



**Sandip Foundation's
Sandip Institute of Technology and Research Centre, Nashik
Department of Computer Engineering**

**Activity Report
of
Workshop
on**

**A Practical Based Learning on IOT,
Big-Data Analytics and Machine
Learning**

(10th September to 16th September 2018)

**Organized by,
Sandip Foundation's
Sandip Institute of Technology and Research Centre
Department of Computer Engineering**

Name of Program : Hands on session on “A Practical Based Learning on IOT, Big-Data Analytics and Machine Learning”.

Date : 10th September to 16th September 2018

Resource Person : Mr. Tushar B. Kute

Address of company : Mitu Skilologies, Pimpri Chinchwad, Pune

Event Coordinator : Prof. Sandip M. Walunj (Asst. Professor, SITRC)

Participants : BE Students (Computer Department)

Venue : Computer Department, Software Lab (A Building Basement)

Aim :

The aim of this workshop is designed to increase the understanding of the hardware and software infrastructure associated with big data analytics and machine learning as well as fostering the discussion on IOT related issues and its practical architecture.

Objective :

- 1) To study IoT data characteristics in real-world.
- 2) To study how big data technique can be applied to classify the data.
- 3) To study why the Machine learning algorithms be applied to IoT smart data.
- 4) The workshop is designed to increase the understanding of the hardware and software infrastructure associated with big data analytics. Student will work with experts to outline big data objectives and strategy, better understand available solutions and explore the benefits of each as they apply to business objectives.

Outcomes :

- 1) The workshop mainly focuses on Big data, IOT, Machine learning, so that students are able to understand the concept and protocol of IOT, demonstration of IOT simulators, Machine learning algorithms, Python Programming, deep learning. It also covers overview an evolution Big data analytics.
- 2) Lab sessions are arranged so that participants will have hands on in IOT simulator,

Python programming, and machine learning algorithms.

3) The knowledge and understanding of students about the fundamental IOT paradigms, architectures, possibilities and challenges both with respect to software and hardware is studied through this workshop.

4) Students learn the basics of Internet of Things and its application and how it relates to cloud computing concepts.

5) Students got information about how open platform allow you to store your sensor data in cloud through this sessions.

Contents:

[06 Hours]

Python Programming:

- Installation and History
- Language basics
- Basic Syntax, Operators,
- Decision Making statements
- Loops control statements
- Strings, Lists
- Tuples, Dictionary
- Creating and using Functions
- Creating Modules and Packages
- Files I/O
- Command line arguments
- Exception Handling

[06 Hours]

Introduction to Raspberry Pi

- Architecture, features and versions
- OS for ARM architectures

- OS installation
- Raspbian Fundamentals: Working in GUI / Terminal Mode

- Complete Raspbian configuration
- Introduction to GPIO
- Networking and accessing via ssh or telnet or PuTTY
- Sensors and GPIO interfacing **IOT**
- **Design using Raspberry Pi**
- Introduction to RPi python programming
- Blinking the LEDs
- Ringing Buzzers
- Interfacing the IR sensor
- Interfacing LDR sensor
- Interfacing the Ultrasonic distance Sensor HC-SR04
- Installation of extra libraries in Python
- Interfacing the Temperature sensors – DHT11
- Creating the Sensor – RPi – Actuator system
- Collecting the sensors data.
- Informing the user through internet.
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- **Cloud and the IOT**
- Interfacing with open ThinkSpeak cloud
- Uploading data on Cloud
- Generating the graphs and downloading
- Using cloud in Android App
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[06 Hours]

- **Data Analytics with Pandas**
- Introduction to Pandas
- Installation
- Reading and writind datasets
- Dataset operations: head, tail, dimensions
- Applying the filters
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- **Python**
- Inrroduction to NumPy
- Installation
- The ndarray
- NumPy operations and functions
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- **Data Visualization with Matplotlib**
- Introduction to Matplotlib
- Installation
- Basic plots with matplotlib
- Drawing multiple graphs
- Colors and Markers
- Bar plots and Histograms **Introduction to Machine Learning**
- ML with Python **Linear Regression**
- Theoretical introduction Using real world datasets

- Training and Testing sets
- Linear Regression application
- Plotting

[06 Hours]

- **Multiple Linear Regression**
- Theoretical introduction
- Using real world datasets
- Training and Testing sets
- Multiple Regression application
- Plotting **Time Series**
- Theoretical introduction
- Using real world datasets
- Training and Testing sets
- Time Series application
- Plotting **Decision Tree**
- Theoretical introduction
- Using real world datasets
- Training and Testing sets
- Decision Tree application
- Plotting **KNN**
- Theoretical introduction
- Using real world datasets
- Training and Testing sets

Summary Report of Practical Based Learning on IOT, Big-Data Analytics and Machine Learning.

For awareness on recent technologies and Practical Based Learning on IOT, Big-Data Analytics and Machine Learning in IT industry, the department of Computer Engineering of Sandip Foundation's, Sandip Institute of Technology and Research Center organized *Four Day Seminar on Awareness on recent technologies in IT industry* on the Date: 10th September 2018 to 16th September 2018 , The lecture was started with welcome & felicitation of Mr. Tushar B. Kute from computer department.

To attend the same workshop total 37 students from Computer Engineering were present. At the end of event students were appreciated. The workshop concluded with vote of thanks.

Student List:

| Sr. No. | Student Names |
|----------------|----------------------------|
| 1. | Shubham Dhanraj Mitkari |
| 2. | Ashwini Subhash Pingle |
| 3. | Yogita Shantaram Sonawane |
| 4. | Nikita Vijay Wagh |
| 5. | Mrunal V. Katkari |
| 6. | Niharika Singh |
| 7. | Aashish Pal |
| 8. | Anurag Tejwani |
| 9. | Aditya Rajendra Patil |
| 10. | Yash Chaudhari |
| 11. | Praveen Kadbhane |
| 12. | Yash Dattatray Avhad |
| 13. | Patil Sudhir Rajaram |
| 14. | Shyam Pratap Singh Rathore |
| 15. | Kshitij Dipraj Dhanvijay |

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|-----|----------------------------|
| 16. | Harish Ravikant More |
| 17. | Sameer Somnath Sangle |
| 18. | Kiran Prakash Lulla |
| 19. | Kalpesh Jitendra Misal |
| 20. | Deval Ramdas Thakkar |
| 21. | Ashish Manoj Patil |
| 22. | Vikas Gabhane |
| 23. | Vajra Somvanshi |
| 24. | Shubham nagare |
| 25. | Kunj Ranpura |
| 26. | Nikhil Dugaje |
| 27. | Amit Harnath Katewa |
| 28. | Patil Kushal Sudhakar |
| 29. | Gopale Shivani Dnyaneshwar |
| 30. | Shubham Yadav |
| 31. | Anjali mukund sonawane |
| 32. | Hiren Chatrola |
| 33. | Borse Pradnya Balasaheb |
| 34. | Vijay Rajkumar Sonawane |
| 35. | Patil Vicky Pramod |
| 36. | Nair Krishnendu |
| 37. | Manjulkar Priyanka |

Photographs:

1) Welcome and Felicitation of expert on first day.



2) Photographs during the session.







Prof. Sandip M. Walunj
Co-ordinator

Prof. (Dr.) Amol. D. Potgantwar
(HOD, Comp Dept)