CS5242 Final Project Plan Group18

Lu Lifu A0248340J | Yang Bo A0246715B | Zhou Tianyao A0248389J

Motivation

Movie posters and synopses provide lots of information which can help human beings classify their genres (drama, comedy, cartoon, etc.). As we know, deep neural networks like convolutional neural networks and recurrent neural networks also perform well on this. So how can we build a model to do that?

Description

In this project, we will investigate three different approaches to building and training automated movie genre classification models based on their posters and synopses using a self-created dataset.

Solution

Data Acquisition

We are going to scrap the IMDB website (www.imdb.com) based on beautifulsoup and also combine it with IMDB API (IMDb API Documentation (apidojo) | RapidAPI) to get posters, synopses, names and genre data of movies. There may be multiple genres for a single movie, and we will do exploratory data analysis (EDA) on those genres and the number of movies and filter noises in the data.

Model

We expect to use three main types of models to classify movie genres using different information respectively.

1. Convolutional Neural Network (CNN)

Firstly, we try to predict the movie genre by the poster images, because posters with different colour tones and lines often reflect abundant contents of movies. This will be a multi-label prediction problem based on CNN, and we will try to make some adjustments and optimization of the network structure as a supplement to the vanilla CNN.

2. Recurrent Neural Network (RNN)

Generally, the movie genre is a stylistic category where a particular movie can be placed based on the setting, characters, plot and theme. So it's possible to predict the movie genre utilizing its plot synopsis. In this part, we plan to build the classification model using RNN as the plot synopsis is the text information and RNN is widely used in the NLP field.

3. Multimodal

Furthermore, we want to explore the possibility of using multimodal learning to classify the genres based on the first two models. Both posters and plots contain the genre information in different data formats (image and text). So we try to combine these two modalities and bring better classification performance.

Milestone

Week 1: Data Collection | Week 2 & 3: CNN & RNN | Week 4 & 5: Improvement & Numerical Results

Work Division

Dataset: Zhou Tianyao | CNN: Lu Lifu & Zhou Tianyao | RNN: Yang Bo | Multimodal: All 3 members