

# MedcareAI

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# Purpose

Our AI project helps automate checking medical bills by using machine learning predict the expenses of of medical healthcare. It takes in multiple inputs from the user such as Age, Gender, BMI, No of Children, Smoker, Charges, What Year and their CPI. From those factors, the AI predicts the medical expenses.

Healthcare can be very confusing and hard to understand. Expenses can also be very hard to understand. This project helps with clearing these issues and makes the user have a better experience with medical expenses and healthcare.

# Features Used in the Model

- Data Visualization to understand data trends
- Linear Regression model chosen based on the data analysis.
- Multiple datasets combined into one which includes patient demographics, health conditions and CPI for healthcare in order to get a well rounded prediction of the healthcare cost for a given person

# Methodology

Our general methodology was as follows

- First we broke up tasks in between the three of us.
- Rishi worked on frontend. Tejas worked on backend and Keane worked on the ML model.
- For the backend Tejas created a flask server and called an API model which was compressed as a pkl file. Then from a javascript frontend, that flask server was run and the model was utilized.
- Rishi worked on creating our dynamic frontend using typescript, through the react framework.
- Keane used jupyter notebook to create a linear regression model to predict the cost of healthcare based on several characteristics of a person.

# Insights from the analysis

The AI system predicts medical fees and expenses by analyzing data provided by the user, offering accurate cost estimates for various treatments and procedures. This helps patients and healthcare providers make better financial decisions ahead of time. Also, by using past data and predictive analytics, the system improves questions and concerns in medical billing and reduces financial surprises. It also helps with the budgeting process for healthcare providers, enabling better financial planning.

# Further Optimization

One of the tricky parts about creating an ML model is that you can rarely ever create a one size fits all model. There are so many factors that go into a prediction such as healthcare cost.

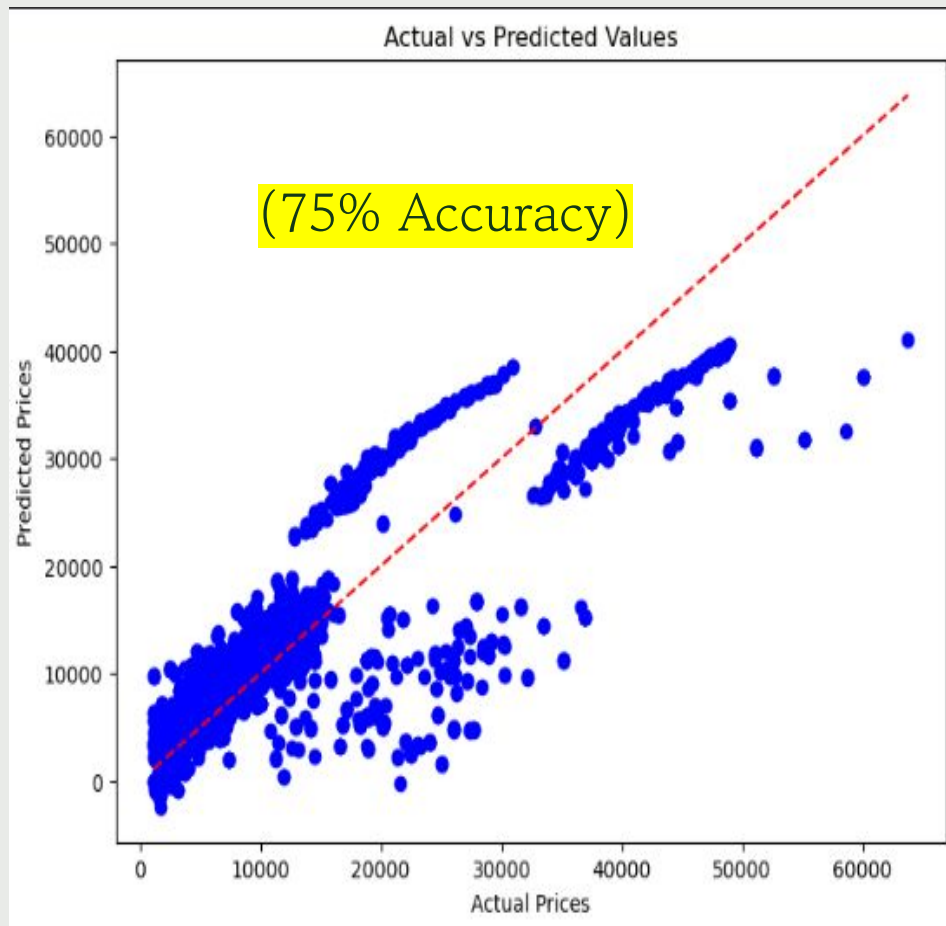
This is one of the challenges we faced while making this project. Combining multiple datasets to pass through to one model can be challenging.

Furthermore, the time constraints of this hackathon didn't allow us to train the model on as much data as would be ideal.

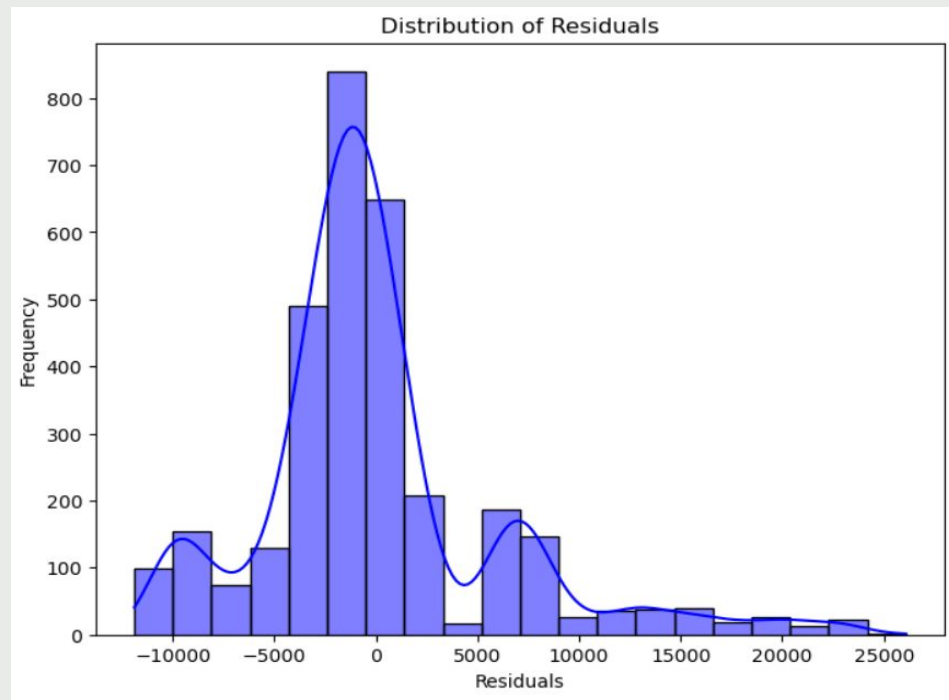
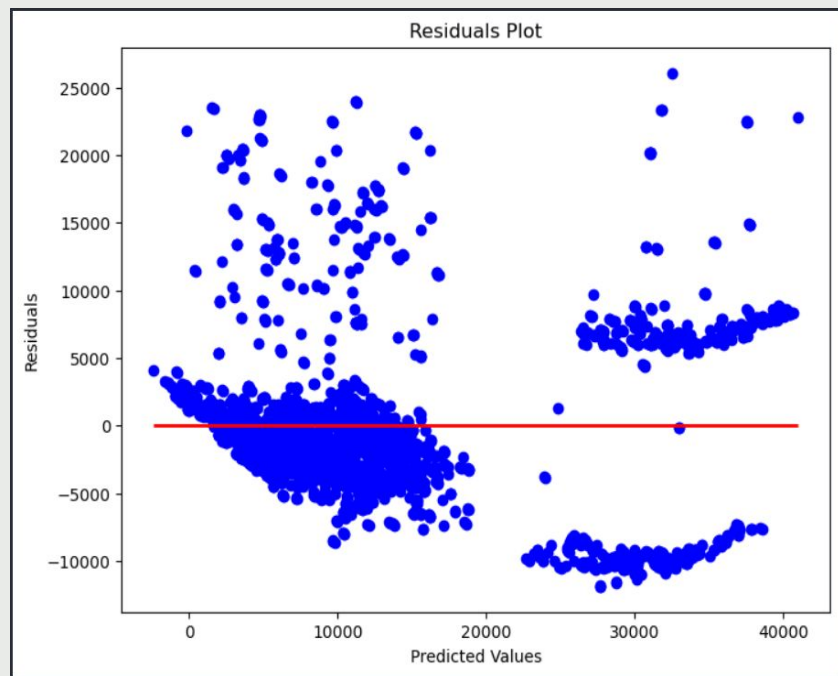
Further optimization of this project would include training on more specific data such as location and more detailed medical history.

Additionally we could train our model on larger datasets that have many more data points.

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# Residuals





Thank You!