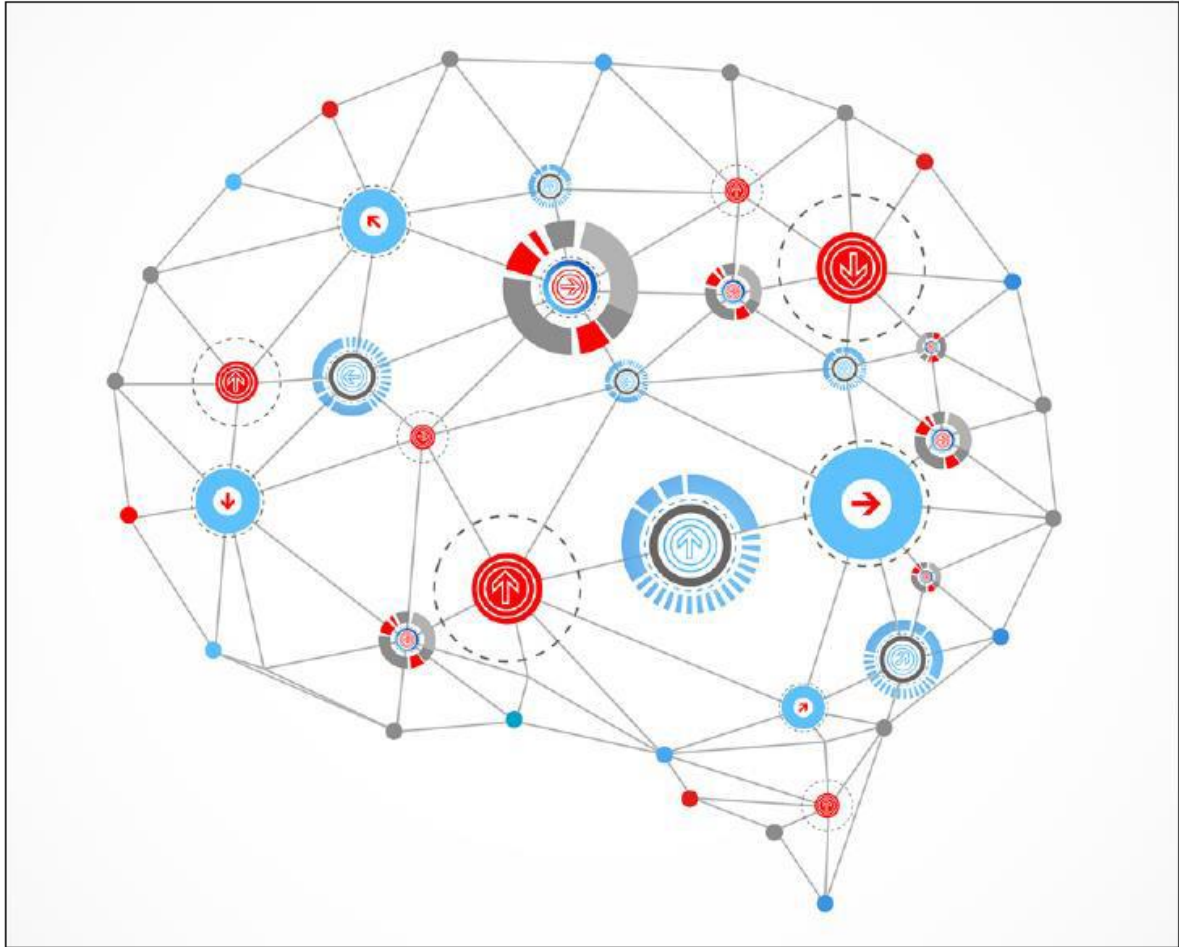


DEEP LEARNING USING TENSORFLOW AND KERAS



OBJECTIVE

Machine learning is one of the fastest-growing and most exciting fields out there, and deep learning represents its true bleeding edge. This course is intended to give a holistic understanding on Deep Learning and its applications. It would cover:

- Neural Networks – Multi-Layer Perceptron (MLP), Convolutional Neural Network (CNN) and Auto Encoders, Recurrent Neural Network (RNN)
- Detailed application-oriented approach towards learning Deep Learning with datasets on Computer Vision and Natural Language Processing.
- Tensor Flow and Keras based notebooks

In this course, you'll develop a clear understanding of the motivation for deep learning, and design intelligent systems that learn from complex and/or large-scale datasets. We'll show you how to train and optimize basic neural networks, convolutional neural networks, and long short-term memory networks. Complete learning systems in TensorFlow and Keras will be introduced with working examples.

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You will learn to solve new classes of problems that were once thought prohibitively challenging, and come to better appreciate the complex nature of human intelligence as you solve these same problems effortlessly using deep learning methods.

HARDWARE AND SOFTWARE

- A laptop running 64-bit OS (Linux/OSX/Windows)
- We shall be using Google Colab service and hence we would not require any installation.
- Decent Internet Connection

PRE-REQUISITES

- Programming knowledge of python and machine learning is a plus

INSTRUCTOR PROFILE

Naveen Kumar Bhansali has around 15 years of experience as data scientist, advisory architect and consultant in big data, artificial intelligence, deep learning/machine learning and business analytics across various domains/verticals such as telecom, retail, aerospace, e-commerce, education, federal agencies and IT – Exchange & Storage. He has worked across the globe for clients such as Embraer Brazil, FWD Hong Kong, Bank of Thailand, TIM Brazil, Hawaiian Telecom USA, Bank of Ayudhya in Thailand, ASOS UK, VTC Hong Kong, etc. He is an alumnus of Indian Institute of Management (IIM), Bangalore and is also a guest lecturer on Artificial Intelligence, Deep Learning and Big Data at IIM Bangalore and Amity University.

He has published an Analytics Cases in Harvard Business Publishing:

- Customer Analytics at Flipkart.com
<https://cb.hbsp.harvard.edu/cbmp/product/IMB555-PDF-ENG>
- Breaking Barriers – Micro-mortgage Analytics:
http://cb.hbsp.harvard.edu/cb/web/product_detail.seam?E=4848558&R=IMB445-PDF-ENG&conversationId=8501

Connect with him on Linked in <https://www.linkedin.com/in/nkbhansali/>

COURSE OUTLINE

Module 1: Introduction to Deep Learning

Representation Learning
Difference between ML/DL/AI
Use case mapping to technique

DEEP LEARNING USING TENSORFLOW AND KERAS

Module 2: Artificial Neural Network (Multi-Layer Perceptron)

Gradient Descent - Mini-batch and Stochastic
Back-propagation; cost function and optimizers
Developing deep learning using Keras
Neural Networks and hyper-parameters
Model Evaluation – Grid Search Cross Validation
Early Stopping

Module 3: Convolutional Neural Networks (CNN) and Recurrent Neural Networks (RNN)

Overview of Convolutional Neural Network and its applications (Image Analytics)
Transfer Learning
Overview of Recurrent Neural Network
RNN Architectures – LSTM/GRU

Module 5: NLP

Understanding the concept of Embeddings
Word Embedding (Word2Vec, GloVe) & Transfer learning
Embedding Projector and visualizing the embeddings
Applying Embedding layer and building a model in Keras (Sentiment Analysis)