DEEP LEARNING FOR BEGINNERS SYLLABUS

Hi Folks,

Oranium Tech introducing some amazing content on Deep Learning. Machine learning is a rapidly growing field in Computer science, to the extent that it became a very popular buzz word. It seems it is everywhere today - from self driving cars to automatic cancerous tumours detection. Deep learning is a sub field in the world of Machine learning mainly based around neural networks - a conceptual model of the human brain that has been around for decades but is getting more and more attention in the last several years. Using this model we are capable of achieving wonderful results in solving complex problems that were once out of our reach. In this course we will start our journey in the world of deep learning - we will start by getting familiar with basic concepts and theory, all the way down to actual hands-on practice. We will cover important topics such as Convolutional neural networks (Convolution, Correlation, and Filtering), Generative Adversarial Networks, Deep reinforcement learning, common tools and much more.

Basic knowledge in the following topics is required:

- Linear algebra
- Calculus
- Statistics
- Basic programming in Python
- Machine learning

Course topics:

1)Deep learning basics:

- Intro, History, capabilities, the perceptron
- Neural network learning: Back-Propagation
- Practical network training
- Autoencoders, Batch-normalization
- Why does it work? Overfitting and generalization

2)Convolutional neural networks:

- Intro to CNNs, Convolution, Correlation, FIltering.
- CNN architectures
- Detection and Segmentation

- Visualizing and Understanding
- Advanced CNNs for computer vision

3)Advanced Deep architectures:

- Recurrent Neural networks (RNNs)
- Advanced RNN: LSTM, GRU,
- Generative Adversarial Networks (GANs)
- Advanced GANs

4)Advanced topics, Recent papers, Influential papers

- Deep reinforcement learning
- Deep Learning: Good -> Great
- Visual Question Answering, Visual Dialog
- Novel deep methods (Deep internal learning, Deep image prior)
- Recent works
- How to stay updated?

5)Tools

- Tensorflow
- Pytorch

6)Practical sessions / Data challenges:

- Computer Vision
- Natural Language Processing (NLP)
- Sequence modeling
- Natural / Biological signals

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ALL THE BEST

Phone / WhatsApp Details / Mail Id

CHROMPET : 73053 43555 whatsapp / oraniumtech@gmail.com

VELACHERY : 73052 77748 whatsapp / oraniumtechvh@gmail.com