Sarvajanik College of Engineering and Technology
Department of Computer Engineering

GUJCOST-DST Sponsored 3-Days Workshop on "Python for Data Science"

Objectives of the Workshop:

- To promote growth and advances in Python programming.
- To communicate wider use of Python libraries for implementation of data science applications.
- To provide hands-on training to participants using Python libraries such as Numpy, Pandas, NLTK, Scikit Learn, Tensorflow and Keras.
- To provide research inclination towards the future scope in the field of data science.

Dates & Days: 28-30 June 2019 (Friday to Sunday)

Time : 09.00 am to 5.00 pm

Venue: Theory sessions in Seminar Hall, 1st Floor, Department of Electronics and Communication, SCET
Hands-on sessions in CO Phase-III lab, Department of Computer Engineering, SCET

Speakers:

- Dr. Nithin George, Associate Professor, IIT Gandhinagar
- Mr. Aditya Tondon, Senior Manager – IT Application, ESSAR Steel India Ltd., Surat
- Dr. Priyank Thakkar, Associate Professor, Nirma University, Ahmedabad
- Dr. Mayuri Mehta, Professor, SCET, Surat
- Prof. Priyang Bhatt, Assistant Professor, GCET, Vidyanagar
- Prof. Dhatri Pandya, Assistant Professor, SCET, Surat
- Mr. Akil Surti, Project Manager, Researcher and Corporate Trainer, Enlighten Infosystems, Vadodara

Participants: 47 faculty members and students from Computer Engineering (BE & ME), M.Sc.(IT), MCA and BCA participated in the workshop. They were from various colleges across South Gujarat region.

Coordinator: Prof. (Dr.) Mayuri Mehta, Department of Computer Engineering.

Members of Organizing Committee:
Prof. Bhavesh Patel
Prof. Jaydeep Barad
Prof. Rachana Oza
Dr. Nirali Nanavati

Summary:

Department of Computer Engineering of Sarvajanik College of Engineering and Technology organized GUJCOST-DST sponsored 3-days workshop on “Python for Data Science” during 28-30 June 2019.

The workshop was aimed to guide the students and faculty members to excel the use of Python for professional activities in the field of Data Science. The lectures and lab sessions of the workshop were conducted by eminent speakers from different disciplines of academia. The following table summarizes the various sessions of the workshop.

Sr. No.	Speaker Name and Session Title	Session Details
1.	**Prof. Priyang Bhatt** 1. Introduction to Python for Data Science 2. Significance of Numpy for Data Science	In this introductory session of Python, Prof. Priyang introduced core fundamentals of Python required to understand the various Python libraries. He discussed advantages of using Python over other programming languages. Participants practiced Python programming syntax and learned how to create and manipulate Python lists, tuples, dictionaries, arrays and functions in Python. In his 2nd session, he introduced Numpy Python library which is used to build arrays and to perform interesting calculations on arrays. Specifically, he introduced several arithmatic operations such as sum(), sort(), etc and several functions such as zeros(), ones(), revel(), flatten(), etc. He also discussed benefits of using Numpy library over list and arrays supported by core Python. He demonstrated some examples using Numpy and the participants practiced those examples concurrently.
2.	**Mr. Akil Surti** 1. Data Manipulation and Analysis using Pandas 2. Data Visualization using Matplotlib	Mr. Akil Surti educated participants about Pandas Python library. First, he discussed installation steps of pandas in Pycharm. Subsequently, he discussed dataframe to load dataset, series objects and panel objects. In his 2nd session, he explained the importance of visualization of huge amount of data. Participants learned how to create and customize plots on real data using Matplotlib Python library. Specifically, they learned how to generate plots, histograms, power spectra, bar charts, errorcharts, scatterplots, etc., with just a few lines of code.
3.	**Mr. Aditya Tandon** Data Science: Introduction and Applications	Mr. Aditya started his session discussing the significance of data science today and tomorrow. Next, he discussed data science process including data collection, data cleaning, data analysis, data modelling & data visualization. Finally, he discussed various data science applications along with real-life examples. He also focused on applications of data science industry. He concluded with discussion of potential of data science for future applications with ever increasing data.

		In this lab session, Dr. Nirali and Prof. Rachana demonstrated potential of Tensorflow for machine learning/deep learning. They gave good exposure about the Tensorflow and its libraries. They demonstrated several examples that helped participants to get an idea of working of Tensorflow.
4.	**Dr. Nithin George** Machine Learning for Data Science	Dr. Nithin George started with neural network and covered the basic concepts of neural network such as neuron, input layer, output layer, kernal, hyper parameters, etc, in deep. Then he explained working of neural network discussing terminologies associated with it such as weight, bias, activation function, etc. Finally, he discussed multilayer perceptron and Cover's theorem.
5.	**Dr. Mayuri Mehta** TensorFlow: From Installation to Building Machine Learning Models for Data Analysis	Dr. Mayuri first discussed Data Flow Graph (DFG) – heart of the TensorFlow and tensors. Then she discussed popularity of TensorFlow discussing its significance along with major applications, advantages and disadvantages. Subsequently, she demonstrated TensorFlow installation along with basic Anaconda commands. Finally, she discussed major elements of TensorFlow program and demonstrated some TensorFlow examples. Participants executed those examples concurrently.
6.	**Prof. Dhatri Pandya** NLTK: for Natural Language Text Processing	Prof. Dhatri started her session discussing significance of Natural Language Processing (NLP) and its applications. Then she talked about the various corpuses available for NLP and demonstrated examples using those corpuses. Finally, she covered VADER Sentiment Analysis. VADER (Valence Aware Dictionary and sEntiment Reasoner) is a lexicon and rule-based sentiment analysis tool that is specifically attuned to sentiments expressed in social media, and works well on texts from other domains.
7.	**Prof. (Dr.) Priyank Thakkar** 1. Scikit Learn for Machine Learning Algorithms 2. Deep Learning Models for Data Analysis 3. Hands-on Deep Learning Models using Keras	During his first session, Dr. Priyank introduced Scikit Learn which is a simple and efficient tool for data mining and data analysis. He demonstrated some concrete examples using Scikit Learn. During his second session, he introduced Convolutional Neural Network in detail and made participants aware of each step of working of Convolutional Neural Network. He also gave good exposure on Supervised Learning with real-time examples and Feed Forward Neural Network. In third session, he introduced Keras for deep learning and its various libraries. He also demonstrated some examples that helped participants to understand the working of Keras.

I would like to extend my sincere gratitude to Sarvajanik Education Society and Sarvajanik College of Engineering and Technology for permitting me to submit workshop proposal to GUJCOST and subsequently providing necessary infrastructure for conducting the workshop after receiving workshop approval from GUJCOST.

I am thankful to our honourable principal Sir Dr. Hiren Patel for his continuous guidance and support. I extend my gratitude to Mr. Bhaskar Cheruku, Registrar for his continuous positive and prompt support. I also thank Prof. (Dr.) Keyur Rana, Ex-HOD and Prof. (Dr.) Pariza Kamboj, HOD, Department of Computer Engineering for their constant support.

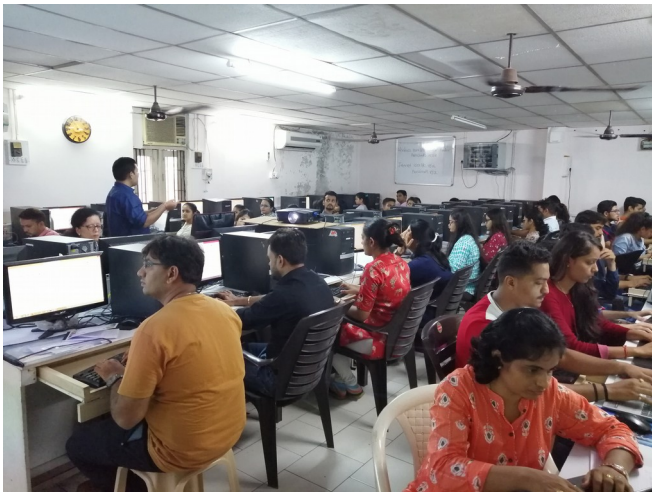
I extend my earnest gratitude to all the eminent speakers (Dr. Nithin George, Dr. Priyank Thakkar, Mr. Aditya Tandon, Mr. Akil Surti, Prof. Priyang Bhatt and Prof. Dhatri Pandya) who traveled long distance and spare their valuable time. All the sessions were highly educative and with deep insights.

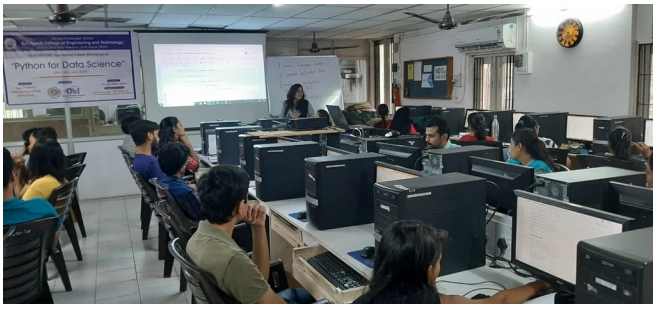
I would like to express my deep gratefulness to members of organizing committee (Prof. Bhavesh Patel, Prof. Jaydeep Barad, Prof. Rachana Oza and Dr. Nirali Nanavati) for their relentless help and support without which it would have been difficult to conduct the workshop smoothly.

I thank Dr. Maulin Joshi, HOD, EC Department for permitting use of Seminar Hall. I also thank lab assistants for helping in preparation of lab and during theory/hands-on sessions too. I deeply appreciate the support extended by all the student volunteers (Kushang Mistry, Vishal Jobanputra, Tejswini, Kshitij, Zeel, Bhavisha, Hetvi, Helly, Komal and Margi) for their assistance in preparing brochure,feedback form preparation, capturing photos, presenting vote of thanks to speakers, etc. My sincere thanks to all staff members of CO department for their help in all the possible ways whenever required. I am also thankful to lab attendants for being always ready for any kind of work.

Last but not the least, I am very thankful to all the participants for your kind presence during the workshop. Hope you must have received valuable insights in Python Libraries for Data Science.

Following are some glimpses of the workshop.

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