# Recommendation Systems Project Proposal

FAST NUCES Karachi

## Introduction:

We aim to build a movie recommendation system using a hybrid approach that combines **Collaborative Filtering** and **Content-Based Filtering**. This system will provide personalized movie suggestions based on user preferences and movie metadata.

## Dataset:

We will use the **MovieLens 20M Dataset**, which contains **20 million ratings** for **27,000 movies** from **138,000 users**. The dataset includes user-movie interactions, movie genres, tags, and timestamps.

## Ratings:

Our system will recommend movies to users based on their past ratings and movie preferences

## Techniques:

### Collaborative Filtering:
- User-Based Filtering: Finds similar users and recommends movies they liked.
- Item-Based Filtering: Finds similar movies based on user interactions.
- Matrix Factorization (SVD): Reduces the dimensionality of the user-item interaction matrix to discover latent patterns.

### Content-Based Filtering:
- Uses movie metadata (genre, tags) to recommend movies similar to those a user has previously liked.

- TF-IDF and Cosine Similarity techniques will be explored to calculate movie similarities.

### Hybrid Approach:
- Combines Collaborative and Content-Based Filtering to provide improved recommendations.

- Helps overcome the cold-start problem by leveraging metadata when user interaction data is sparse.

### Undertaking:
We pledge to complete this project with integrity, ensuring that we do not use any dishonest means at any stage of the project. All work submitted will be original, properly cited, and follow ethical academic guidelines.

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