Advisor Name:
Dr. Brian Letort

Grand Canyon University

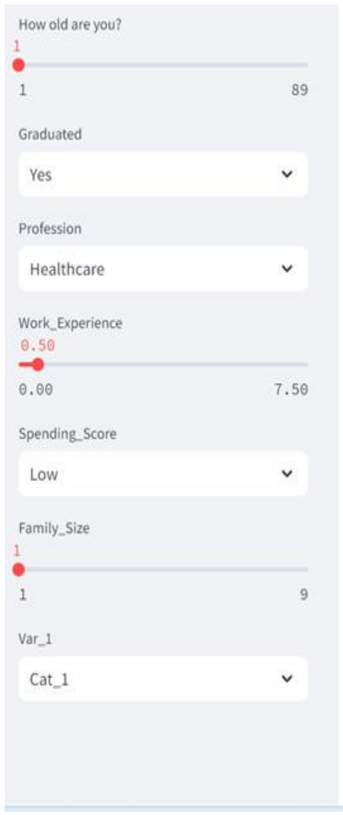
Predicting customer behavior using machine learning :Customer Insight Segmentation App

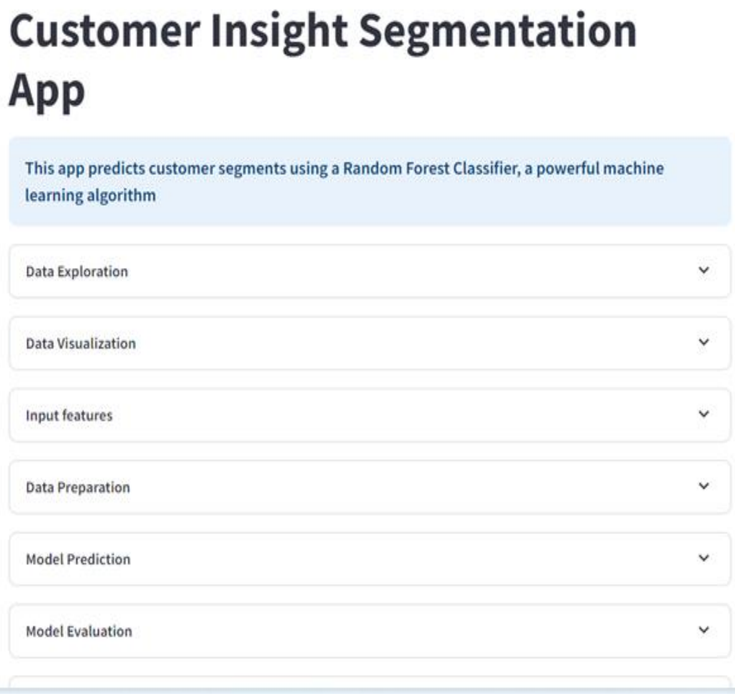
Abadit Weldeslassie

the intuitive app empowers users to gain insights without technical expertise

Context and background

- In today's competitive market, businesses struggle to understand and predict customer behavior, which can lead to inefficient marketing strategies and reduced customer retention.
- Accurately predicting customer behavior is crucial for businesses to create personalized marketing strategies, optimize resource allocation, and ultimately enhance customer satisfaction and loyalty.
- The primary objective of our project is to develop a predictive model that segments customers based on their behavior, enabling businesses to implement targeted marketing strategies and improve overall customer engagement.





Methodology

Algorithms used: Random Forest, Logistic regression, support vector machine, K-NN and decision tree
Data: The model was trained on dataset of (10,695,11) of demographic and behavioral features.
Data preparation: data was cleaned, missing values were imputed, and features were encoded for model training."
Visualization and Analysis: Our app includes histograms for univariate analysis, bar graphs for value counts, and Plotly graphs for bivariate analysis."

Model Performances

- Model performance is evaluated using accuracy scores and confusion matrices to ensure reliable predictions
- Random Forest was selected due to its robustness in handling diverse and large datasets. It reduces overfitting and improves prediction performance through ensemble learning.

Impact and Benefits

- By leveraging these predictions, businesses can create targeted marketing campaigns and improve customer satisfaction

References

- https://www.kaggle.com/datasets/kaushiksuresh147/customer-segmentation/data
- Sharma, Udit (May 29, 2024). OSEMN Framework for Data Science. LinkedIn . https://www.linkedin.com/pulse/osemn-framework-data-science-pronounced-awesome-udit-sharma-26blc/
- Kumar, Dhairya. (December 25, 2018). Introduction to data preprocessing in machine learning. Medium. . https://towardsdatascience.com/introduction-to-data-preprocessing-in-machine-learning-a9fa83a5dc9d
- Practical data science. A quick guide to customer segmentation for data scientists. Practical data science. . https://practicaldatascience.co.uk/data-science/a-quick-guide-to-customer-segmentation