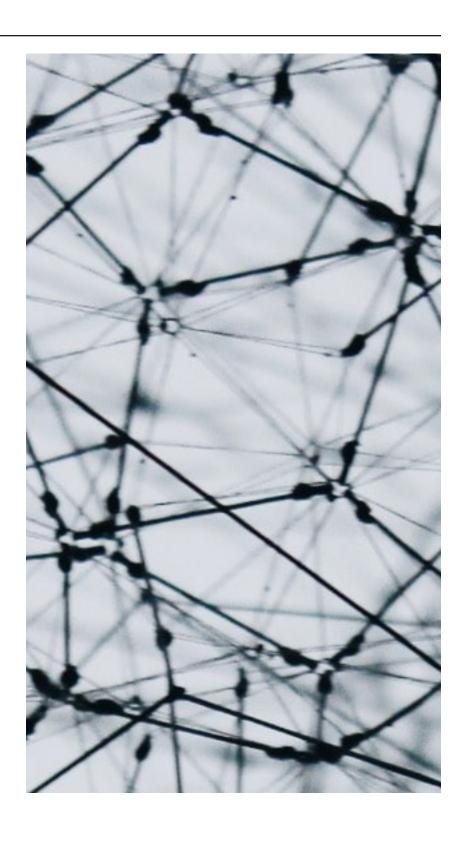
## DeepLearning LEARNING

FROM BASIC TO ADVANCED



# COURSE CURRICULUM

#### INTRO TO DEEP LEARNING CONCEPTS

- INTRO TO DEEP LEARNING
- COMPUTATION GRAPH

#### INTRO TO PYTORCH

CODING WITH PYTORCH

#### **BASIC NEURAL NETWORKS**

- NEURAL NETWORK REPRESENTATION
- ACTIVATION FUNCTIONS
- DERIVATIVES
- GRADIENT DESCENT
- BACK PROPAGATION
- RANDOM INITIALIZATION

#### **DEEP NEURAL NETWORKS**

- DEEP NEURAL NETWORKS
- FORWARD PROPAGATION
- BUILDING BLOCKS OF NEURAL NETWORK
- FORWARD AND BACKWARD
- PROPAGATION
- PARAMETERS VS HYPER PARAMETERS
- REGULARIZATION
- DROPOUT

#### **TESTING YOUR NEURAL NETWORKS**

- APPLIED DEEP LEARNING
- NORMALIZATION
- WEIGHT INITIALIZATION
- NUMERICAL APPROXIMATION
- GRADIENT CHECKING
- OPTIMIZATION ALGORITHMS

#### **OPTIMIZATION ALGOS**

- GRADIENT DESCENT
- WEIGHTED AND AVERAGE GRADIENT DESCENT
- MOMENTUM
- RMSPROP
- ADAM
- LEARNING RATE DECAY
- HYPERPARAMETER TUNING
- BATCH NORMALIZATION
- SOFTMAX REGRESSION CLASSIFIER

#### CONVOLUTION NEURAL NETWORKS (CNN)

- FOUNDATION OF CNN
- PADDING
- CONVOLUTIONS
- POOLING
- EXAMPLES

### FAMOUS NEURAL NETWORK CNN ARCHITECTURES

- ALEXNET
- RESNET
- MOBILENET
- U-NET
- INCEPTION

#### **Natural Language Processing**

- Introduction to NLP
- Bag of words
- Skip Grams | N-Grams
- Text Representations
- Word2Vec
- Glove
- Word Embedding
- Tokenization | Stemming | Lemmatization
- NLP Pipeline
- Positional and Segment Embeddings

#### **SEQUENCE MODELS IN DEEP LEARNING**

- SEQUENCE MODELS
- NOTATION
- RECURRENT NEURAL NETWORKS
- BACK PROPAGATION WITH TIME
- PROBLEMS WITH RNN
- LSTM NETWORKS
- GRU NETWORKS
- TRANSFORMER NETWORKS
- BEAM SEARCH
- TRIGGER WORD DETECTION
- SPEECH RECOGNITION
- BERT MODEL

#### WHAT COMES NEXT?