

Natural Language Processing

Mini- Project

AI & DS

Title: Movie Genre Classification

Dhwaj Jain – S012- 60018230070

Eric Kurissery – S014- 60018230071

Hadi Gala – S015 – 60018230085

Kaustav Dedhia – S026 – 60018230009

Aim:

Develop a web app that predicts movie genres from short plot descriptions and recommends similar movies with plot summaries using NLP and content-based algorithms.

Problem:

Users struggle to identify movie genres or find similar movies based on text input; manual searching is time-consuming and subjective.

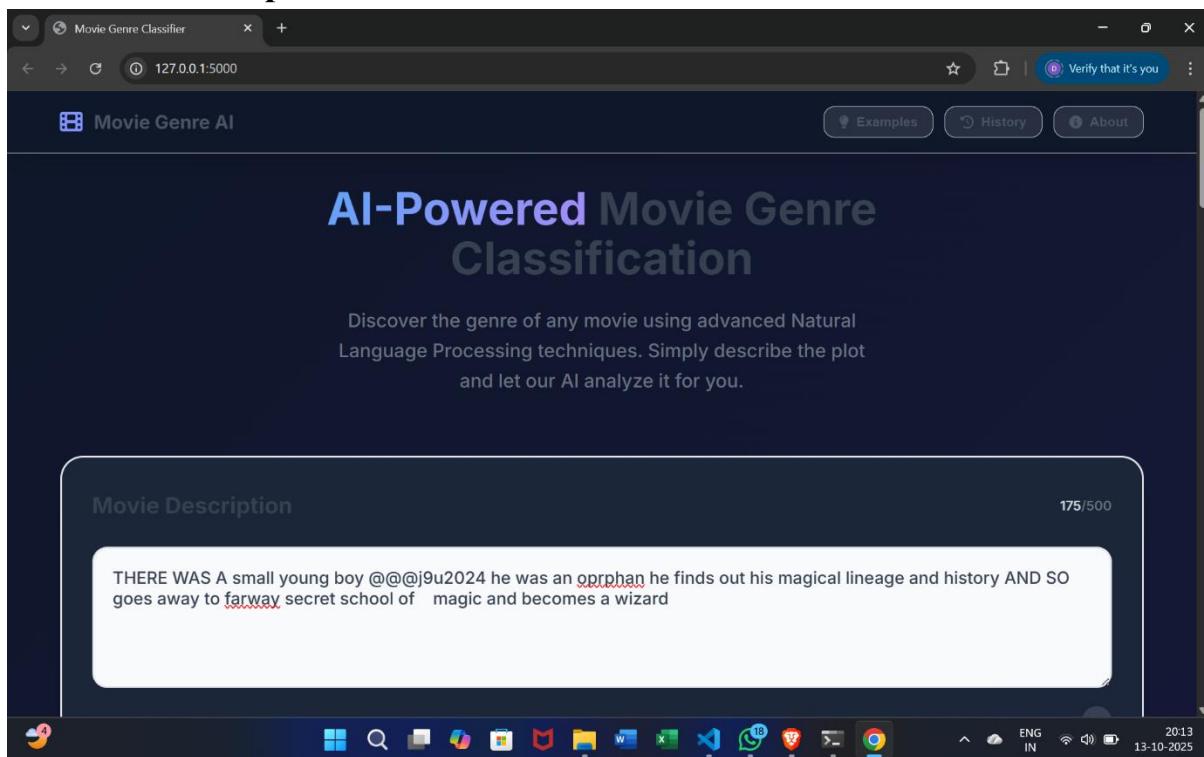
Solution:

Build an NLP model for genre classification and a content-based recommender system, accessible intuitively via a web interface.

NLP Pipeline & Implementation

- **Preprocessing:** Tokenization, stemming, lemmatization, stopword removal, and normalization techniques .
- **Feature extraction:** Discussion of N-grams, TF-IDF, POS tags, and how these representations boost genre classification performance.
- **Semantic features:** Use of WordNet (word sense disambiguation, synonyms/hypernyms) and integration into feature sets.
- **Models:** List all algorithms evaluated (Multinomial NB, Bernoulli NB, Logistic Regression, Random Forest).
- **Training/Evaluation:** Explain cross-validation, metrics such as accuracy, precision, recall, F1-score, confusion matrices, etc.

Results and Output:



Movie Genre Classifier 127.0.0.1:5000

Movie Genre AI

Text Preprocessing Applied

- ✓ Converted to lowercase
- ✓ Removed punctuation and special characters
- ✓ Removed numbers and digits
- ✓ Removed HTML tags and URLs
- ✓ Tokenized text into words
- ✓ Removed common stopwords
- ✓ Applied lemmatization for word normalization

Processed Text

there was a small young boy ju he was an oprhan he finds out his magical lineage and history and so goes away to farway secret school of magic and becomes a wizard

20:13 13-10-2025

Movie Genre Classifier 127.0.0.1:5000

Movie Genre AI



Harry Potter and the Sorcerer's Stone
ADVENTURE, FAMILY, FANTASY
An orphaned boy enrolls in a school of wizardry, where he learns the truth about himself, his family...

22% MATCH



Kubo and the Two Strings
ANIMATION, ACTION, ADVENTURE
A young boy named Kubo must locate a magical suit of armour worn by his late father in order to defe...

22% MATCH



The Secret of Kells
ANIMATION, ADVENTURE, FAMILY
A young boy in a remote medieval outpost under siege from barbarian raids is beckoned to adventure w...

20% MATCH

20:13 13-10-2025

Proposed Improvements/Future Work:

Planned enhancements (e.g., expand genre list, use transformers for better accuracy, or add collaborative filtering).