Xavor AI Bootcamp Week 3

**Home Task:**  ANN, CNN, NN

**RNNs: GNNs: LSTM**

**Text Classification**- Nave Bayes, Bag of Words etc.

**Neural Network:** NN

**ANN Problems:** Dependency of words in case of Text Processing, no memory state (only current input)

**“Word Embeddings, Vector Semantics, Word Meaning”**

**Embedding: “**Add on**”**

**One Hot Encoding:**

The [010000]- 1 bit

Easy

**Problem:** can’t handle large data (**sparse data**)

**Techniques:** Glove & Word2vec

## RNN

X= Input

x= Items of set X

H = Hidden States

Y= Output

Probabilistic Value: 0-1

Types: 1-1 (ANN) , 1- Many , Many- One, Many- Many

ANN- Back Propagation , Stochastic Gradient Descent , Gradient Descent

# LSTM- RNN- Transformer- GRU

## GRU

Memory Add by 2 Gateway : Reset , Update

**Reset**

Rt= sigmoid( Xt\* u T + Ht-1\*Wt)

Wt=0 – RNN

Wt=1 – Memory

( Current)- no saving

**Update**

Ut= sigmoid( Xt\* u T + Ht-1\*Wu)

(Updated save)

## LSTM

3 Gateway- Forget, Update , Path

**Forget**

Rejection of un-useful words.

# Vector Semantic & Embedding

Lema – Basic Unit

Go , Went , Gone --- Go is Lemma

**Lexical Semantic -Lexicon (**Poly-meaning**)**

**Simlex – Dictionary**

## Connotation- Sentiment – Emotion

**Valence (**Ahsas-Love-Happy**), Arousal (**Fight wala jazba**), Dominance (**Leadership etc**)**

**Classfication –** TF ITF

**Term Document Matrix**

**Term Content Matrix-** Probabilities

Document Normalization / Term Normalization

# Labs-

**Frequency Based-** One Hot Coding, Bag of Words, N-grams, Glove

**Prediction Based-**  Word2vec