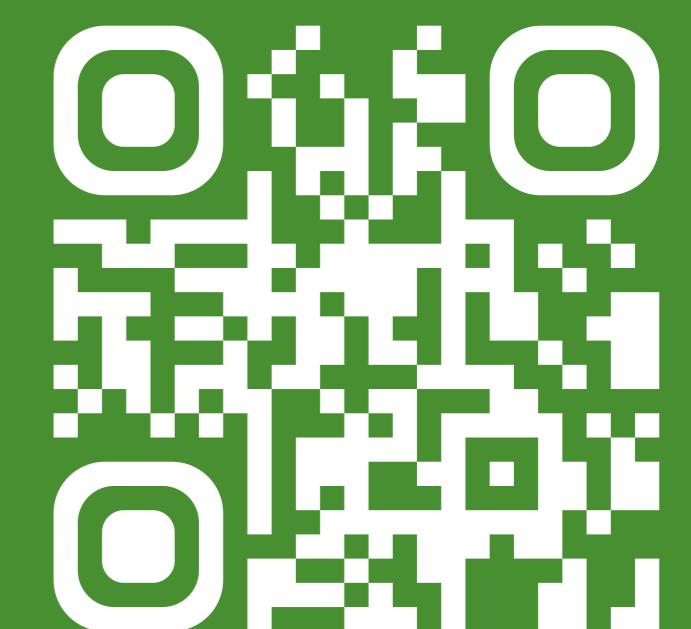


Chicago Urban Planning

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[Dashboard](#)

[Report](#)

1 Introduction

Chicago Urban Planning is a dashboard for the Chicago community areas greening exploration. It is meant to help **Urban Planners** to build parks where needed, and **Lay Users** to find the best community areas for living in Chicago based on their preferences.

2 Machine Learning Architecture

For our interactive task, we collected data about green areas (parks and green roofs), and diverse life quality metrics that characterize community areas and their inhabitants.

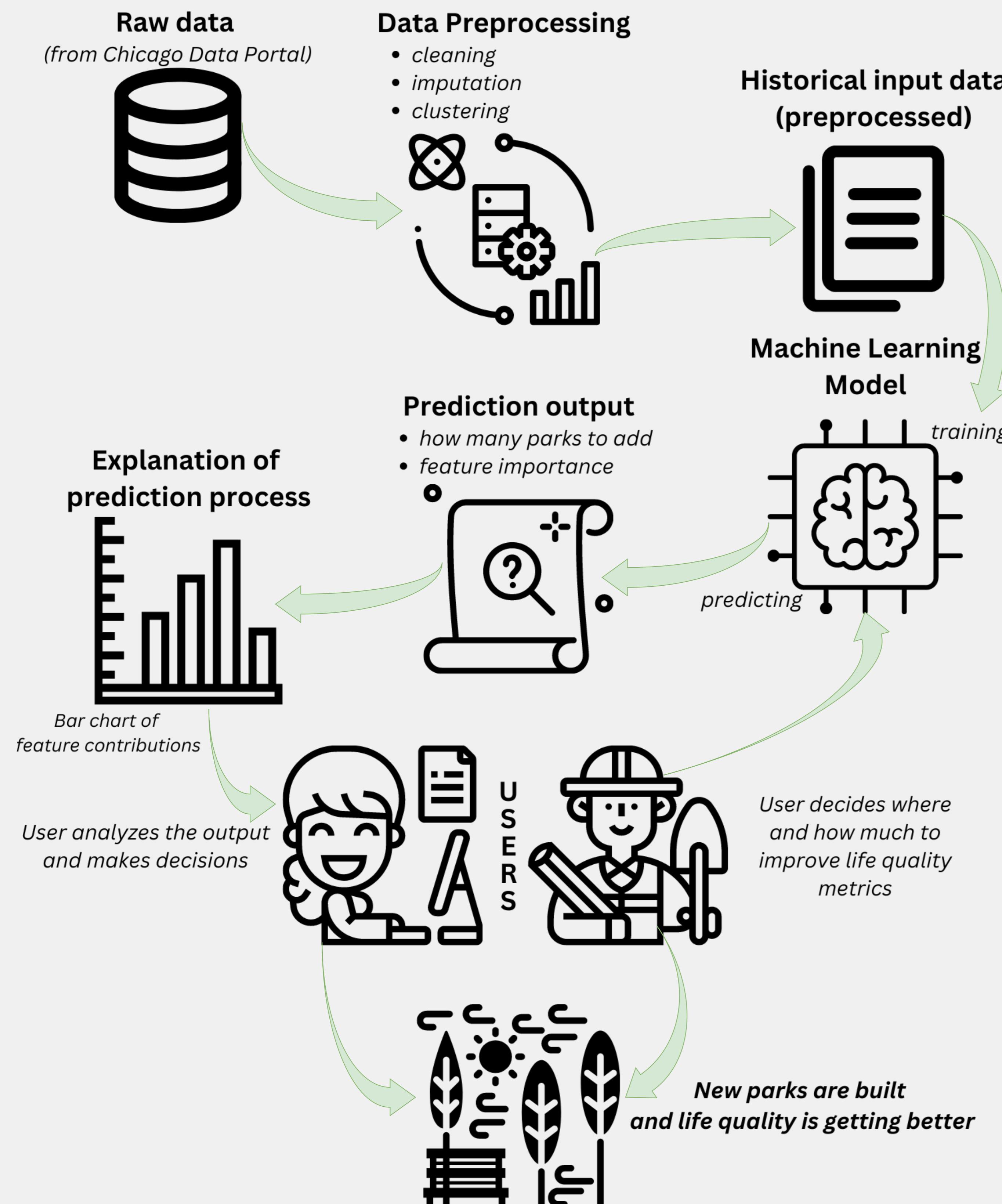


Figure 1: Machine Learning Pipeline

The Figure 1 above describes our Machine Learning Pipeline used in the Future Tab. It contains the entire pipeline from the raw data and pre-processing to model inference and end results. For predicting the future greening of Chicago areas we are using a XGBoost model. We use this model because it is explainable and computationally efficient for training and predicting on the fly. The main users of the Future Tab are the **Urban Planners**.

4 Contribution & Conclusion

Chicago Urban Planning dashboard has two main explainability purposes. It provides support for **Urban Planners** during their decision-making process and can also be used by **Lay Users** for exploration purposes. The main contribution is an extended pipeline that contains frontend, backend, data pre-processing, ML training and inference, and dynamic visualization empowering an end user to make novel observations and critical decisions about urban planning in Chicago. In total, we see this dashboard as a critical part of an urban planner workflow in Chicago and any urban planning task. The future work would extend to a larger area, including more historical data, and support park location prediction. Additionally, active learning from the user could be a useful improvement for the city.

3 Interaction Workflow



Figure 2: Structure of Interactive Dashboard Workflow

Lay users can use the Current Tab to explore the community areas and their life quality metrics with the interactive help of line, grouped, and stacked bar charts. **Urban Planners** can do the same analysis and use it in the Future Tab, where they define how much and where they wish to improve life quality. The page displays the number of required new parks and the expected ratio of green to total area in the community. The prediction output is accompanied by a bar chart with Shapley values (contribution of each feature to the predicted value).