Emotion Analysis 22/23

Semantic Role Labeling

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Introduction

- Task: Semantic Role Labeling in Corpora
- Motivation: To recognize semantic roles in news headlines using pre-trained embeddings and compare
- Datasets: Goodnews everyone Dataset (by Bostan et. al (2018)
- Models:
  - 1. Glove Embeddings representation, Bi-LSTM, Linear Layer
  - 2. BERT Embeddings representation, Bi-LSTM, Linear Layer
- Evaluation: Span level Precision, Recall, and F1
- Analysis: Comparison based on different embeddings

Data

Goodnews Everyone Dataset - Semantic Role Labeling Dataset

- Data Source: https://www.ims.uni-stuttgart.de/documents/ressourcen/korpora/goodnewseveryone/goodnewseveryone-v1.0.zip
- Type of Data: 5000 news headlines from 82 sources, annotated on Plutchik's emotions
- Labels present: Cue, Experiencer, Target
- Dropped Stimuli in our experimentation

Methods

Glove Embedding, Bi-LSTM, Linear Layer

- Tokenization, Splitting in train, dev, and test
- Create Glove Embeddings
- Trained Bi-LSTM model with adam optimizer, lr=0.001, with cross-entropy, 32 batch size
- Evaluation using span based Precision, Recall, and F1 score

BERT Embedding, Bi-LSTM, Linear Layer

- Tokenization, splitting in train, dev, and test
- Create BERT Embeddings(768 dimensions), base-uncased
- Trained Bi-LSTM model with adam optimizer, lr=0.001, with cross-entropy, 32 batch size
- Evaluation using span based Precision, Recall, and F1 score

Experimental Setup

Goodnews everyone dataset

- Total number of instances : 5000
- Split: 70:20:10 Train, Dev, and Test split

Approaches

- GloVe embeddings and Bert Embeddings
- Model : Bi-LSTM
- Evaluation using span level precision, recall, and F1-score

Results

Glove-embedding and Bi-LSTM

- Span Precision : 0.24
- Span Recall : 0.21
- Span F1 Score : 0.22

BERT-embedding and Bi-LSTM

- Span Precision : 0.29
- Span Recall : 0.23
- Span F1 Score : 0.25

Analysis

- Bert and glove embeddings with the bi-LSTM model have comparable performance
- With pre-trained embeddings, it is difficult to beat the state-of-the-art results available
- Other embeddings can also be tried to get better results
- Future work can include fine-tuning embeddings on the task to achieve better results

Thank you