Movie genre Classification

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Problem

Movies are one of the most popular means of entertainment. There are large volumes of movie data being generated and shared on the internet every second. The genre of a movie can be deciphered from its synopsis much of the time

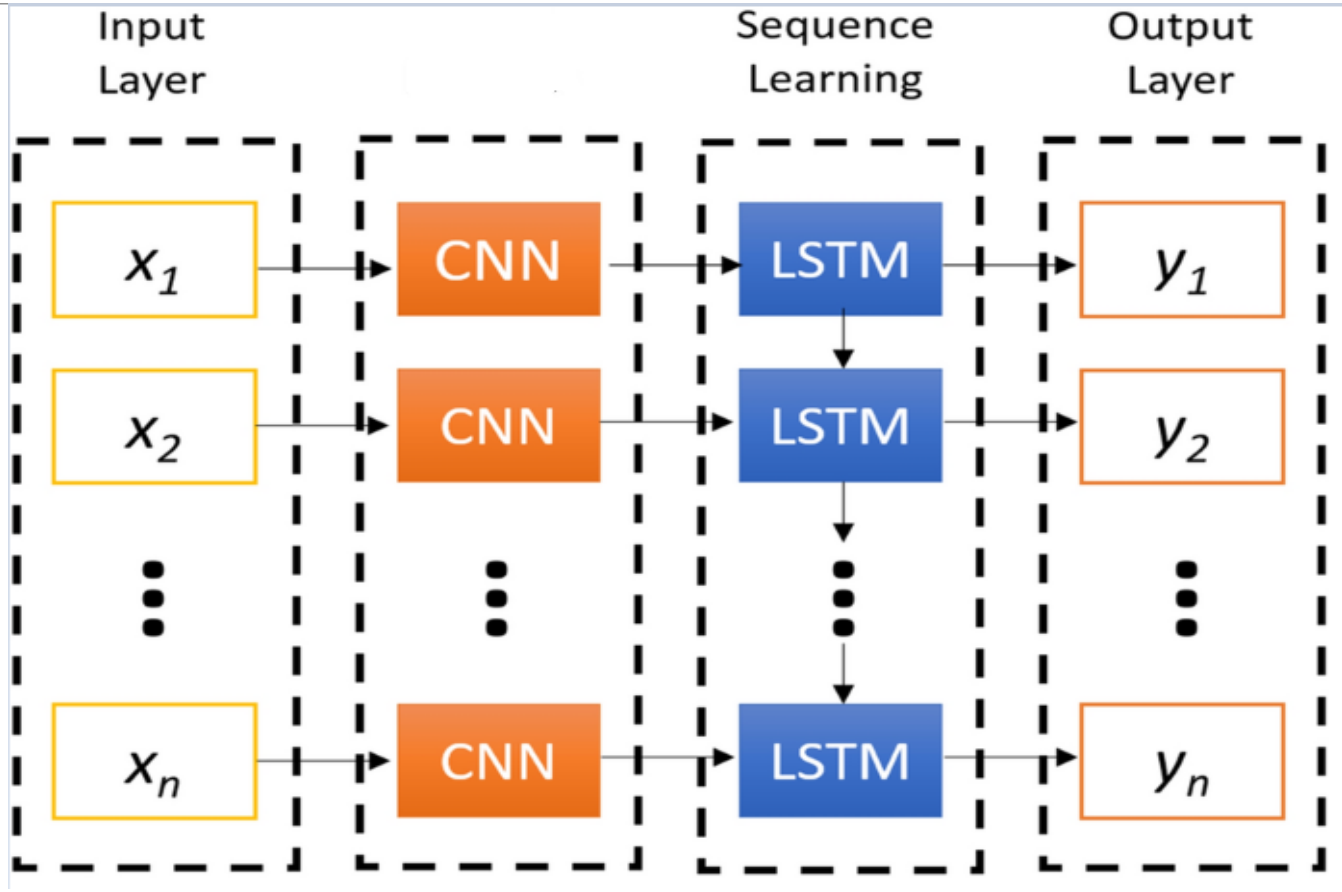
Dataset

	name	genre	released_at	poster	language	director	domain	duration	synopsis	trailer
0	10 Days, 10 Years: Nicaraguan Elections of 1990	Culture & Society	1990-01-01				https://www.allmovie.com/	0H54M		
1	1-2-3 Magic: Effective Discipline for Children	Education	1990-01-01		English		https://www.allmovie.com/	2H0M	Presented by clinical psychiatrist Thomas Phel...	
2	10 Keys to Personal Power	Business	NaT				https://www.allmovie.com/	1H4M		
3	10,000 Maniacs: Time Capsule 1982-1990	Music	1990-01-01	https://cps-static.rovicorp.com/1/avg/cov310/d...	English		https://www.allmovie.com/	0H58M	With their thoughtful folk rock sound and lyri...	
4	10 Rillington Place	Crime, Drama	1971-02-10	https://cps-static.rovicorp.com/2/Open/Sony%20...	English	Richard Fleischer	https://www.allmovie.com/	1H51M	10 Rillington Place is the true story of Briti...	https://video.internetvideoarchive.net/video.m...

Dataset contains next column: name, genre, released_year, poster, language, director, domain, duration, synopsis (description), trailer, cast, url, id.

There are **10,254** movies (observations). Genre of movies are multi-label. So, this classification is **Multi-label Classification problem**

Hybrid model



Model performance metrics

I check the result of confusion matrix, but for assessment. I use **F1-score**. Calculate metrics globally by counting the total true positives, false negatives and false positives. This is a better metric when we have **class imbalance.**

List of optimized hyper parameters

LSTM:

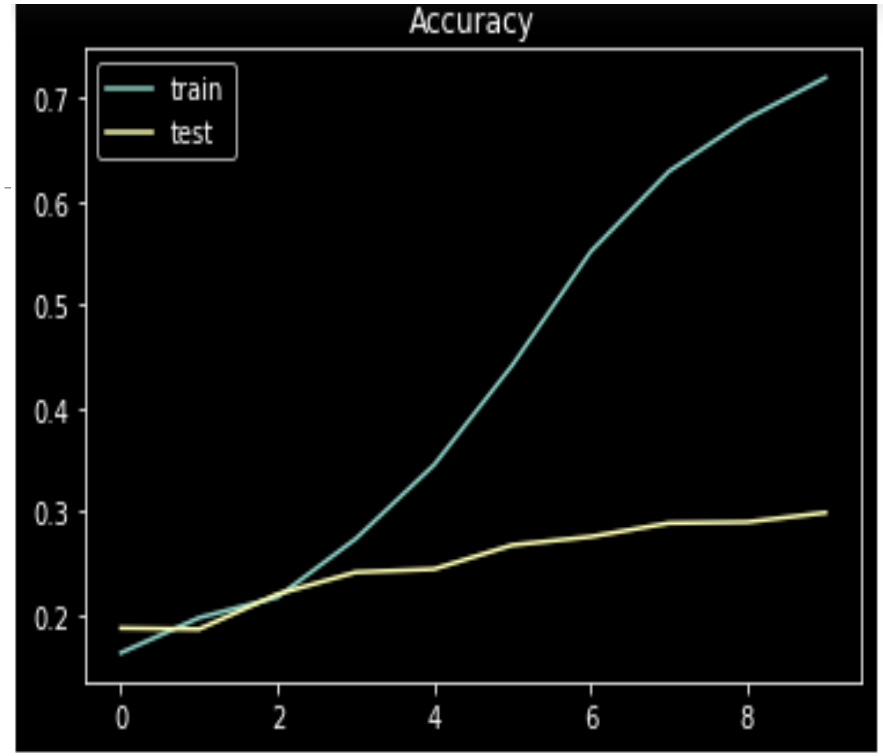
- NUMBER OF NODES AND HIDDEN LAYERS: 30
- NUMBER OF UNITS IN A DENSE LAYER: 41
- DROPOUT: 0.2
- OPTIMAZER: rmsprop
- ACTIVATION FUNCTION: sigmoid
- LEARNING RATE: 0.1
- MOMENTUM: 0.2
- NUMBER OF EPOCHS: 5
- BATCH SIZE: 32

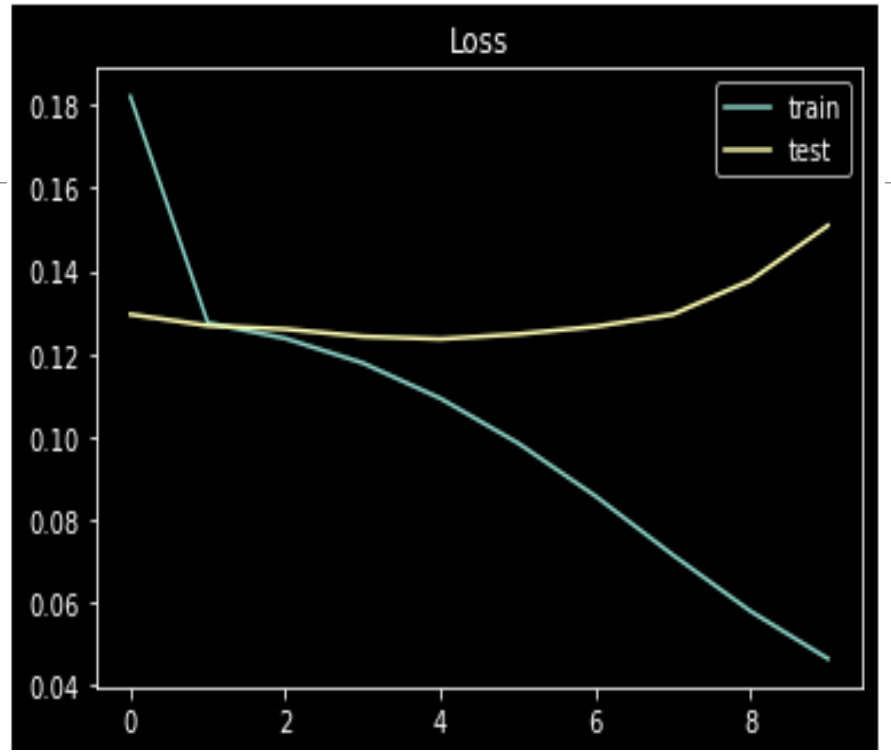
CNN:

- Convolution activation: tanh
- Pooltype: average
- Dense Layer: 41
- Dropout: 0.2

Results

	LSTM	LSTM +	CNN	**CNN+**	LSTM+CNN
F1	0.215	0,261	0.29	**0.34**	0,23
Recall	0.2565	0.274	0.31	**0.51**	0,35
Precision	0.187	0.202	0.28	**0.25**	0.17
Loss	0.12	0.121	0.012	**0,1531**	0,13



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1/1 [==============================] - 0s 100ms/step
Original tags --> ['Action,Comedy']
Predicted tags --> ['action' 'comedy' 'comedy drama']
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1/1 [==============================] - 0s 38ms/step
Original tags --> ['Drama']
Predicted tags --> ['drama']
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```
1/1 [==============================] - 0s 31ms/step
Original tags --> ['Mystery']
Predicted tags --> ['mystery' 'science fiction' 'thriller']
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