Minor Project- Report

Aug-2019-2020

Course Name & Code: Machine Learning 17CS6DCMLG

Semester: 6 ‘C’ Date: 20-05-2020

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| TITLE OF THE PROJECT | Customer Segmentation | | | |
|  |  | | | |
| STUDENT NAME | Shreyas M | Vandanapu Venkata Haswanth Sai | Vikash Kumar | Suhas HS |
| USN | 1DS17CS110 | 1DS17CS119 | 1DS17CS121 | 1DS18CS415 |
| INDIVIDUAL  CONTRIBUTION | Code Implementation | Code Implementation | Algorithm Design | Algorithm Design |
| GUIDE | Poornima K S  Dr Md Tajuddin | | | |
| PROJECT ABSTRACT | Customer segmentation is a method of dividing customers into groups or clusters on the basis of common characteristics. The market researcher can segment customers using various customer's demographic characteristics such as occupation, gender, age, location, and marital status. Psycho-graphic characteristics such as social class, lifestyle and personality characteristics and behavioral characteristics such as spending, consumption habits, product/service usage, and previously purchased products.  . | | | |
| PLATFORM USED  (H/W & S/w tools to be used | Jupyter notebook , anaconda navigator ,Python version 3. | | | |
| Introduction | In the first step of this project, we will perform data exploration. We will import the essential packages required for this role and then read our data. Finally, we will go through the input data to gain necessary insights about it.We have different segmentations according to what you are trying to achieve. If you want to increase retention rate, you can do a segmentation based on churn probability and take actions. But there are very common and useful segmentation methods as well. Now we are going to implement one of them to our business: **RFM.**  **RFM**stands for Recency - Frequency - Monetary Value. Theoretically we will have segments like below:   * **Low Value**: Customers who are less active than others, not very frequent buyer/visitor and generates very low - zero - maybe negative revenue. * **Mid Value**: In the middle of everything. Often using our platform (but not as much as our High Values), fairly frequent and generates moderate revenue. * **High Value**: The group we don’t want to lose. High Revenue, Frequency and low Inactivity. | | | |
|  |  | | | |
| DESIGN | After the analysis of the customer requirements ,  we use a technique called RFM , i.e.  (Recency\_Frequency\_Monetary Value) As the methodology, we need to calculate Recency, Frequency and Monetary Value (we will call it Revenue with respect to retail sector) and apply unsupervised machine learning to identify different groups (clusters) for each.  This technique compares the spending scores of the customers and hence based  on this we conclude our clusters .  We make use of histograms to compare the percentage of male and female customers, in the dataset we have used there are more female customers than male customers.  Hence with the help of a heatmap , we try to find a correlation between the  variables age and spending score in the dataset. But we observe negative correlation , i.e. older the customer in the dataset, the lower their spending score.  But for women , we observe that age strongly affects spending score. | | | |
|  |  | | | |
| Project Source Code Link (Github/ Google DRive) | https://github.com/Shreyas398/Customer-Segmentation.git | | | |
|  |  | | | |
| Conclusion /FUTURE ENHANCEMENT | This project deals with that we went through in the customer segmentation model. We developed this using a class of machine learning known as unsupervised learning. Specifically, we made use of a clustering algorithm called RFM clustering. We analyzed and visualized the data and then proceeded to implement our algorithm. | | | |
|  |  | | | |
| OUTPUT | A screenshot of a cell phone  Description automatically generated  A screenshot of a cell phone  Description automatically generatedA screenshot of a cell phone  Description automatically generated  A close up of a map  Description automatically generated  A close up of a map  Description automatically generated | | | |