



The Gujarat Council on Science and Technology (GUJCOST)

Sponsored

Five days Short Term Training Program on

“Deep Learning using Python – A Practical Approach”

(22nd – 26th July, 2019)

Organized By



छोटुभाई गोपालभाई पटेल प्रौद्योगिकी संस्थान, बारडोली
Chhotubhai Gopalbhai Patel Institute of Technology, Bardoli



in Association with



Conveners

Dr. Madhavi Desai & Ms. Purvi Tandel

Assistant Professors, Computer Engineering & Information Technology Department,
C. G. Patel Institute of Technology, Bardoli

Program Coordinators

Ms. Rachna Patel, Ms. Ankita Desai, Ms. Palak Desai, Mr. Achyut Sakadasariya

Assistant Professors, Computer Engineering & Information Technology Department,
C. G. Patel Institute of Technology, Bardoli

About Program

Deep Learning is the sub-field of Machine Learning, where models inspired by how our brain works are expressed mathematically, and the parameters defining the mathematical models. Deep Learning is a key enabler of AI powered technologies being developed across the globe. In this deep learning STTP, Participants will learn an intuitive approach to build complex models that help machines to solve real-world problems with human like intelligence. The intuitive approaches will be translated into working code with practical problems and hands-on experience. The goal of this program is to educate and explore the knowledge on Python programming along with current research studies, challenges as well as practical experience in the field of deep learning.

Date: 22nd– 26th July, 2019

Time: 09:30 AM to 04:00 PM (Monday – Friday)

Venue: IBM LAB, Ground Floor, Maliba Pharmacy College

Coordinators:

- 1) Ms. Rachna Patel (Assistant Professor)
- 2) Ms. Ankita Desai (Assistant Professor)
- 3) Ms. Palak Desai (Assistant Professor)
- 4) Mr. Achyut Sakadasariya (Assistant Professor)

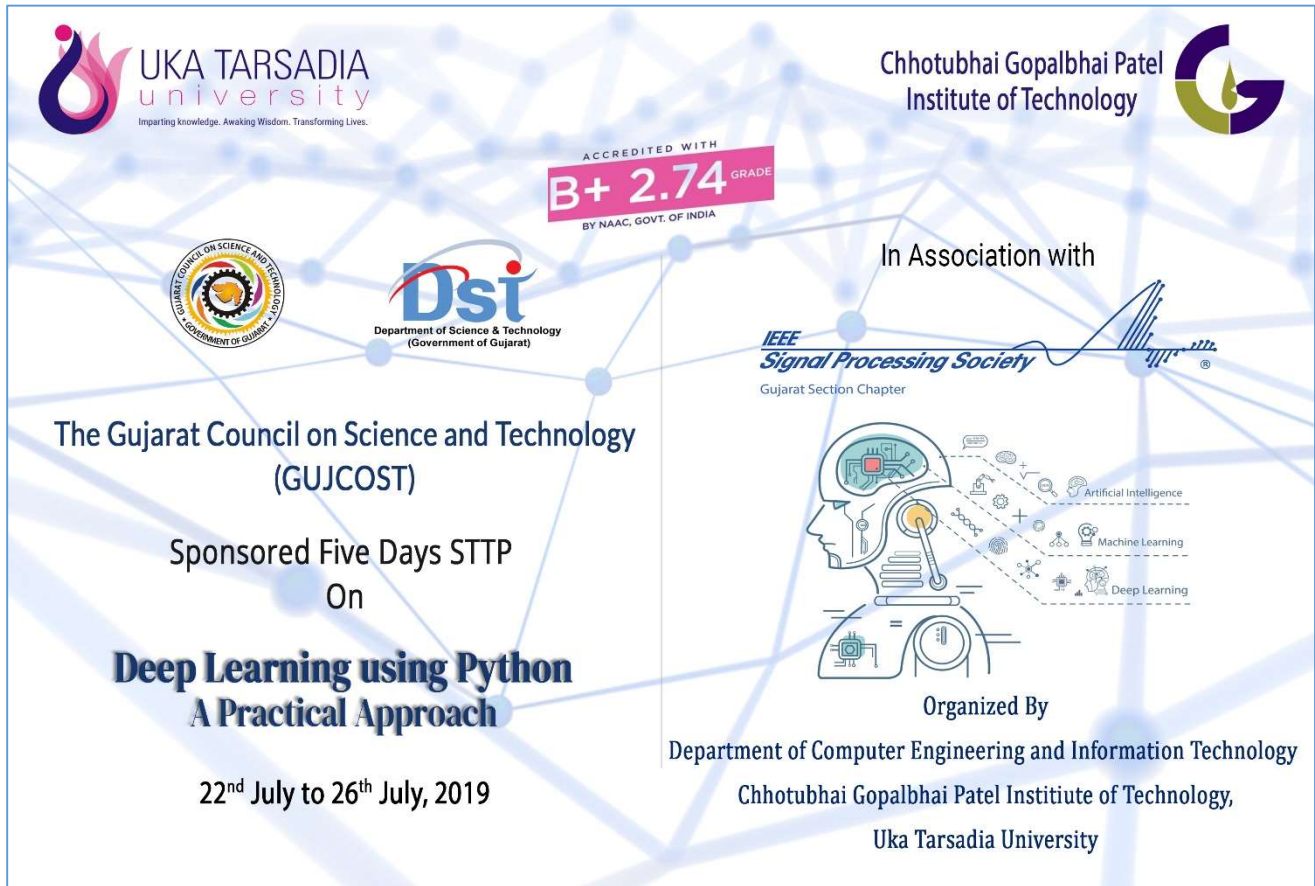
Targeted Audience:

- 1) Faculty members from various academic Institutes/Universities
- 2) Research Scholars
- 3) Industrial Persons

No. of Participants:

- 1) Faculty members – 06
- 2) Research Scholars - 45

STTP Banner



The banner features a blue geometric network background. Logos for UKA Tarsadia University, Chhotubhai Gopalbhai Patel Institute of Technology, Gujarat Council on Science and Technology (GUJCOST), and Department of Science & Technology (DST) are present. A pink accreditation badge from NAAC is also included. The central text describes the event: 'Sponsored Five Days STTP On Deep Learning using Python A Practical Approach' from July 22nd to 26th, 2019. It is organized by the Department of Computer Engineering and Information Technology at Chhotubhai Gopalbhai Patel Institute of Technology, Uka Tarsadia University. An association with the IEEE Signal Processing Society Gujarat Section Chapter is noted. An illustration of a human head with AI components is shown on the right.

UKA TARSADIA
university
Imparting knowledge. Awaking Wisdom. Transforming Lives.

Chhotubhai Gopalbhai Patel
Institute of Technology

ACCREDITED WITH
B+ 2.74 GRADE
BY NAAC, GOVT. OF INDIA

GUJARAT COUNCIL ON SCIENCE AND TECHNOLOGY
GOVERNMENT OF GUJARAT

Dst
Department of Science & Technology
(Government of Gujarat)

In Association with
IEEE
Signal Processing Society
Gujarat Section Chapter

The Gujarat Council on Science and Technology
(GUJCOST)

Sponsored Five Days STTP
On
Deep Learning using Python
A Practical Approach

22nd July to 26th July, 2019

Organized By
Department of Computer Engineering and Information Technology
Chhotubhai Gopalbhai Patel Institute of Technology,
Uka Tarsadia University

Artificial Intelligence
Machine Learning
Deep Learning

STTP SCHEDULE

C. G. PATEL INSTITUTE OF TECHNOLOGY, UKA TARSADIA UNIVERSITY					
GUJCOST SPONSORED FIVE DAYS STTP ON "DEEP LEARNING USING PYTHON - A PRACTICAL APPROACH" TECHNICAL SUPPORT BY IEEE SIGNAL PROCESSING SOCIETY, GUJARAT SECTION ORGANIZED BY DEPARTMENT OF COMPUTER ENGINEERING AND INFORMATION TECHNOLOGY					
VENUE : IBM LAB, MALIBA PHARMACY COLLEGE, UKA TARSADIA UNIVERSITY					
Time	DAY I 22/07/2019	DAY II 23/07/2019	DAY III 24/07/2019	DAY IV 25/07/2019	DAY V 26/07/2019
09:00 AM to 09:30 AM	<i>Registration and High Tea : IBM Lab</i>		<i>High Tea (IBM Lab)</i>		
09:30 AM to 11:00 AM	Python Essentials for Deep Learning	Image Processing using Python	Introduction to Multilayer Perceptron	Introduction to Convolutional Neural Network	Introduction to Recurrent Neural Network
11:00 PM to 12:30 PM	Inaugural Ceremony & Python Essentials for Deep Learning	Image Processing using Python	Implementing Multilayer Perceptron using Tensorflow	Implementing Convolutional Neural Network using Tensorflow	Implementing Recurrent Neural Network using Tensorflow
12:30 PM to 01:15 PM	<i>Lunch (Girls Hostel)</i>				
01:15 PM to 02:30 PM	Tensorflow using Python	Introduction to Neural Network	Tuning Multilayer Perceptron for Performance	Tuning Convolutional Neural Network for Performance	Tuning Recurrent Neural Network for Performance
02:30 PM to 02:45PM	<i>Tea Break (IBM Lab)</i>				
02:45 PM to 04:00	Tensorflow using Python	Introduction to Neural Network	Hands-On Case Study	Hands-On Case Study	Hands-On Case Study & Validictory

Day 1: Prof. Varsha Mali

Prof. Varsha Mali, Assistant Professor, IT Department, SIES GST, Mumbai University, India, has delivered talk on Day 1 and Day 2 with theory and practical approach.

Session 1: Python Essentials for Deep Learning

She has discussed following points:

- Characteristics of Python Language
- Industry Demand
- Inbuilt Python Libraries for Machine Learning
- Installation of NumPy Library in Linux
- Arrays in Numpy
- Array Creation
- Array Indexing
- Basic Operations on Array

Session 2: Python Essentials for Deep Learning

- Python Data Analysis Library
- Pandas Library
- Problems can be solved by Pandas Library
- Installation of Pandas Library
- Dimension and Description
- Panda Series
- Pandas Data Frame
- Pandas Panel
- Series Basic Functionality



Inauguration by Honorable Director Dr. R. V. Patil and Convener

Session 3: Tensorflow using Python

She has discussed and demonstrate the Hands-on using TensorFlow on various topics as below:

- Array
- String Function
- Dictionary
- Loops
- Functions
- Anonymous Function
- Lamba Function
- Classes and Objects
- Class Inheritance

Session 4: Tensorflow using Python

In this session, Hands-on for following topics are covered:

- Import of External Dataset
- To read Dataset with CSV file
- Use of NumPy
- Use of Panda
- Use of air quality CSV dataset



Group Photograph with Expert Prof. Varsha Mali

Day 2: Prof. Varsha Mali

Prof. Varsha Mali has discussed the following topics on Day2.

Session 1: Introduction to Neural Network

- Overview of Neural Network
- Machine Learning Algorithms
- Deep Learning, Machine Learning and Artificial Intelligence
- Perceptron Neural Network
- Activation Functions
- Bias
- Learning Rate
- Weights
- Number of Input and Output Neurons
- Hidden Neurons and Hidden Layers

Session 2: Introduction to Neural Network

- Tuning parameters of Neural Network
- Linear and Nonlinear Inputs
- Limitations of Single Layer Perceptron Neural Network
- Backpropagation Neural Network
- Forward and Backward Functioning of Network

Session 3: Hands on Image Processing Neural Network

- Installations of TensorFlow and Keras
- Comparison of TensorFlow and Keras
- Hands-on for the inbuilt dataset of Keras Library
- Implementation of Single Layer Perceptron Neural Network with inbuilt Library
- Parameter Tuning for improvement of results

Session 4: Hands on Image Processing Neural Network

- Importing of own Dataset
- Resizing of Dataset
- Normalization of Dataset
- Introduction to errors
- Implementation of Backpropagation Network
- Tuning of Parameters



Session Conducted by Prof. Varsha Mali

Day 3: Dr. Vijay D. Katkar

Dr. Vijay D. Katkar, Associate Professor, IT Department, SIES GST, Mumbai University, India, has delivered sessions on Day 3, Day 4 and Day 5.

Session 1: Introduction to Multilayer Perceptron

- Overview of Multilayer Perceptron
- Difference between single layer and multilayer perceptron
- Block diagram and algorithm of multilayer perceptron

Session 2: Implementation of Multilayer Perceptron

- Explanation of Tensor flow
- Tensor flow and Keras
- Hands-on for multilayer perceptron

Session 3: Tuning of Perceptron for Performance Improvement

- List of Activation Functions
- Tuning of Activation Function for performance improvement
- Tuning of learning rate for performance improvement
- Tuning of hidden neurons and hidden layers for performance improvement

Session 4: Hands-on Case Study

- Hands-on with standard image dataset
- Hands-on with real time images with resize and normalization of images
- Tuning of parameters for performance improvement



Session conducted by expert Dr. Vijay D. Katkar



Introduction about IEEE Student Chapter by Dr. Madhavi Desai

Day 4: Dr. Vijay D. Katkar

Session 1: Introduction to Convolution Neural Network

- Need of Convolution Neural Network over Feed Forward Neural Nets
- Algorithm and Block diagram of Convolution Neural Network
- Convolution Layer
- Max-pooling Layer
- Classification and Fully Connected Layer

Session 2: Implementing Convolution Neural Network with TensorFlow

- TensorFlow library to implement CNN
- Implementation of activation Functions
- Max-pooling
- Implementation with Existing Dataset of Library

Session 3: Tuning Convolution Neural Network for Performance

- Optimization with activation Function
- Implementation with different hidden layers
- Implementation and optimization of accuracy

Session 4: Hands-on Case Study

- Hands-on with standard image dataset with Convolution Neural Network
- Hands-on with real time images with resize and normalization of images
- Tuning of parameters for performance improvement



Hands-on session conducted by expert Dr. Vijay D. Katkar

Day 5: Dr. Vijay D. Katkar

Session 1: Introduction to Recurrent Neural Network

- Need of Recurrent Neural Network over Feed Forward Neural Nets and Convolution Neural Network
- Algorithm and Block diagram of Recurrent Neural Network
- Convolution Layer
- Max-pooling Layer
- Classification and Fully Connected Layer

Session 2: Implementing Convolution Neural Network with TensorFlow

- TensorFlow library to implement CNN
- Implementation of activation Functions
- Max-pooling
- Implementation with Existing Dataset of Library

Session 3: Tuning Recurrent Neural Network for Performance and Hands-on

- Optimization with activation Function
- Implementation with different hidden layers
- Implementation and optimization of accuracy
- Hands-on with standard image dataset with Convolution Neural Network
- Hands-on with real time images with resize and normalization of images
- Tuning of parameters for performance improvement

Session 4: Research Scope with Deep Learning Neural Networks

- Application in Medical Domain
- Application in Recommendation System
- Application in Agriculture and Environment
- Application in Security



Feedback given by participant



Certificate distribution to participants



Certificate distribution to participants



Group Photograph with expert Prof. Vijay D. Katkar



Group photograph of Conveners and Coordinators with Expert



Conveners and Coordinators with Honorable Director and Expert



Dr. Vijay D. Katkar with Dr. Rajkumar V. Patil

IEEE and IEEE SPS Membership Drive

Prof. Naitik Nakrani and Dr. Madhavi Desai presented the benefits of IEEE and IEEE Student Membership. They kept the desk in last two days to register the interested participants to be member and to get the required information. No Participants are ready to be member.

Dr. Madhavi Desai, Convener STTP is ready to be member of IEEE SPS.



Dr. Madhavi Desai
Convener