**Instructions:**

**Capstone Project Submission**

1. Please ﬁll in all the required information.
2. Avoid grammatical errors.

**Summary and Conclusions:**

* In this project, we worked on a text clustering problem wherein we had to classify/group the Netflix shows into certain clusters such that the shows within a cluster are similar to each other and the shows in different clusters are dissimilar to each other.
* The dataset contained about 7787 records, and 11 attributes.
* We began by dealing with the dataset's missing values and doing exploratory data analysis (EDA).
* It was found that Netflix hosts more movies than TV shows on its platform, and the total number of shows added on Netflix is growing exponentially. Also, majority of the shows were produced in the United States, and the majority of the shows on Netflix were created for adults and young adult’s age group.
* It was decided to cluster the data based on the attributes: director, cast, country, genre, and description. The values in these attributes were tokenized, preprocessed, and then factorized using TFIDF vectorizer.
* Through TFIDF Vectorization, we created a total of 20000 attributes.
* We used Principal Component Analysis (PCA) to handle the curse of dimensionality. 4000 components were able to capture more than 80% of variance, and hence, the number of components were restricted to 4000.
* We first built clusters using the k-means clustering algorithm, and the optimal number of clusters came out to be 6. This was obtained through the elbow method and Silhouette score analysis.
* Then clusters were built using the Agglomerative clustering algorithm, and the optimal number of clusters came out to be 12. This was obtained after visualizing the dendrogram.
* A content based recommender system was built using the similarity matrix obtained after using cosine similarity. This recommender system will make 10 recommendations to the user based on the type of show they watched.

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| **Github Link:-**  **https://github.com/arunaherkar/Capstoneproject\_IV.git** |