METAPHOR DETECTION

CSCI-57800

JEEVAN REDDY MOTATI

PRIYANKA VOLETI

NARASIMHA ROHIT KATTA

GIRISH CHANDRA CHOUDHARY NANNURI

MODEL

- In our project, we implemented 5 different models to get the accuracy of the dataset.
- The models are:
  1. Logistic Regression
  2. Naïve Bayes Classifier
  3. Support Vector Machine
  4. Random Forest
  5. Neural Network (PyTorch)

Implementation

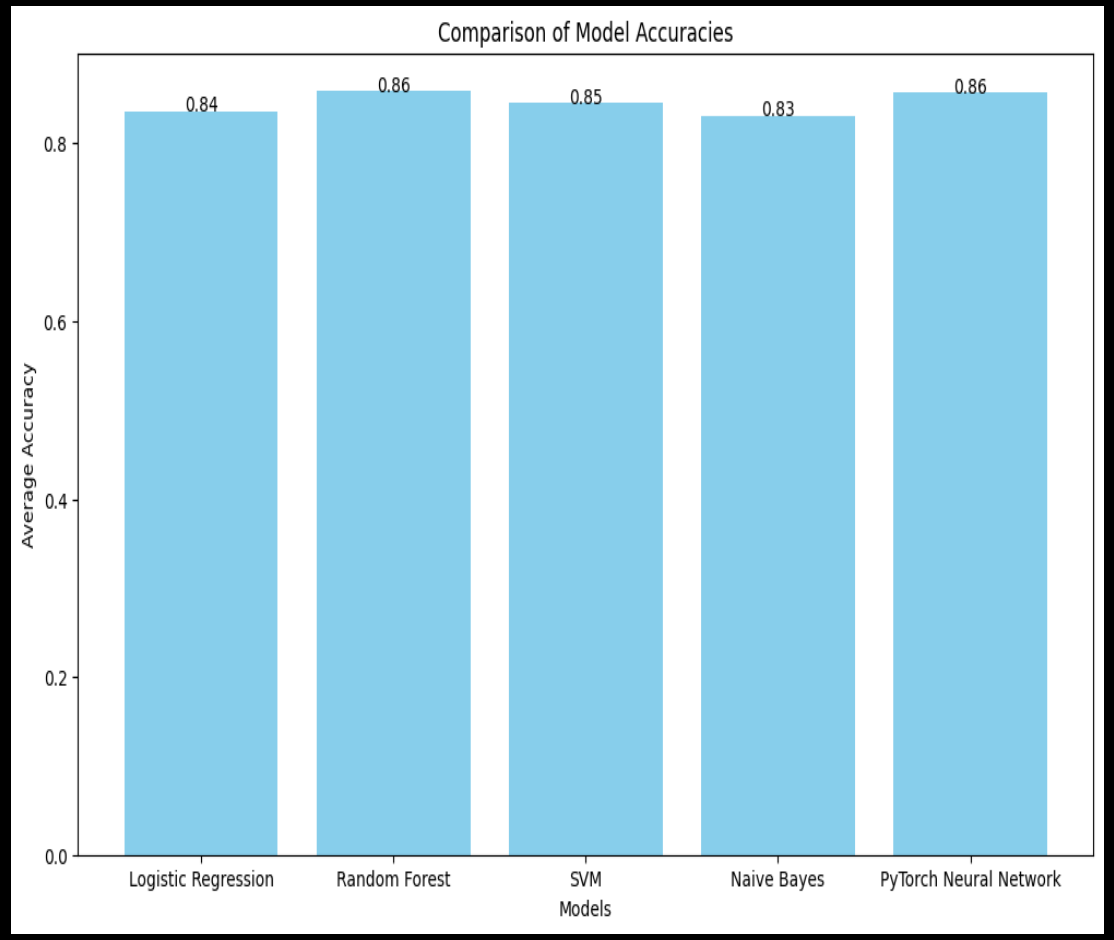
- Initially, we have done feature extraction in this way:
  1. **Context Extraction for Target Words**
  2. **Data Cleaning (**cleaning the dataset by removing rows where the context extraction results in an empty string)
  3. **TF-IDF Feature Transformation (**`context` column is transformed into numerical features using TF-IDF)
- Next, we used the sklearn library to implement the previously specified models.
- We used k–fold cross-validation and calculated the average accuracy for each model (5 – folds).

Neural – Network Implementation

- We implemented the neural network to detect the metaphors separately from the previous models.
- The model is instantiated with the number of input features.
- Cross-entropy loss (**nn.CrossEntropyLoss**) is used which is suitable for binary classification tasks.
- Stochastic Gradient Descent (SGD) optimizer is used with a learning rate of 0.01.
- The training loop involves forwarding pass, loss computation, backpropagation, and optimization steps for a fixed number of epochs.

Results

- After implementation, we get the accuracies for each model as shown in the figure.
- Random Forest and Neural Network models obtain the highest accuracies of about 86%.



THANK YOU!!