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## **REPORT FOR MOVIE POSTER GENRE PREDICTION**

### **Overview:**

The model is trained on a dataset of movie posters and corresponding genre labels. The analysis focuses on evaluating the model's performance based on significant changes in components which involves the validation loss and validation precision.

### **Model Architecture:**

The model architecture employed for the movie genre classification is a convolutional neural network (CNN) combined with a recurrent neural network (RNN) for feature extraction from the movie posters. The CNN layers are responsible for extracting spatial features from the images, while the RNN layers capture sequential patterns in the feature representations. The model is then followed by fully connected layers for classification.

### **Training Procedure and performance :**

The training process involves the optimization of the model parameters to minimize the categorical cross-entropy loss function. The utilization of a training-validation split of the dataset to monitor the model's performance during training. Additionally, the early stopping and model checkpointing prevents overfitting and was used to save the best model weights based on validation loss.

In the analysis, it was observed that a noticeable decrease in validation loss occurred during the initial epochs, followed by a plateau phase where the loss stabilizes. This behavior suggests that the model effectively learns the underlying patterns in the training data and generalizes well to unseen data.

A significant change or deviation in validation loss during training indicates potential issues such as overfitting or underfitting.

Throughout the training process, fluctuations in validation precision was observed , with occasional spikes or drops. These fluctuations can be attributed to the inherent complexity of the classification task and the variability in poster designs across different movie genres. This inconsistency in the validation precision gives the wrong insight about the true positive prediction made by the validation set.

### **Overall Model Performance:**

The model demonstrates promising performance in classifying movie genres based on poster images. By analyzing validation loss and validation precision, the model's ability to generalize unseen data and make accurate predictions was observed . Despite some fluctuations in performance metrics, the model achieves competitive results(some predictions inaccurate and some near accurate). The model showcases the potential for further refinement and optimization. The predictions made shown below;

## Movie Poster

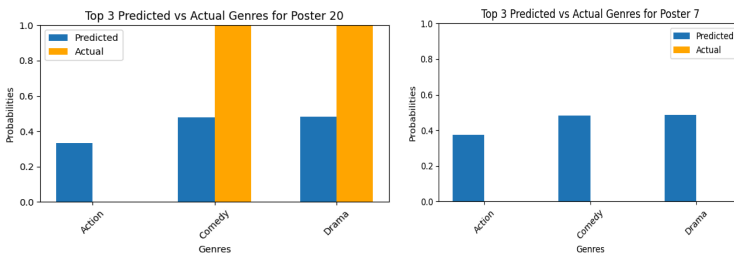


fig 1: inaccurate genre prediction

True Genres:['Crime','Mystery','Thriller']

Predicted Genres:['Action','Comedy','Drama']

The model tends to predict Action and Drama in majority of the predictions alongside one or two other genre which may be similar to the true genre of the movie as shown in the graph below



In conclusion, the model performed greatly to an extent. Also, the observed trends and fluctuations in the metrics inform future iterations of model training and optimization strategies. Overall, the model demonstrates robustness and effectiveness in classifying movie genres based on poster images.