbone of Telangana's Economy. Two important rivers of India, the Godavari and Krishna, flow through the state, providing irrigation. Farmers in Telangana mainly depend on rain-fed water sources for irrigation. Rice is the major food crop. Other important local crops are cotton, sugar cane, mango and tobacco. Recently, crops used for vegetable oil production, such as sunflower and peanuts, have gained favour. There are many multi-state irrigation projects in development, including Godavari River Basin Irrigation Projects.

The state has also started to focus on the fields of information technology and biotechnology. There are 68 Special Economic Zones in the state.Telangana is a mineral-rich state, with coal reserves at Singareni Colleries.

1.2 PROBLEM STATEMENT

Telanagana is rising its economical status from year to year but we are not having an idea regarding the sectors which gives their contribution in the economy development.we are not even having the idea of the main sectors in Telanagana.By using machine leaning concepts we would like to present Percentage of sectors helped in Telanagana economy.By knowing the information we may take some further steps which helps them in increase its economy some more .

1.3 OBJECTIVES DESCRIPTION

Despite being the youngest state in the country, Telangana has demonstrated rapid growth. Telangana has shown rapid and robust economic growth amidst a global and national economic slowdown. Global growth for 2019 was 2.4%, the slowest since the financial crisis. The Indian economy is expected to grow at 5% in 2019-20. Telangana however, is expected to register a real economic growth rate of 8.2% in 2019-20 – well above the national average. This growth can be attributed to the proactive industrial initiatives of the government of Telangana and the mindset of the government to act as facilitators and catalysts for industrialists. In addition, the extent of urbanization has also contributed to the economic development of Telangana – according to the 2011 about 38.8% of the state's population resides in urban areas.

1.4. OVERALL ARCHITECTURE

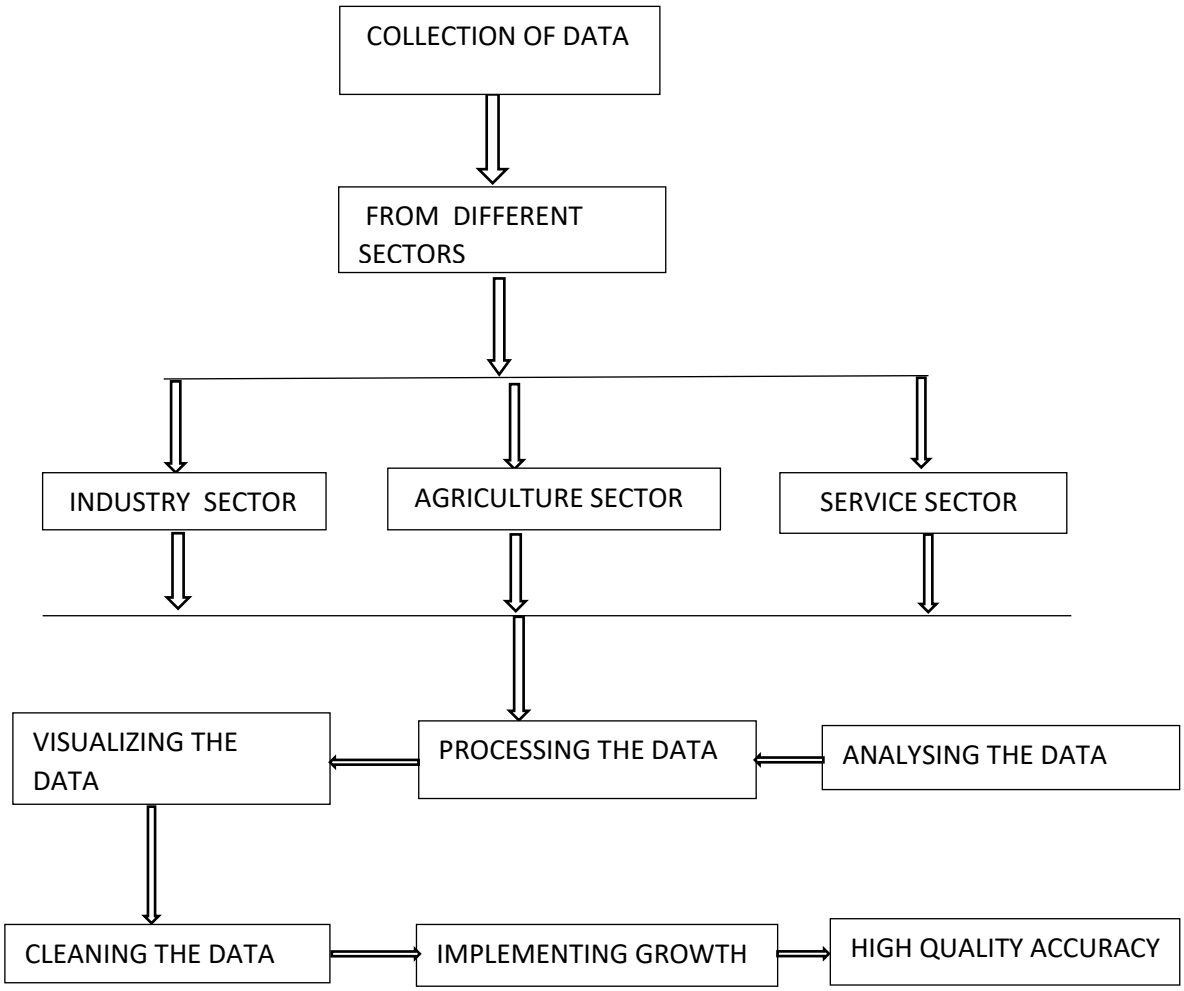


FIG 1.3.1

ECONOMY OF TELANGANA FROM DIFFERENT SECTORS

INDUSTRY SECTOR: Industry, group of productive enterprises or organizations that produce or supply goods, services, or sources of income.

AGRICULTURE SECTOR: The majority of the world's poor live in rural areas. Agriculture is a source of livelihood for 86 percent of rural people. Farming systems often consist of a range of interdependent gathering,

SERVICE SECTOR: The services sector covers a wide range of services, including trade, hotels and restaurants, transport, storage and communication, financing, insurance.

2. LITERATURE SURVEY

ECONOMY OF TELANGANA

Agriculture is the main source of economy in Telangana. The rivers Godavari and Krishna aid in irrigation. Local crops include rice, cotton, mango and tobacco. Sunflower and peanuts are also grown for producing oil. Multi-state irrigation projects include Godavari River Basin Irrigation Projects and Nagarjuna Sagar Dam which is the world's highest masonry dam. Hyderabad is the main source of revenue as there is lot of economic activity here.

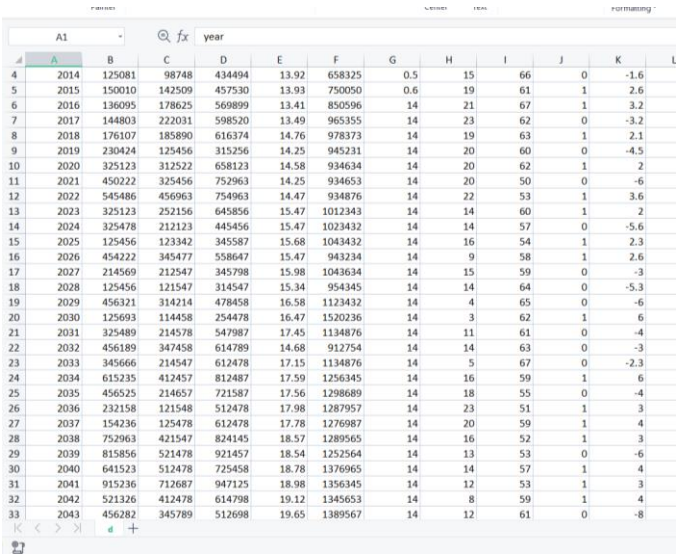
Hyderabad is known for IT Parks and IT-enabled services (ITeS). There are Special Economic Zones (SEZs) in Telangana. Manufacturing units are based in Hyderabad, Rangareddy, Medak and Nalgonda districts. Mining, food processing, dairy and farming, poultry also aid in economy of Telangana state.

Hyderabad is the torch-bearer for all other districts in Telangana with an international airport in place, educational institutions, skilled professionals, Metro-rail project, suitable weather, IT Parks and infrastructural growth.

Nirmal wooden toys and Dhokra casting crafts of Adilabad are famous all over the country. Hyderabad emerged as a pharmaceutical and biotechnology hub and is known as "Genome Valley of India". 'Fab City' and the 'Nano Technology park' signify infrastructural growth in the field of Bio-technology in Hyderabad.

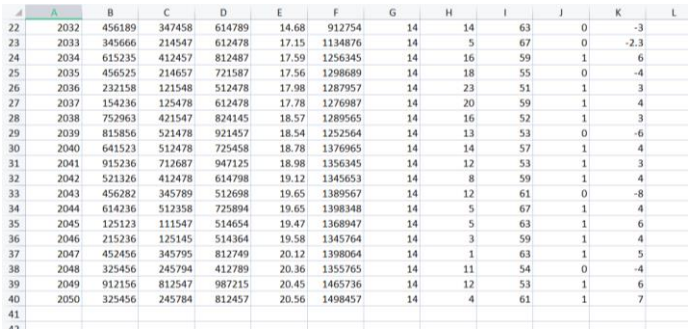
3.DATA PROCESSING

3.1.DATASET DESCRIPTION



A1 | year

	A	B	C	D	E	F	G	H	I	J	K
4	2014	125081	98748	434494	13.92	658325	0.5	15	66	0	-1.6
5	2015	150010	142509	457530	13.93	750050	0.6	19	61	1	2.6
6	2016	136095	178625	569899	13.41	850596	14	21	67	1	3.2
7	2017	144803	222031	598520	13.49	965355	14	23	62	0	-3.2
8	2018	176107	185890	616374	14.76	978373	14	19	63	1	2.1
9	2019	230424	125456	315256	14.25	945231	14	20	60	0	-4.5
10	2020	325123	312522	658123	14.58	934634	14	20	62	1	2
11	2021	450222	325456	752963	14.25	934653	14	20	50	0	-6
12	2022	545486	456963	754963	14.47	934876	14	22	53	1	3.6
13	2023	325123	252156	645856	15.47	1012343	14	14	60	1	2
14	2024	325478	212123	445456	15.47	1023432	14	14	57	0	-5.6
15	2025	125456	123342	345587	15.68	1043432	14	16	54	1	2.3
16	2026	454222	345477	558647	15.47	943234	14	9	58	1	2.6
17	2027	214569	212547	345798	15.98	1043634	14	15	59	0	-3
18	2028	125456	121547	314547	15.34	954345	14	14	64	0	-5.3
19	2029	456321	314214	478458	16.58	1123432	14	4	65	0	-6
20	2030	125693	114458	254478	16.47	1520236	14	3	62	1	6
21	2031	325489	214578	547987	17.45	1134876	14	11	61	0	-4
22	2032	456189	347458	614789	14.68	912754	14	14	63	0	-3
23	2033	345666	214547	612478	17.15	1134876	14	5	67	0	-2.3
24	2034	615235	412457	812487	17.59	1256345	14	16	59	1	6
25	2035	456525	214657	721587	17.56	1298689	14	18	55	0	-4
26	2036	232158	121548	512478	17.98	1287957	14	23	51	1	3
27	2037	154236	125478	612478	17.78	1276987	14	20	59	1	4
28	2038	752963	421547	824145	18.57	1289565	14	16	52	1	3
29	2039	815856	521478	921457	18.54	1252564	14	13	53	0	-6
30	2040	641523	512478	725458	18.78	1376965	14	14	57	1	4
31	2041	915236	712687	947125	18.98	1356345	14	12	53	1	3
32	2042	521326	412478	614798	19.12	1345653	14	8	59	1	4
33	2043	456282	345789	512698	19.65	1389567	14	12	61	0	-8



	A	B	C	D	E	F	G	H	I	J	K
22	2032	456189	347458	614789	14.68	912754	14	14	63	0	-3
23	2033	345666	214547	612478	17.15	1134876	14	5	67	0	-2.3
24	2034	615235	412457	812487	17.59	1256345	14	16	59	1	6
25	2035	456525	214657	721587	17.56	1298689	14	18	55	0	-4
26	2036	232158	121548	512478	17.98	1287957	14	23	51	1	3
27	2037	154236	125478	612478	17.78	1276987	14	20	59	1	4
28	2038	752963	421547	824145	18.57	1289565	14	16	52	1	3
29	2039	815856	521478	921457	18.54	1252564	14	13	53	0	-6
30	2040	641523	512478	725458	18.78	1376965	14	14	57	1	4
31	2041	915236	712687	947125	18.98	1356345	14	12	53	1	3
32	2042	521326	412478	614798	19.12	1345653	14	8	59	1	4
33	2043	456282	345789	512698	19.65	1389567	14	12	61	0	-8
34	2044	614236	512358	725894	19.65	1398348	14	5	67	1	4
35	2045	125123	111547	514654	19.47	1368947	14	5	63	1	6
36	2046	215236	125145	514364	19.58	1345764	14	3	59	1	4
37	2047	452456	345795	812749	20.12	1398064	14	1	63	1	5
38	2048	325456	245794	412789	20.36	1355765	14	11	54	0	-4
39	2049	912156	812547	987215	20.45	1465736	14	12	53	1	6
40	2050	325456	245784	812457	20.56	1498457	14	4	61	1	7
41											

Number of targets	40
Number of instances	40
Number of attributes	9

3.2 DATA CLEANING

Steps Data cleaning is an important precursor to doing any analysis. Even with careful surveying, there may be typos or other errors made in data collection, or there may be outliers that, if not properly accounted for, could skew your results. Before doing any kind of analysis, it is important to first clean the data, regardless of whether it is original field data or administrative data. Cleaning data can be time-consuming, but putting in the effort upfront can save a lot of time and energy down the line. Note: the first step in data processing should always be to encrypt data that contains information that could be used to identify individuals.

1. Set up your file

Follow the steps above: set up a header that clears the environment, sets the working directory, seed, and version, and includes information on project name, co-authors, purpose of the do-file, date of creation, etc.

2. Import and merge your data

In your do-file, import and merge files as needed. Doing this in your do-file means that the import is documented: someone else (or your future self) can just run the do-file and know exactly which raw data file is imported

3. Understand your data

Use the browse window to look at your data.

3.3 DATA AUGMENTATION

Data augmentation techniques generate different versions of a real dataset artificially to increase its size. Computer vision and natural language processing (NLP) models use data augmentation strategy to handle with data scarcity and insufficient data diversity.

Data augmentation algorithms can increase accuracy of machine learning models. According to an experiment, a deep learning model after image augmentation performs better in training loss (i.e. penalty for a bad prediction) & accuracy and validation loss & accuracy than a deep learning model without augmentation for image classification task.

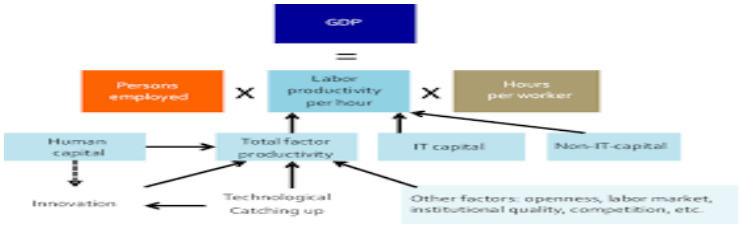


Fig 3.3.1

3.3 DATA VISUALIZATION

PAPER FORMAT:

```
In [100…
sns.set_context("paper")
sns.scatterplot(x='year', y='COA',data=df, hue='target')
Out[100…
<AxesSubplot:xlabel='year', ylabel='COA'>
```

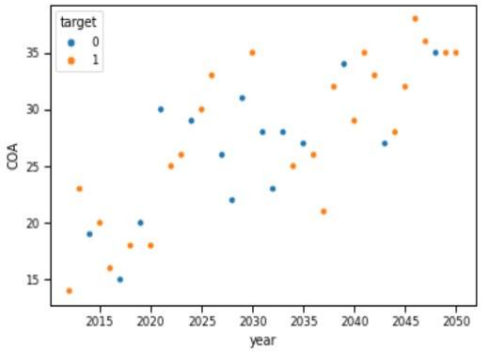


Fig .3.3.1

In [100…
sns.set_context("paper")
sns.scatterplot(x='year', y='COA',data=df, hue='target')
Out[100…
<AxesSubplot:xlabel='year', ylabel='COA'>

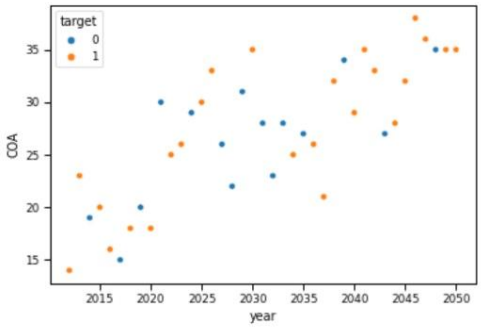


Fig .3.3.2:PAPER

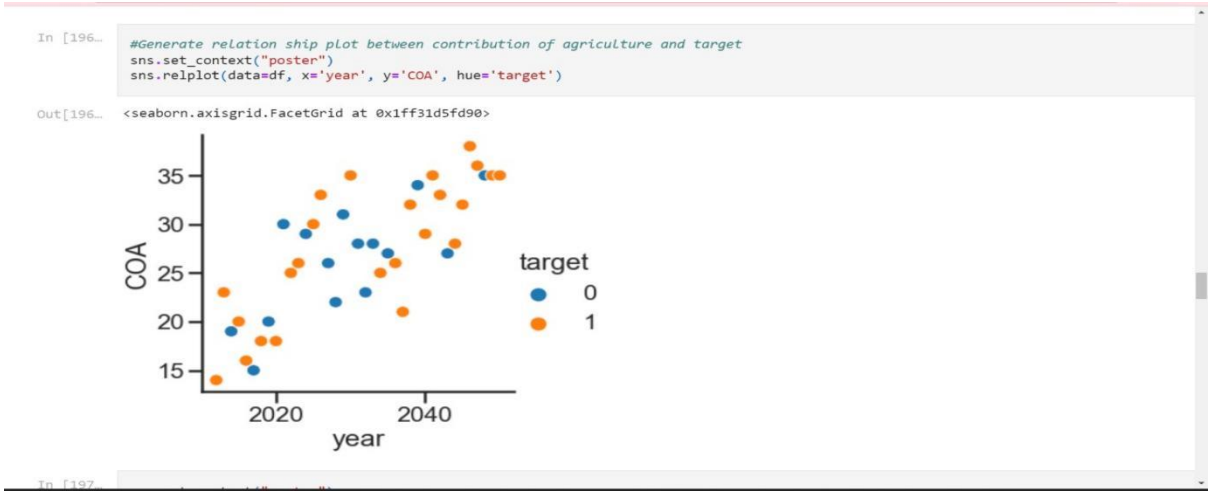


Fig .3.3.3: POSTER

Fig .3.3.4 :TICKS GRAPH

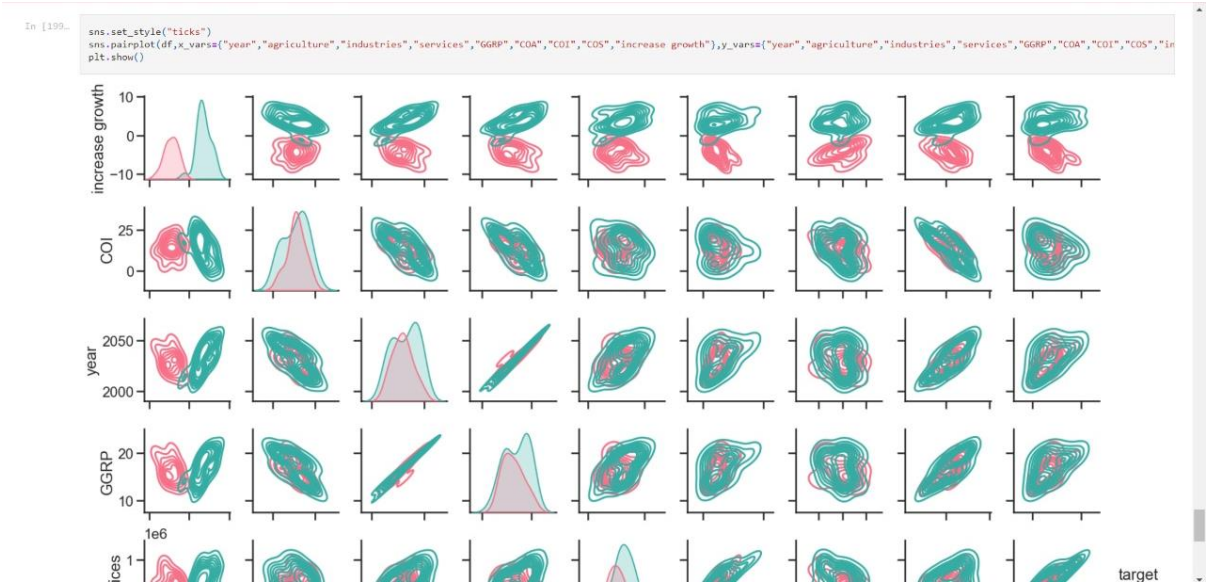


Fig .3.3.5:TICKS GRAPH(PAIR PLOT)

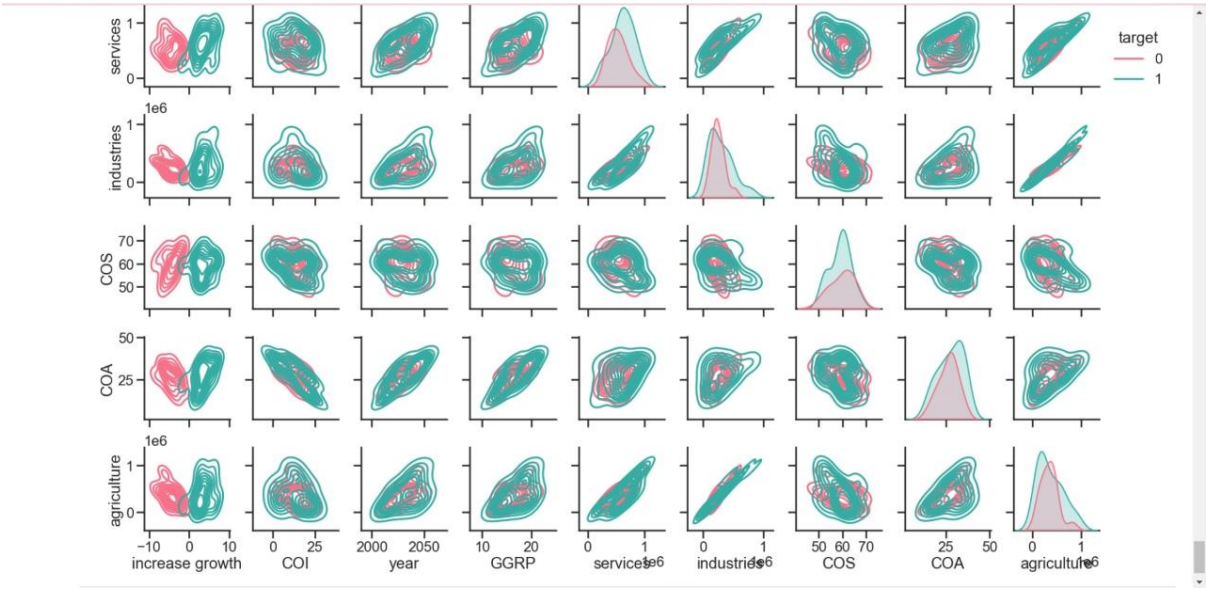


Fig .3.3.6 TICKS GRAPH(PAIR PLOT)

```
In [176…
sns.displot(df['GGRP'],bins=10,color='green',label='KDE')
plt.legend()
plt.gcf().set_size_inches(12,5)
```

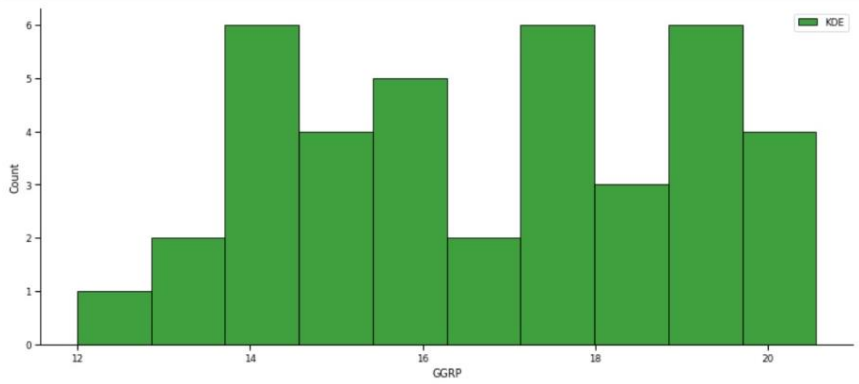


Fig .3.3.7: DISPLOT

```
In [177…
sns.violinplot(data=df,x='target',y='GGRP')
```

```
Out[177…
<AxesSubplot:xlabel='target', ylabel='GGRP'>
```

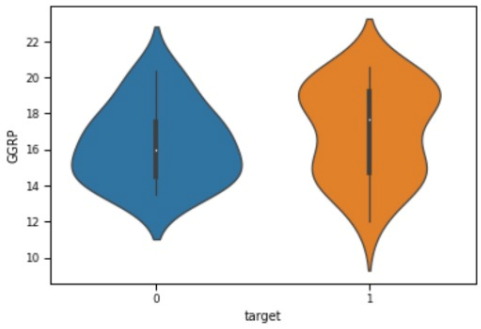


Fig .3.3.8: VOILIN PLOT

4.METHODOLOGY

4.1. MODEL DESCRIPTION

In [155…

```
import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.ensemble import RandomForestClassifier
from sklearn import metrics
import seaborn as sn
import matplotlib.pyplot as p
import matplotlib.pyplot as plt
import seaborn as sns
%matplotlib inline
import numpy as np
from numpy import math
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LinearRegression
from sklearn.metrics import r2_score
from sklearn.metrics import mean_squared_error
import matplotlib.pyplot as plt
import seaborn as sns
%matplotlib inline
```

In [156…

```
data_scaled.head()
```

Out[156…

	0	1	2	3	4	5	6	7	8	9
0	-1.688194	-1.283841	-1.040015	-1.921745	-2.012674	-2.265684	-2.045899	1.924965	0.156393	0.790569
1	-1.599342	-0.957113	-1.109625	-1.632743	-1.166557	-2.166566	-0.640595	0.517334	-0.061440	0.790569
2	-1.510490	-1.067904	-1.072393	-0.767781	-1.200402	-1.848324	-1.265175	0.204528	1.463390	-1.264911
3	-1.421637	-0.957951	-0.813364	-0.649612	-1.196171	-1.485358	-1.109030	0.830141	0.374226	0.790569
4	-1.332785	-1.019325	-0.599586	-0.073184	-1.416162	-1.087486	-1.733610	1.142948	1.681223	0.790569

ECONOMY OF TELANGANA FROM DIFFERENT SECTORS

In [158…

```
df = pd.read_csv("d.csv")
print (df)
```

```
    year  agriculture  industries  services   GGRP  \
0   2012        76123      104218    209540  12.00
1   2013       150200       92458    265878  14.00
2   2014       125081       98748    434494  13.92
3   2015       150010      142509    457530  13.93
4   2016       136095      178625    569899  13.41
5   2017       144803      222031    598520  13.49
6   2018       176107      185890    616374  14.76
7   2019       230424      125456    315256  14.25
8   2020       325123      312522    658123  14.58
9   2021       450222      325456    752963  14.25
10  2022       545486      456963    754963  14.47
11  2023       325123      252156    645856  15.47
12  2024       325478      212123    445456  15.47
13  2025       125456      123342    345587  15.68
14  2026       454222      345477    558647  15.47
15  2027       214569      212547    345798  15.98
16  2028       125456      121547    314547  15.34
17  2029       456321      314214    478458  16.58
18  2030       125693      114458    254478  16.47
```

```
    year  agriculture  industries  services   GGRP  \
0   2012        76123      104218    209540  12.00
1   2013       150200       92458    265878  14.00
2   2014       125081       98748    434494  13.92
3   2015       150010      142509    457530  13.93
4   2016       136095      178625    569899  13.41
5   2017       144803      222031    598520  13.49
6   2018       176107      185890    616374  14.76
7   2019       230424      125456    315256  14.25
8   2020       325123      312522    658123  14.58
9   2021       450222      325456    752963  14.25
10  2022       545486      456963    754963  14.47
11  2023       325123      252156    645856  15.47
12  2024       325478      212123    445456  15.47
13  2025       125456      123342    345587  15.68
14  2026       454222      345477    558647  15.47
15  2027       214569      212547    345798  15.98
16  2028       125456      121547    314547  15.34
17  2029       456321      314214    478458  16.58
18  2030       125693      114458    254478  16.47
19  2031       325489      214578    547987  17.45
20  2032       456189      347458    614789  14.68
21  2033       345666      214547    612478  17.15
22  2034       615235      412457    812487  17.59
23  2035       456525      214657    721587  17.56
24  2036       232158      121548    512478  17.98
25  2037       154236      125478    612478  17.78
26  2038       752963      421547    824145  18.57
27  2039       815856      521478    921457  18.54
28  2040       641523      512478    725458  18.78
29  2041       915236      712687    947125  18.98
```

	increased GSDP growth(crores)	COA	COI	COS	target	increase growth
0	552854	14	26	60	1	2.3
1	577902	23	17	59	1	-1.2
2	658325	19	15	66	0	-1.6
3	750050	20	19	61	1	2.6
4	850596	16	21	67	1	3.2
5	965355	15	23	62	0	-3.2
6	978373	18	19	63	1	2.1
7	945231	20	20	60	0	-4.5
8	934634	18	20	62	1	2.0
9	934653	30	20	50	0	-6.0
10	934876	25	22	53	1	3.6
11	1012343	26	14	60	1	2.0
12	1023432	29	14	57	0	-5.6
13	1043432	30	16	54	1	2.3
14	943234	33	9	58	1	2.6
15	1043634	26	15	59	0	-3.0
16	954345	22	14	64	0	-5.3
17	1123432	31	4	65	0	-6.0
18	1520236	35	3	62	1	6.0
19	1134876	28	11	61	0	-4.0
20	912754	23	14	63	0	-3.0
21	1134876	28	5	67	0	-2.3
22	1256345	25	16	59	1	6.0
23	1298689	27	18	55	0	-4.0
24	1287957	26	23	51	1	3.0
25	1276987	21	20	59	1	4.0
26	1289565	32	16	52	1	3.0
27	1252564	34	13	53	0	-6.0
28	1376965	29	14	57	1	4.0
29	1356345	35	12	53	1	3.0
30	1345653	33	8	59	1	4.0

RANDOM FOREST

160…
```
X = df[['GGRP','target','COS','COI','COA']]
y = df['target']
X_train,X_test,y_train,y_test = train_test_split(X,y,test_size=0.25,random_state=0)
```

161…
```
#Loading the data
x = data_scaled.iloc[:,0:9]
y = data_scaled.iloc[:,9:10]
```

162…
```
clf = RandomForestClassifier(n_estimators=20)
clf.fit(X_train,y_train)
```

162…
```
RandomForestClassifier(n_estimators=20)
```

163…
```
y_pred=clf.predict(X_test)
```

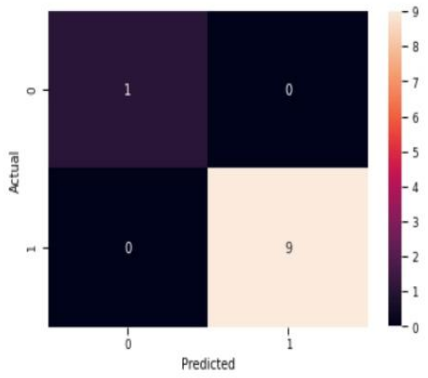
In [164…

```
#generate confusion matrix
print('Accuracy: ', 100 * metrics.accuracy_score(y_test, y_pred))
group_names = ['True Negative','False Positive','False Negative','TruePositive']
labels = [f'{v1}' for v1 in zip(group_names)]
confusion_matrix = pd.crosstab(y_test, y_pred, rownames=['Actual'], colnames=['Predicted'])
sn.heatmap(confusion_matrix, annot=True)
```

```
Accuracy:  100.0
```

Out[164…

```
<AxesSubplot:xlabel='Predicted', ylabel='Actual'>
```



In [165…

```
print (X_test)
```

```
     GGRP  target  COS  COI  COA
4   13.41       1   67   21   16
28  18.78       1   57   14   29
29  18.98       1   53   12   35
33  19.47       1   63    5   32
34  19.58       1   59    3   38
25  17.78       1   59   20   21
10  14.47       1   53   22   25
22  17.59       1   59   16   25
11  15.47       1   60   14   26
27  18.54       0   53   13   34
```

In [166…

```
print(y_pred)
```

```
[1 1 1 1 1 1 1 1 1 0]
```

In [167…

```
from sklearn import metrics

print('Mean Absolute Error:', metrics.mean_absolute_error(y_test, y_pred))
print('Mean Squared Error:', metrics.mean_squared_error(y_test, y_pred))
print('Root Mean Squared Error:', np.sqrt(metrics.mean_squared_error(y_test, y_pred)))
```

```
Mean Absolute Error: 0.0
Mean Squared Error: 0.0
Root Mean Squared Error: 0.0
```

SVM(RBF)

In [168…
```
from sklearn.svm import SVC
svc = SVC(kernel = 'rbf')
svc.fit(X_train,y_train)
```

Out[168…
```
SVC()
```

In [169…
```
from sklearn.metrics import confusion_matrix
y_pred_RSVM = svc.predict(X_test)
cm = confusion_matrix(y_test,y_pred_RSVM)
print('confusion matrix:\n',cm)
```

```
confusion matrix:
 [[0 1]
 [0 9]]
```

In [170…
```
from sklearn.metrics import accuracy_score
sva2 = accuracy_score(y_test,y_pred_RSVM)
print('accuracy score = ',sva2)
```

```
accuracy score =  0.9
```

In [171…
```
from sklearn.preprocessing import StandardScaler
sc = StandardScaler()
X_train = sc.fit_transform(X_train)
X_test = sc.transform(X_test)
```

LOGISTIC REGRESSION

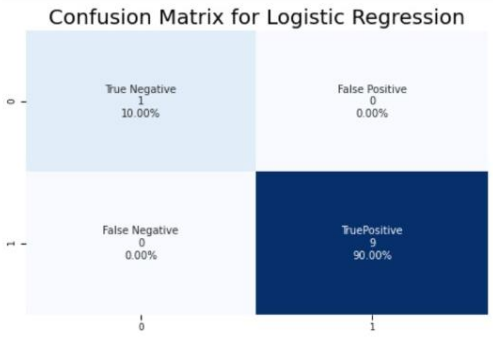
In [171…
```
from sklearn.preprocessing import StandardScaler
sc = StandardScaler()
X_train = sc.fit_transform(X_train)
X_test = sc.transform(X_test)
```

In [172…
```
from sklearn.linear_model import LogisticRegression
lr = LogisticRegression()
lr.fit(X_train,y_train)
```

Out[172…
```
LogisticRegression()
```

In [173…
```
from sklearn.metrics import confusion_matrix
y_pred_log = lr.predict(X_test)
cm = confusion_matrix(y_test,y_pred_log)
print('confusion matrix:\n',cm)
#generate confusion matrix
cm = confusion_matrix(y_test, y_pred)
group_names = ['True Negative','False Positive','False Negative','TruePositive']
group_counts = ['{0:0.0f}'.format(value) for value in cm.flatten()]
group_percentages = ['{0:.2%}'.format(value) for value in cm.flatten()/np.sum(cm)]
labels = [f'{v1}\n{v2}\n{v3}' for v1, v2, v3 in zip(group_names,group_counts,group_percentages)]
labels = np.asarray(labels).reshape(2,2)
sns.heatmap(cm, annot = labels, fmt = '', cmap='Blues', cbar = False)
plt.gcf().set_size_inches(8,5)
plt.title('Confusion Matrix for Logistic Regression', fontsize = 20)
plt.show()
```

```
In [174…
#generate confusion matrix
cm = confusion_matrix(y_test, y_pred_log)
group_names = ['True Negative','False Positive','False Negative','TruePositive']
group_counts = ['{0:0.0f}'.format(value) for value in cm.flatten()]
group_percentages = ['{0:.2%}'.format(value) for value in cm.flatten()/np.sum(cm)]
labels = [f'{v1}\n{v2}\n{v3}' for v1, v2, v3 in zip(group_names,group_counts,group_percentages)]
labels = np.asarray(labels).reshape(2,2)
sns.heatmap(cm, annot = labels, fmt = '', cmap='Blues', cbar = False)
plt.gcf().set_size_inches(8,5)
plt.title('Confusion Matrix for Logistic Regression', fontsize = 20)
plt.show()
```



4.2.MODEL ARCHITECTURE

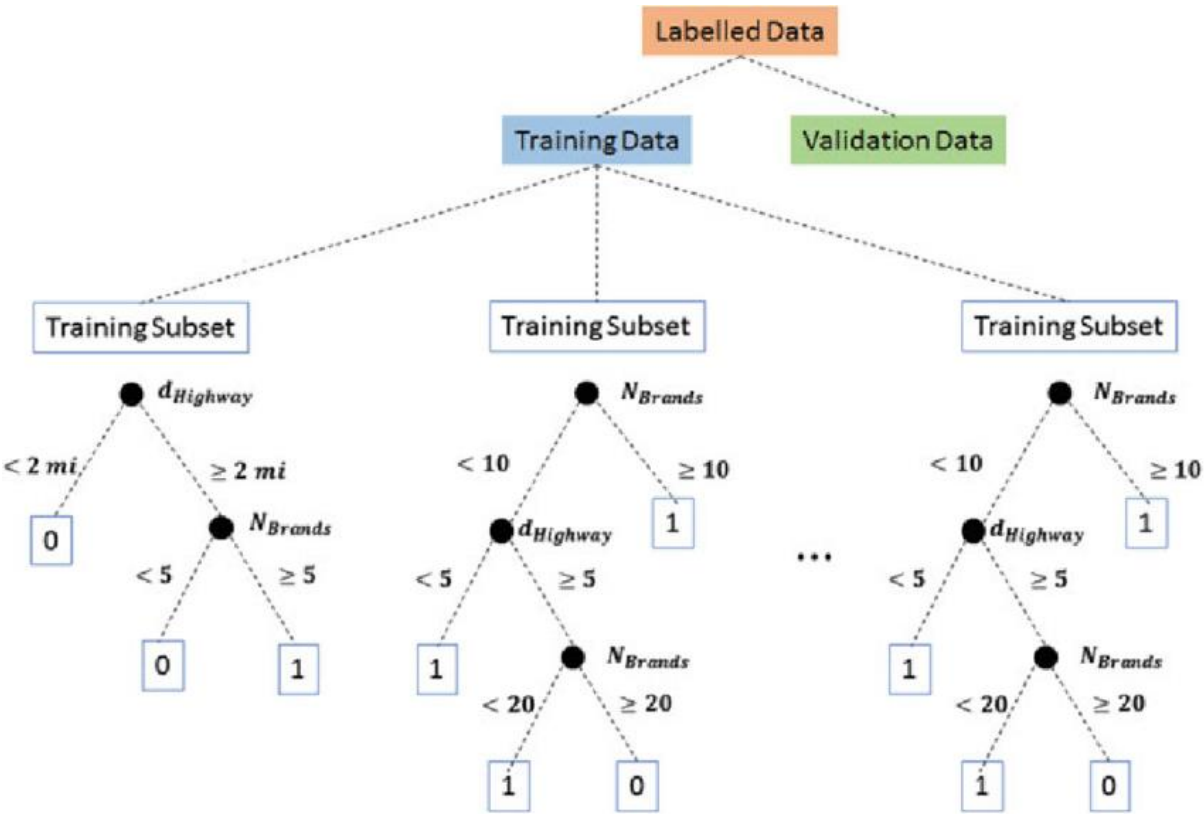


Fig 4.2.1

We used random forest as shown in the fig 4.2.1 ,kernel(rbf),logistic regression for our dataset.We have multiple decision trees in our dataset so we used random forest as it is for both classification and regression.logistic regression is best method for classification and we have three classifications in our dataset. We used SVM kernel rbf as it the function of kernel is to take data as input and transform it into the required form. Different SVM algorithms use different types of kernel functions. These functions can be different types and we used kernel (rbf).

4.2 SOFTWARE DESCRIPTION

a. PYTHON - Python is an interpreted, high-level, general-purpose programming language. Python's design philosophy emphasizes code readability with its notable use of significant whitespace. Its language constructs and object-oriented approach aim to help programmers write clear, logical code for small and large-scale projects. Python is dynamically typed AND supports multiple programming paradigms, including procedural, object-oriented, and functional programming.

b. GOOGLE COLAB – Colaboratory or “Colab” for short, is a product from Google Research. Colab allows anybody to write and execute arbitrary python code through the browser, and is especially well suited to machine learning, data analysis and education.

5.RESULTS AND DISCUSSIONS

We get the accuaracy of the economy whether it is increased or not.By using the target values we get to know the accurate value. We have used all the techniques and we got the same accuracy for every method.the accuracy is 1.0 for every method. We get to know that random forest is good to use rather than decision tree as it is the combination of multiple decision trees.logistic regression gives a very accurate common matrix which is used for every method, logistic regression is aloso used for classification as it is one of the best method so far.svm is also used for the same purpose.

6. CONCLUSION AND FUTURE SCOPE

CONCLUSION

The analysis in this report establishes an unambiguous impact of AI on economic growth in India. Both the econometric estimation as well as the case study analysis finds AI applications spread across multiple sectors of the Indian economy. While diffusion is still limited, there is adequate evidence establishing AI-led increase in firm efficiencies. In a recent business survey conducted by IDC, while 77 percent respondents agreed that AI is an instrument to improve organisational efficiency, only one third among them had adopted AI. The study estimates these firms to increase their competitiveness by 2.3 times by 2021. Impacts in the future, the report suggests, are realisable on account of firms increasing their investments in research, developing in house capabilities of developers and data engineers, building data governance practices, etc.

The econometric exercise in this study examines the impact of AI on firm-level efficiency in India. AI is measured as investments in software, the closest approximation to AI at the firm level, in the absence of other direct measures on AI. We posit that AI determines firm-level total factor productivity (TFP), a residual variable that determines aspects of growth that are not determined by labour and capital. This setup directly follows from the argument that AI is a General-Purpose Technology and that it plays a much broader role than ‘factors of production’, affecting different aspects of a firm’s organizational, administrative and financial coordination operations. Total Factor Productivity is, therefore, the most appropriate measure to capture the effects of AI on economic growth.

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