# Deep Learning With Computer Vision and Advanced NLP

**Instructors:**

**krish naik:**

Having 10+ years of experience in Data Science and Analytics with product architecture design and delivery. Worked in various product and service based Company. Having an experience of 5+ years in educating people and helping them to make a career transition.

**Sudhanshu Kumar:**

Having 8+ years of experience in Big data, Data Science and Analytics with product architecture design and delivery. Worked in various product and service based Company. Having an experience of 5+ years in educating people and helping them to make a career transition.

**Curriculum:**

**Introduction**

**Advance NLP with deep-learning overview**

• Computational Linguistic

• History of NLP

• Why NLP

• Use of NLP

**TensorFlow Installation**

• Tensorflow Installation 2.0

• Tensorflow Installation 1.6 with virtual environment

• TensorFlow 2.0 function

• Tensorflow 2.0 neural network creation

• Tensorflow 1.6 functions

• Tensorflow 1.6 neural network and its functions

• Keras Introduction

• Keras in-depth with neural network creation

• Mini project in Tensorflow

**Pytorch**

• Pytorch installation

• Pyrotorch functional overview

• Pytorch neural network creation

**Neural Network**

• A Simple Perception Preview

• Neural Network overview and its use case Preview

• Various Neural Network architect overview

• Use case of Neural Network in NLP and computer vision

• Multilayer Network

• Loss Functions

• The Learning Mechanism

• Optimizers

• Forward and Backward Propagation

• Gradient Descent

**CNN overview**

• CNN definition and various CNN based architecture

• End to End CNN network training

• Deployment in Azure

• Cloud performance tuning of CNN network

**Advance Computer Vision – Part 1**

• GAN

• Generative Model Using GAN

• BERT

• Semi-Supervised learning using GAN

• Restricted Boltzmann Machine (RBM) and Autocoders

• CNN Architectures

• LeNet-5

• AlexNet

• GoogleNet

• VGGNet

• ResNet

• SSD

• SSD lite

• Faster R CNN

**Advance computer Vision – Part 2**

• SCNN

• Masked R-CNN

• Xception

• SENet

• Facenet

• Implementing a ResNet – 34 CNN using Keras

• Pretrained Models from Keras

• Pretrained Models for Transfer Learning

**ChatBot**

• Intents and Entities

• Fulfillment and integration

• Chatbot using Microsoft bot builder and LUIS, development to Telegram, Skype

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• Chatbot using Amazon Lex, deployment to Telegram, Skype

• Chatbot using RASA NLU, deployment to Telegram , Skype

• Semantic Segmentation

• Classification and Localisation

• TensorFlow Object Detection

• You Only Look Once (YOLO)

**Text processing**

• Importing Text

• Web Scrapping

• Text Processing

• Understanding Regex

• Text Normalisation

• Word Count

• Frequency Distribution

• Text Annotation

• Use of Anotator

• String Tokenization

• Annonator Creation

• Sentence processing

• Lemmatization in text processing

• POS

• Named Entity Recognition

• Dependency Parsing in text

• Sentimental Analysis

**Spacy**

• Spacy Overview

• Spacy function

• Spacy function implementation in text processing

• POS tagging, challenges and acuracy

• Entities and named entry Recognition, interpolation, Language models

**NLP terminalogy**

• Morphology and Diversity

• Ambiguity and Paradigms

• Structures and meanings

• Lexical Knowledge, NetworknMetaphors and co-refrences

• Lexical Ambiguity

• Polysemy and homonymy

• Conference Resolution

• Anaphora and cataphora resolution

• Multi-sentiential resolution

• Humans and Ambiguity

• Machines and ambiguity

• Co-occurrence and distributional similarity

• Similarity and relatedness

• Knowledge graphs and repositories

• Computational Linguistics

• Word embeddings and co-occurrence vectors

• Word Sim353 Dataset examples

• Word2vec

• Part of speech tagging

**RNN**

• Recurrent Neural Networks

• Long Short Term Memory (LSTM)

• Bi LSTM

• GRU implementation

• Building a Story writer using character level RNN

**Attention Based model**

• Seq 2 Seq

• Encoders and Decoders

• Attention Mechanism

• Attention Neural Networks

• Self Attention

**Hardware Setup – GPU**

• GPU Introduction

• Various type of GPU configuration

• GPU provider and its pricing

• Paperspace GPU setup

• Running model in GPU

**Transfer Learning in NLP**

• Introdution to transformers

• BERT Model

• ELMo Model

• GPT1 Model.

• GPT2 Model

• ALBERT Model

• DistilBERT Model

**NLP project end to end with deployment in various cloud and UI integration**

• Topic Modeling

• Word sense disambiguation

• Text to speech

• Keyword Spotting

• Document Ranking

• Text Search (with Synonyms)

• Language Modeling

• Spam Detector

• Image Captioning

**Mini NLP project**

• Machine Translation

• Abstractive text summarization

• Keyword spotting

• Language modelling

• Document summarization

**Deployment of model and performance tuning**

• Deep learning model deployment strategies

• Deep learning project architecture

• Deep learning model deployment phase

• Deep learning model retraining phase

• Deep learning model deployment in aws

• Deep learning model deployment in azure

• Deep learning model deployment in gcloud

**Nlp transfer learning project**

• Deployment and integration with ui machine translation

• Question answering (like chat – bot)

• Sentiment analysis imdb

• Text search (with synonyms)

• Text classifications

• Spelling corrector

• Entity (person, place or brand) recognition

• Text summarization

• Text similarity (paraphrase)

• Topic detection

• Language identification

• Document ranking

• Fake news detection

• Plagiarism checker

• Text summarization extractive

• Text summarization abstractive

**NLP end to end project with architecture and deployment**

• Movie review using bert

• Ner using bert

• Pos bert

• Text generation gpt 2

• Text summarization xlnet

• Abstract bert

• Machine Translation

- Nlp text summarization custom
- Keras/tensorflow
- Language identification
- Text classification using fast bert
- Neuralcore
- Detecting fake text using gltr with bert and gpt2
- Fake news detector using gpt2
- Python plagiarism checker type a message
- Question answering