# MACHINE LEARNING APPROACH FOR GDP ANALYSIS

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**Abstract -:** *In this project we plan to implement a system that will help in GDP prediction. By manually it is very hard and time consuming work to analyze data of whole country's economical progress based on total production in country and investments. Machine Learning technology can help in this work and can give very high level output. As India is a vast country, there is a lot of Unemployment, Illiteracy Rate, Political disputes and overpopulation, which results in altering our GDP rate and economic growth. We are implementing an application which will predict future economic condition of our country. We are using neural network, regression tree, random forest prediction, bootstrap, boosting algorithm for prediction. The state of economy of the country is determined by various factors, each factors lead to assignment of large amount of data contributing to large size of database ,which needs to be analyzed and formulated to find out the GDP which finally contributes to the prediction of the economy of the country. The machine learning implements various algorithms and methodologies to calculate and predict the economic conditions from the past data collections as well data from the present scenarios. It is very critical to understand the importance of this project as it contributes to the employment, purchasing power and development of the country.*

**KeyWords:**GDP prediction, Machine Learning, Data Analysis, Time Series Forecasting

## 1.INTRODUCTION

GDP (Gross Domestic Production) is clearly supported the ample completely different aspects of sectors and fields running in country. abundant of the industries square measure running at the same time and varied square measure smitten by one another. to be told and analyze this rate of gross domestic product we want to be told regarding all of those sectors and fields. This needed vast knowledge with depth in values and of long span of your time. Ups and downs in each section can increase the standard of our analysis and far variety of attributes can facilitate to understand the deep information of effects of varied sectors on gross domestic product. once more to investigate this Brobdingnagian knowledge it's terribly tough to use human power because it takes vast variety of calculations and deep learning with intention to urge satisfactory result. once more it'll consume vast time span.

Here we tend to square measure approaching computing for this work. New technologies square measure upgrading and serving to in mean of handling varied deep works. Machine Learning and Deep Learning fields of computing can facilitate to perform this task. varied algorithms square measure already developed and being improved with characteristics of their own. As per our demand we tend to square measure getting to select algorithms in our analysis based mostly work.

## 2. PROBLEM STATEMENT

Currently there is no automatic system that will predict GDP of whole country. There experts appointed by Government to study the information regarding multiple sectors of financial income providers. Currently it is critical work to analyze every field of industry running in country. Huge human work power need for this work. Again it doesn't guarantee accuracy of work results and output.

GDP which is very most important index for any country in terms of planning of various things. Wrong or miss leading decision can effect on GDP index. It is hard to think in and cover multiple aspects at same time for human.

Objectives:

- **GDP rate-**"The total market value of all final goods and services produced during a given time period within a nation's domestic borders is called GDP of that country."GDP = Consumption (C) + Investment (I) + Government Spending + (Exports - Imports) Components of GDP Or NET EXPORTS.

- **Sectors affected. -** there are three main sectors in India: primary, secondary, tertiary
- **PPP- purchasing power parity-**Purchasing power parity is defined as the number of units of a country's currency required to buy the same amount of goods

and services in the domestic market as one dollar would buy in the US.

## 2.1 LITERATURE REVIEW

[1] Author- **Sung-Bong Jang**
A Design of a Tax Prediction System based on Artificial Neural Network Sung-Bong Jang 2019 Using this system, the people who is responsible for tax prediction can get much help when they need to predict. Especially, if the experts leave the organization, the new comers can continue the task of prediction without stopping.

[2]Author- **Emmilya Umma Aziza Gaffar, IrwanGani**
A Heuristic Network for Predicting the Percentage of Gross Domestic Product Distribution Emmilya Umma Aziza Gaffar, IrwanGani 2018 Thus, the GDP growth in 2017 variables includes (1) agriculture, livestock, forestry, fishery of 0.0471, (2) Mining & Quarrying of 1.2493, (3) Manufacturing Industry of 0.0006, (4) Electricity, Gas, Water supply of 0.0961, (5) Construction of 0.0076, (6) Trade, Hotel, Restaurant of 0.1255, (7) Transport & Communication of 0.1423, (8) Finance, Real Estate & Business Services of 0.1673, and (9) Services of 0.0195 have been achieved. In other words, the percentage of GDP distribution in 2017 shows 0.21% growth has been proven

[3]Author-**Andry Alamsyah1, Muhammad Fahmi Permana2**
Artificial Neural Network for Predicting Indonesian Economic Growth Using Macroeconomics Indicators Andry Alamsyah1, Muhammad Fahmi Permana2 2018 We found that in this research based on the experiment, the best ANN architecture model or configuration is 5-11-1 (2N+1). With 5-11-1 architecture, we obtained a good fit data train model. The error in training is 0.001537 with 95.81% forecast accuracy. Based on the research, we obtained the prediction value of the three following years with the final result of GDP in 2019, 2020, and 2021 are 11,625,084, 12,264,574, and 12,939,229 expressed in billions of rupiah

[4]Author-**Hong-XuyenThi Ho**
Forecasting of CO2 Emissions, Renewable Energy Consumption and Economic Growth in Vietnam Using Grey Models Hong-XuyenThi Ho 2018 This paper forecasted the CO2 emissions, renewable energy consumption and GDP in Vietnam by implementing the grey forecasting model GM(1,1) and DGM(1,1) based on the annual data from 2010 to 2014. The results show that the performance of DGM(1,1) model is better than GM(11) model.

[5]Author-**Joseph C. Chen1, Xiaoyun (Angela) Wang1**
Development of Fuzzy Logic and Genetic Fuzzy Commodity Price Prediction Systems – An Industrial Case Study Joseph C. Chen1, Xiaoyun (Angela) Wang1 2017 The predicted 434 Proceedings of the 2017 IEEE IEEM
results using GF system match with the actual NR prices well. The prediction error is reduced to 13.4% from 19.8% by integrating Generic Algorithm to refine the fuzzy rule bank as proposed.

## 2.2PROPOSED SYSTEM

We are here proposing system that will be based on **Decision Tree**, **Random Forest** and **Boot Strap** algorithms and will forecast the **GDP** of Nation.
We will use data of Agriculture Production, Manufacturing Industry and Service Industry. These are the sectors of main stream that are responsible for the effect on GDP forecasting. Also, we will use Purchasing Power Parity as input element for better prediction of GDP of a nation. We will use multiple algorithms for increasing and improvement of accuracy.

Proposed System:
Advantages:
- It would help in making financial decisions and investments decisions with much ease.
- It would help in career guidance indirectly or directly.
- It would be of low cost and highly user friendly.
- It would not require much high maintenance until the parameters change.
Disadvantages:
- Calculations and the data assessment need to be altered in case of change in any single parameter.
- Can't be 100 accurate due to any sudden change or unfortunate incident.
- High space complexity.
- In accurate dataset.
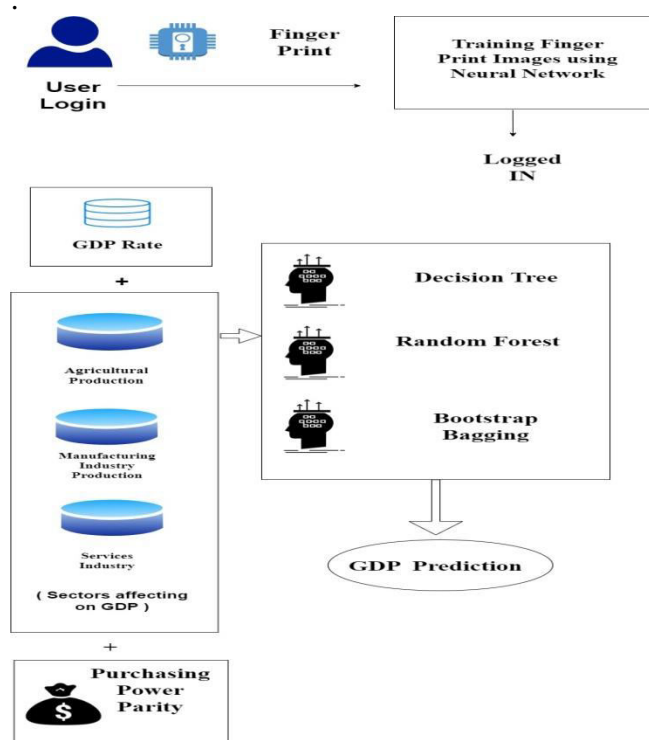- Security.

## 2.3SYSTEM ARCHITECTURE

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**Fig -1**: **System Architecture**

## 3. CONCLUSIONS

Here we concluded that machine learning which is all new and latest technology which is still in research phase is able to help us to learn and make Forecasting of huge data in terms of time series forecasting. Various Machine Leaning algorithms are build and implemented with specific special and dedicated characteristics and properties. For our research Decision Tree , Random Forest and Bootstrap Bagging are provenly and effectively satisfying the work of predicting future movement of GDP of country with given data.

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[4] **A Heuristic Network for Predicting the Percentage of Gross Domestic Product Distribution**2018 **Emmilya Umma Aziza Gaffar ; IrwanGani ; Haviluddin ; Achmad Fanany OnnilitaGaffar ; Rayner Alfred**
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[7] **Forecasting of CO2 Emissions, Renewable Energy Consumption and Economic Growth in Vietnam Using Grey Models**
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[10] **Operation Expenditure Forecasting Model of Regional Power Grid Based on LS-SVM**2018**Yujie Xu ; Yue Lv ; Heng Zhang ; Yan Zheng ; ShujunZhai**
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