Chronic kidney disease prediction using Watson Auto AI

PROJECT DOCUMENTATION

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INTRODUCTION

Overview:

The Project ``Chronic kidney disease prediction using Watson Auto AI" predicts that if a person has Chronic kidney disease so that the patient can be treated. The project is based on IBM provided features. It consists of Watson studio Auto AI expermentwhic uses different pipelines and uses the best one.The prediction is shown using Node Red app dashboard.

The Chronic kidney disease condition depends on many factors such as BP, Sugar, other health conditions. An Auto AI Experiment considers these parameters and apply the best machine learning algorithm to get the result process of geng the prediction if a person is having the diseases consisting of authentication which uses service credentials aer the whole process the person can better treatment. Thus machine learning algorithms can help in the medical department.

Purpose:

In Health Sector hospitals have to give treatment for the people, having information if a person might have that disease will be a help for the doctors so they can give treatment accordingly so machine learning can be a tool for the future.

Today, machine learning is helping to streamline administrative processes in hospitals, map and treat infectious diseases and personalize medical treatments.

It can also be used to demonstrate and educate patients on potential disease pathways and outcomes given different treatments.

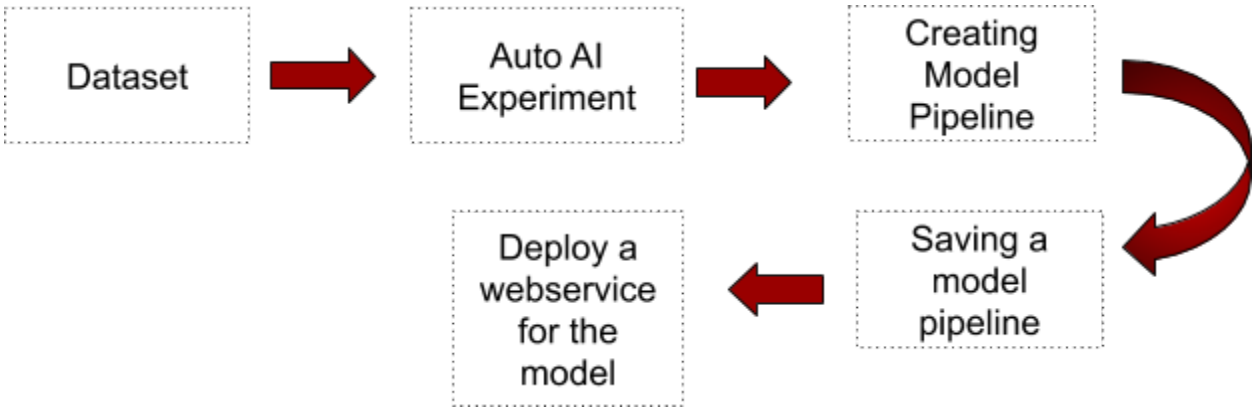
LITERATURE SURVEY

Existing Problem: Chronic Kidney Disease (CKD) is a major medical problem and can be cured if treated in the early stages. Usually, people are not aware that medical tests we take for different purposes could contain valuable information concerning kidney diseases. Consequently, attributes of various medical tests are investigated to distinguish which attributes may contain helpful information about the disease.The information says that it helps us to measure the severity of the problem, the predicted survival of the patient after the illness, the pattern of the disease
and work for curing the disease.

Proposed Solution: In this proposed system we are able to identify the patients with disease. Once any person gets kidney disease, they may suffer from the disease which may decrease their working capability as well as living quality. Our aim is to predict patients with chronic kidney failure (ckd) disease and patients who do not (not-ckd) suffer from the disease. So for that we are building a Machine Learning model to predict the compressive strength of concrete using IBM Watson AutoAI Machine Learning Service. The model is deployed on IBM cloud to get a scoring end point which can be used as API in mobile app or web app building. We are developing a web application which is built using node red service. We make use of the scoring end point to give user input values to the deployed model. The model prediction is then showcased on User Interface.

THEORETICAL ANALYSIS

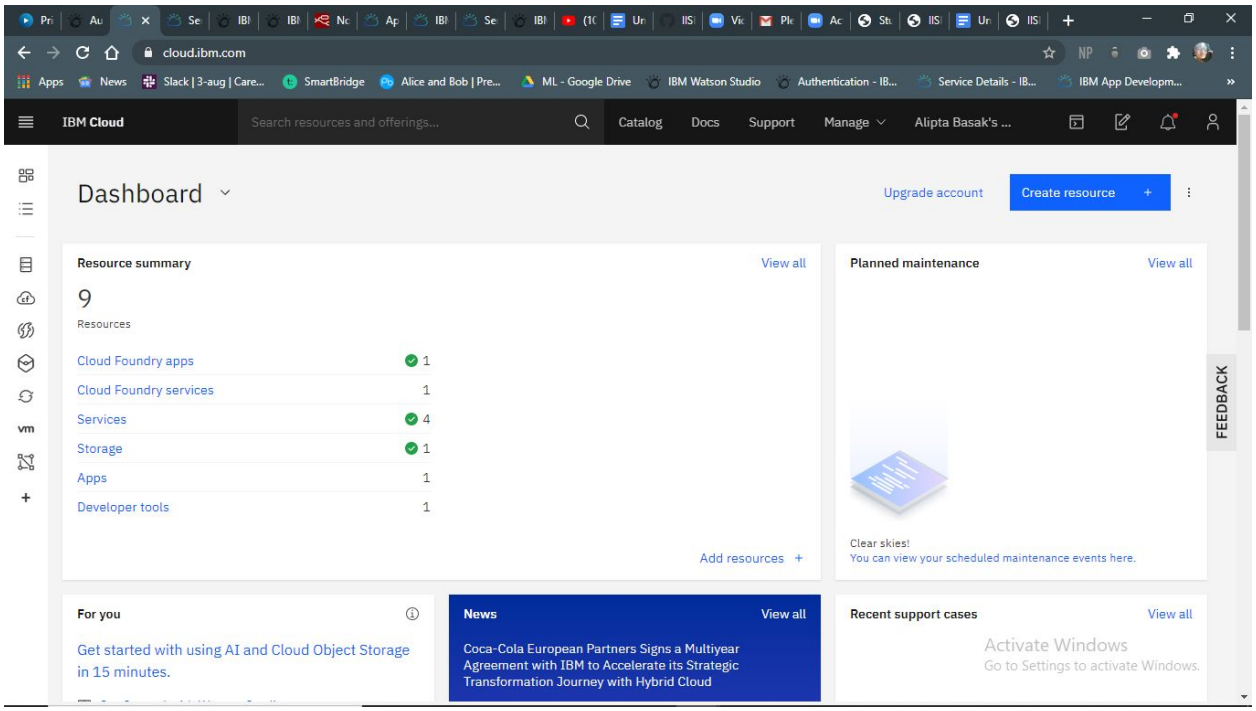
Block Diagram:

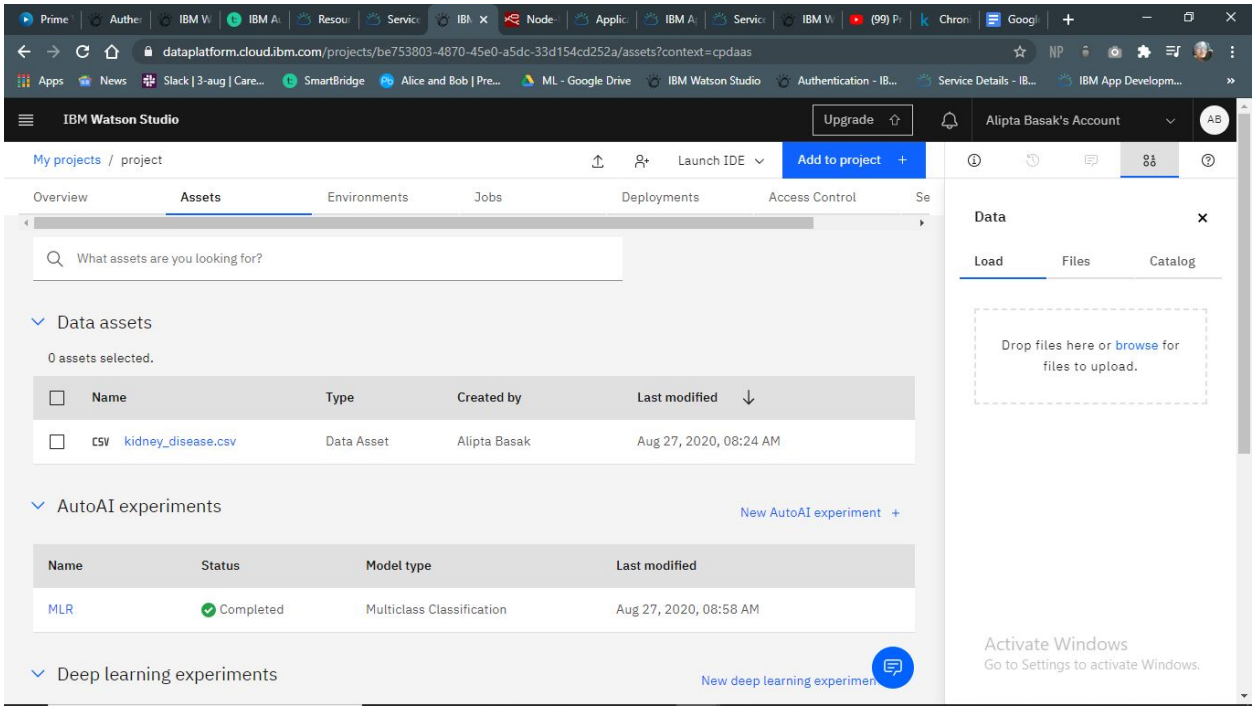


In Machine Learning according to these steps machine can predict the result also one more benefit is that when a large data is present, it's not possible for a human to analysis the huge data. So, it's preferable that a machine uses algorithms to analysis these data and predict the future data which can help in different ways.
The project uses Watson Auto AI Experiment Service.The project used XGB Classifier Algorithm to predict if the person has kidney disease Auto AI Experiment implements 8 different pipeline and uses the best one. Also, a cloud object storage service needed to store the dataset and machine learning service instance. Node Red App service is required to get authen can easily and get predicted kidney disease NodeRed Dashboard or building UI Applicon.

Software Designing:

This project can be implemented using IBM CloudServices on a PC. A machine learning service has to create and also a Watson studio, cloud storage service instance to store a dataset. A Jupyter notebook can be added to the project & we have to write code to get authenticated which include geng API key , instance ID,pre token etc.



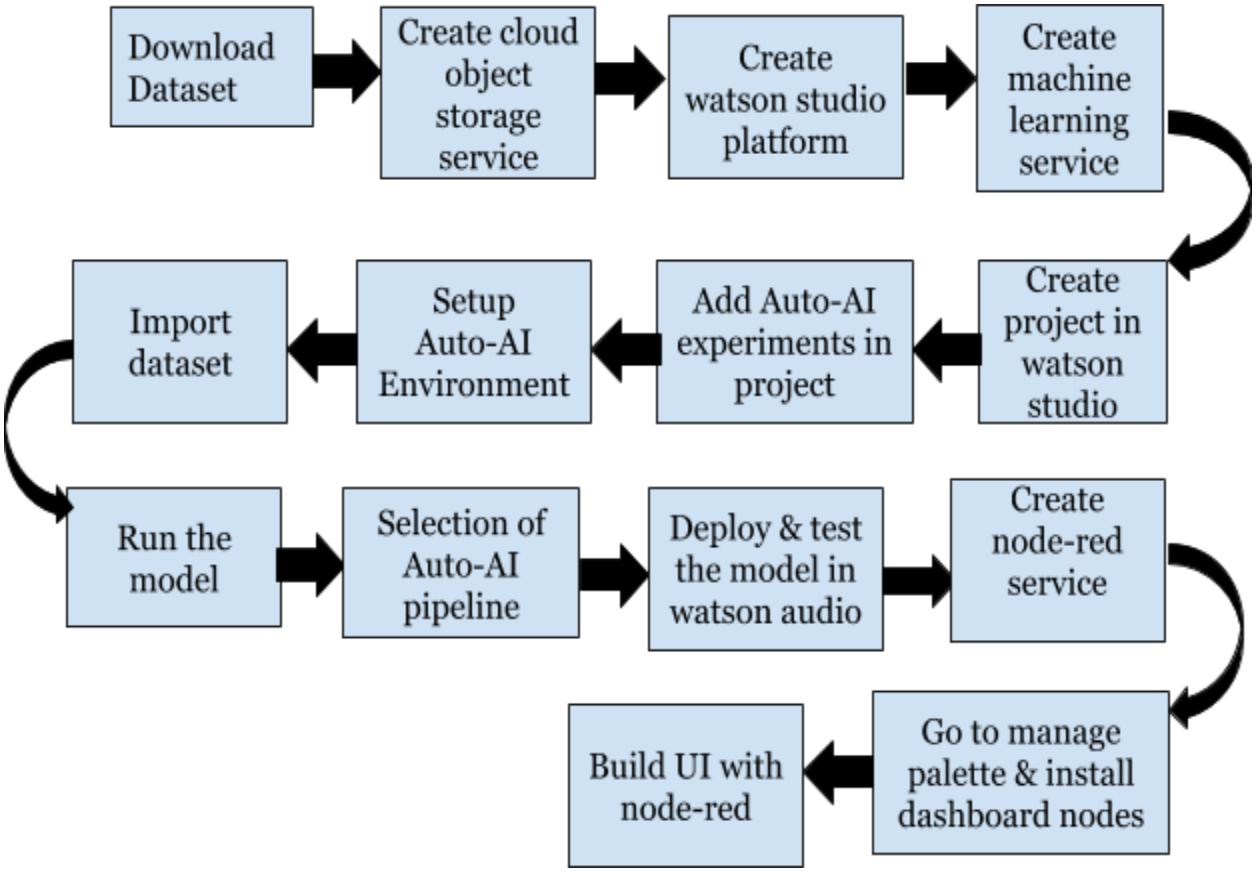


EXPERIMENTAL INVESTIGATION:

There are six steps in experimental investigation of a general project:

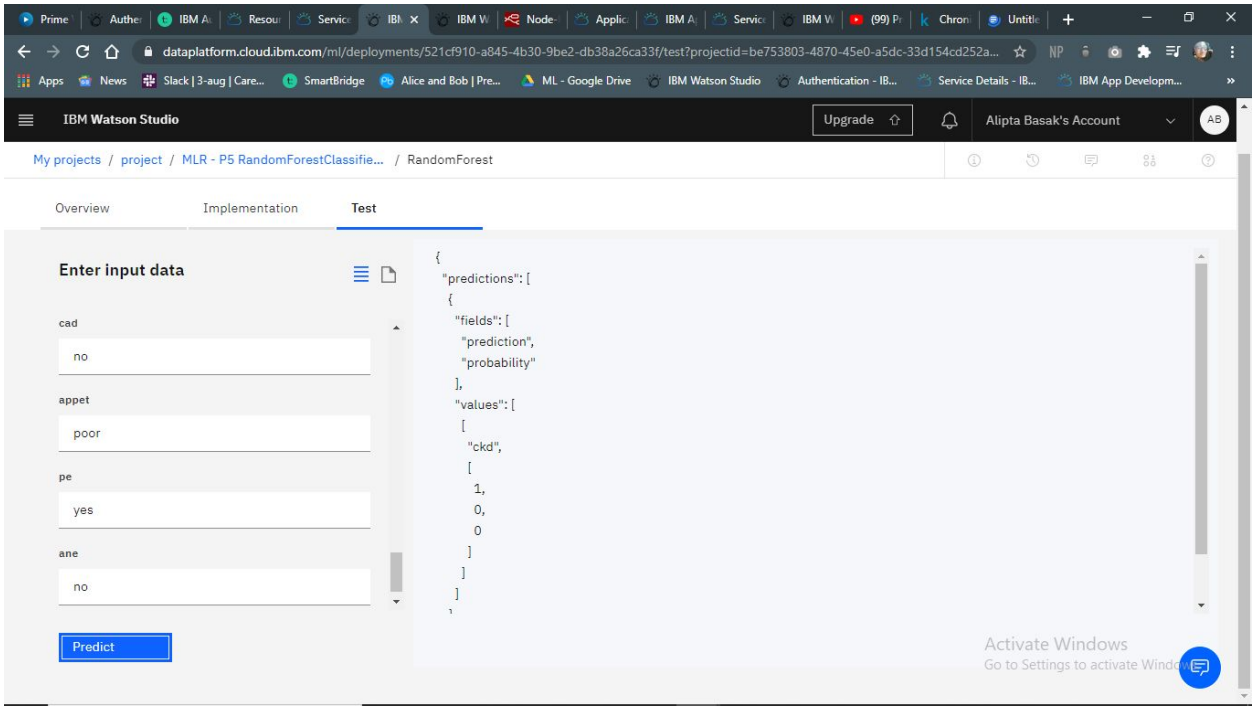
1. Choose a Project Idea
2. Conduct Background Research
3. Compose a Hypothesis
4. Design your Experiment
5. Collect Data
6. Analyse Data and Draw Conclusions

FLOW CHART:



RESULT:

After the testing of the project as given below we create a node RED UI. The ui predicts whether he or she was affected by chronic kidney disease or not. The Node Red UI provides us a simple way to get the result of the Auto AI Experiment. The Node Red User Interface can be a web application to help the people to be aware of the health situation.



ADVANTAGES & DISADVANTAGES:

Advantages

1. The prediction gives good insights about the risk of kidney disease in the body.
2. With the help of this UI, Efficient prediction of kidney disease that can be done in an easy way.

Disadvantages

1. The model may need to be re-trained in case of decrementation of patients.
2. Many times we do face a situation where we find an imbalance in data which leads to poor accuracy of models.

APPLICATION:

Using The Auto AI Experiment, we can build and deploy a machine learning model with sophisticated training features and no coding. The tool does most of the work for us. In this project , the UI model building can help people a lot.
If we use machine learning then we can predict if a person may get the diseases in future then we can give treatment accordingly by the help of machine learning we can save the lives of the people.
The Node Red service provides us a better user UI with the help of anyone who can deploy machine learning models and get predicted results.

CONCLUSION:

In this project we have discussed the direct impact of machine learning on health systems, but have not explored the indirect effects of machine learning in basic sciences, drug discovery and other enabling technologies on health systems. Prediction is inherently difficult: technology modifies its environment and the environment then generates further opportunities and new constraints for the technology. Ultimately, general purpose intelligence will be possible, as a version of it already exists in human brains. However, an extrapolation of existing techniques to re-create general intelligence artificially appears unlikely in the next 5-10 years. However, what is immediately plausible, and should therefore be planned for, is a federation of ‘narrow’ and ‘targeted’ machine learning systems that are able to tackle core information processing problems across a health system by augmenting capabilities of human decision makers, and in so doing establishing new standards of effectiveness and efficiency in clinical and management operations. This is a significant opportunity for health system transformation as the cost of augmenting decision-making capabilities

across the health system is unlikely to be large. There is no other approach that offers such potential impact without commensurate scaling of cost. The fixed cost involved in developing machine learning solutions: the cost of research and development and of retooling a health system is considerable, but given the potential scalability, the rationale to invest is clear. An opportunity exists to seed growth in machine learning through the creation of high resolution clinical datasets and the necessary mechanisms for sharing of data and collaborative investigation to establish both efficacy and safety. What is currently missing in health systems is the leadership to do so. Whilst the issues raised are being actively discussed among the academic AI community, the academic AI community alone will not be able to solve them – it will require leadership from policy makers and the engagement of citizens, patients and clinicians. The fear of wholesale displacement of the health workforce by AI is overstated, but where fear is warranted is in considering the opportunity cost of not embracing AI, of continuing business as usual with piecemeal implementation of AI that does not realize its potential for transformation of health systems.

FUTURE SCOPE:

The solution can be improved for more heuristic analysis and can be further extended to predict more detailed requirements in future. These models will be more helpful to predict and analyse chronic kidney disease patients according to growing up of the populations in the world.

BIBLIOGRAPHY:

Source of the Dataset

https://www.kaggle.com/mansoordaku/ckdisease

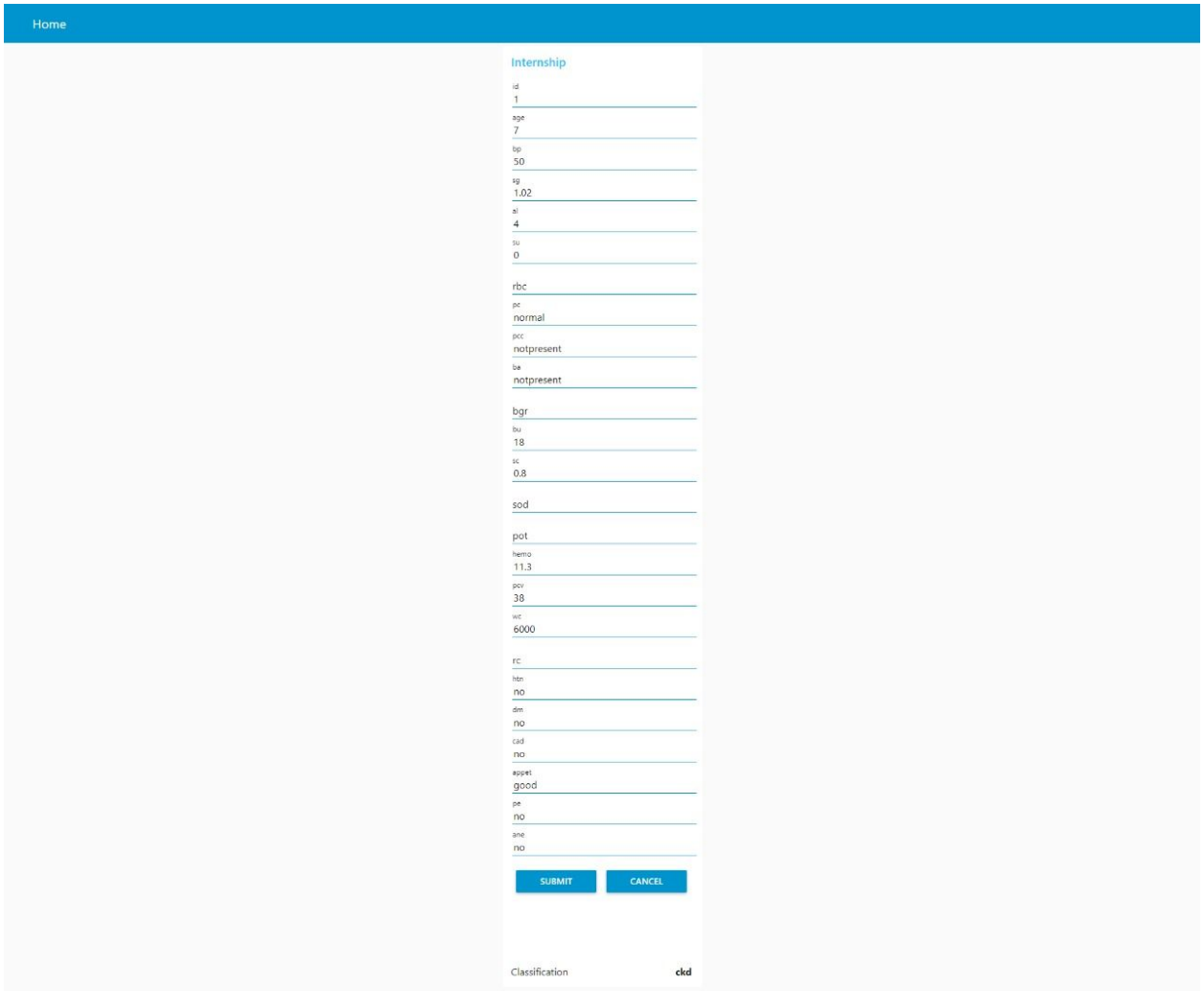
APPENDIX

Source Code:

The Json file of the Node-red UI can be found here →

https://drive.google.com/file/d/15iDYBFM13vaT6LUbu3yAm-gYHzdBdw6W/view?usp=drivesdk

UI Screenshot: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CANCEL
Classification
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