

SYMPOL 2017

In the magnificent Shores of Great Cochin

SYMPOL 2017 2017 International Symposium on
Ocean Technology

December 8, 2017

DEEP LEARNING - A DEEP DIVE

FROM BASICS TO ADVANCED

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DEEP LEARNING
WORKSHOP SERIES- II

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As a part of the International Symposium on Ocean Technology (SYMPOL 2017), the Department of Electronics, Cochin University of Science and Technology, is organizing an IEEE Communication Society sponsored Workshop on 8th December, 2017.

Speaker Mr. Shaunak De, Indian Institute of Technology, Bombay

About the Workshop

In this hands-on workshop, participants will be introduced to neural networks, ideas of deep learning and why it is so effective at solving real world problems. Then we will dive into some basic networks, some advanced ones and finally learn how to deploy intelligent algorithms at scale.

About the Speaker

Mr. Shaunak De is a doctoral candidate at the Indian Institute of Technology Bombay, working with the application of deep learning to Polarimetric Synthetic Aperture Radar (SAR) data. Shaunak is a Remote Sensing & Deep Learning Specialist, and has presented several talks on deep learning both at industry as well as academic conferences.

Shaunak was a visiting researcher in Fondazione Bruno Kessler – FBK research institute and in The University of Trento, Italy. Earlier he was also a Junior research fellow in IIT Bombay. Currently he is working on a video series for teaching deep learning.

Basics to Advanced : Deep Learning - A Deep Dive - 8th December 2017

• Introducing Deep Learning

This section talks about the evolution of deep learning, and the key innovations that make it the technological breakthrough it currently is.

- A brief history of deep learning
- Deep learning today
- Tools, requirements and setup

• Building the Basic Blocks of Machine Learning (Supervised)

Will be covering the basics of machine learning and the core components of deep learning.

- What is supervised learning?
- Representational learning and feature engineering
- Linear regression
- The Perceptron

• Diving into Deep Neural Networks

In this section we will start with getting our feet wet with simple neural networks.

- Feed forward network
- Back propagation
- Neural network from scratch
- Overfitting and regularization

• Discovering Convolutional Neural Networks (CNNs) - I

We will evolve the models from the previous section to become more complex and capable by adding convolutions.

- What are CNNs?
- Implementing a CNN
- Deep CNNs

• Discovering Convolutional Neural Networks - II

With increase in depth, the models are able to solve increasingly complex tasks. This is the core philosophy of deep learning.

- Very deep CNNs
- Batch normalization
- Fine tuning

• Learning about Detection and Segmentation

Focus on adding "semantics" to parts of an image, rather than understanding the image as a whole, moving closer to how humans view the world!

- Semantic segmentation
- Fully convolutional networks

• Exploring Recurrent Neural Networks

Will be shifting our focus on text data now, and will explore techniques that make predictive text on your phone and machine translation work.

- Recurrent neural networks
- LSTM and advancements

• Project 1: Object Detection using CNNs

A project to put the learnings so far together.

- Building a CNN to detect general images
- Training and deploying on a cluster

• Moving forward with Deep learning and AI

Will be exploring some exciting areas and scope of DL & AI.

- Comparison of DL frameworks
- Exciting areas for upcoming research
- Declarative v/s Imperative programming

Venue: Auditorium, Department of Electronics, CUSAT

Time: 09.00 am - 5.00 pm

Register at: doe.cusat.ac.in/news.php#comsoc

