



WORKSHOP REPORT

DATE: 12th-16th December 2018

EVENT: Workshop

TIME: 10.00 AM

VENUE: Seminar Hall, KITS Guntur

ORGANIZED BY: SPACE, E.C.E Dept.



EVENT DESCRIPTION:

The ECE association *SPACE* conducted a five day workshop on “**Deep Learning**” from 12th to 16th **December 2018** from 10.00 AM to 4.30 PM in the Seminar Hall. **Prof.T.Srinivasa Rao garu** was resource person for this workshop. This workshop is conducted to get the awareness among the students towards Machine Learning.

SESSION ACTIVITIES:

The Department of E.C.E has made proper arrangements for transportation for the guest to the campus. As per the given instructions by the **Dr. Siva Ganga Prasad, HOD ECE dept.**, the faculty in charges made proper arrangements for this Lecturer. The program started with the opening remarks of HOD. Exactly at 10.30 AM the lecture is started by **Prof.T.Srinivasa Rao garu**. The Resource person given hands of experience on Machine Learning.

KITS **5 - Day Workshop** **SPACE**
On
DEEP LEARNING Redefine your Limits...
By
Prof. T.Srinivasa Rao
12th to 16th DEC 2018
Venue: ECE Seminar Hall
Organizing by
Department of Electronics and Communication Engineering
KKR & KSR INSTITUTE OF TECHNOLOGY AND SCIENCES
Vinjanampadu, Vatticherukuru Mandal, Guntur - 522017, A.P.

All III year ECE students interacted with resource person friendly and expressed their doubts.



Day 01(12th December 2018):

On the first day the resource person explained about

- Artificial intelligence
- Thinking Humanity
- Acting Humanity
- Machine learning

Machine learning is an application of artificial intelligence (AI) that provides systems the ability to automatically learn and improve from experience without being explicitly programmed. Machine learning focuses on the development of computer programs that can access data and use it learn for themselves.

The process of learning begins with observations or data, such as examples, direct experience, or instruction, in order to look for patterns in data and make better decisions in the future based on the examples that we provide. The primary aim is to allow the computers learn automatically without human intervention or assistance and adjust actions accordingly.

Deep Learning is a new area of Machine Learning research, which has been introduced with the objective of moving Machine Learning closer to one of its original goals: Artificial Intelligence.

Day 02(13th December 2018):

The second day started with an algorithm along with the following topics

- Regression Algorithm
- Support vector machines
- Decision Trees
- Neural Networks

In statistical modeling, regression analysis is a set of statistical processes for estimating the relationships among variables. It includes many techniques for modeling and analyzing several variables, when the focus is on the relationship between a dependent variable and one or more independent variables (or 'predictors'). More specifically, regression analysis helps one understand how the typical value of the dependent variable (or 'criterion variable') changes when any one of the independent variables is varied, while the other independent variables are held fixed.

Day 03(14th December 2018):

The third day completely engaged with Artificial neural Networks

- Artificial Neural Networks
- Perceptron
- Back Propagation
- Multilayer perceptron
- Deep Learning

An artificial neural network is an interconnected group of nodes, similar to the vast network of neurons in a brain. Here, each circular node represents an artificial neuron and an arrow represents a connection from the output of one artificial neuron to the input of another.

Artificial Neural Networks (ANN) or connectionist systems are computing systems vaguely inspired by the biological neural networks that constitute animal brains. The neural network itself is not an algorithm, but rather a framework for many different machine learning algorithms to work together and process complex data inputs. Such systems "learn" to perform tasks by considering examples, generally without being programmed with any task-specific rules. For

example, in image recognition, they might learn to identify images that contain cats by analyzing example images that have been manually labeled as "cat" or "no cat" and using the results to identify cats in other images. They do this without any prior knowledge about cats, for example, that they have fur, tails, whiskers and cat-like faces. Instead, they automatically generate identifying characteristics from the learning material that they process.

Day 04(15th December 2018):

On the fourth day the speaker explained about Deep learning Convolution and its importance along with the following area.

- Deep learning Convolution
- Deep learning RELU
- Deep Learning Max Pooling

Convolution is probably the most important concept in deep learning right now. It was convolution and convolutional nets that catapulted deep learning to the forefront of almost any machine learning task there is. But what makes convolution so powerful? How does it work? In this blog post I will explain convolution and relate it to other concepts that will help you to understand convolution thoroughly.

There are already some blog post regarding convolution in deep learning, but I found all of them highly confusing with unnecessary mathematical details that do not further the understanding in any meaningful way. This blog post will also have many mathematical details, but I will approach them from a conceptual point of view where I represent the underlying mathematics with images everybody should be able to understand. The first part of this blog post is aimed at anybody who wants to understand the general concept of convolution and convolutional nets in deep learning. The second part of this blog post includes advanced concepts and is aimed to further and enhance the understanding of convolution for deep learning researchers and specialists.

Day 05(16th December 2018):

The final day focused on the implementation of programs in a Lab. Students shows more interest in the lab session.

- **Implementation of program in “TENSOR FLOW”**
- **Implementation of program in “KERAS”**



Keras is an open source neural network library written in Python. It is capable of running on top of TensorFlow, Microsoft Cognitive Toolkit, or Theano. Designed to enable fast experimentation with deep neural networks, it focuses on being user-friendly, modular, and extensible. It was developed as part of the research effort of project ONEIROS (Open-ended Neuro-Electronic Intelligent Robot Operating System), and its primary author and maintainer is François Chollet, a Google engineer.

In 2017, Google's TensorFlow team decided to support Keras in TensorFlow's core library. Chollet explained that Keras was conceived to be an interface rather than a standalone machine-learning framework. It offers a higher-level, more intuitive set of abstractions that make it easy to develop deep learning models regardless of the computational backend used. Microsoft added a CNTK backend to Keras as well, available as of CNTK v2.0.



TensorFlow is an open-source software library for dataflow programming across a range of tasks. It is a symbolic math library, and is also used for machine learning applications such as neural networks. It is used for both research and production at Google.

On behalf of the department of Electronics and communication engineering, the hosting department, Our faculty Coordinator extended her gratitude to the College Management and Principal. After the felicitation the program came to end with the National Anthem.