

Mukesh Patel School of Technology Management & Engineering

Computer Engineering Department

Report

on

Data Visualization with Python

Under the Initiative of



**MUKESH PATEL SCHOOL OF
TECHNOLOGY MANAGEMENT
& ENGINEERING**

Computer Engineering Department

AND



Network for the Open Web (N.O.W.)

20th - 21st May 2020

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Objective

As an industry, Big Data is growing at a dizzying speed, with nearly 2.3 trillion gigabytes of data produced every day, and the data galaxy doubling every couple of years. So, the ability to make sense of all this data and use it to change the way we live and interact with one another is set to inevitably become a vital part of business.

With a predicted growth of US\$7.3 billion this year, the market size for big data is expected to soar past the US\$40 billion mark over the next few months, which is why a new generation of trained data experts and analysts are needed to lead the way and establish better data governance to win over consumers.

The aim of this workshop was to introduce students to the concept of data visualization and teach them the basics by practical examples from exploratory data analysis to visual analysis of Covid-19 data.

Profile of the instructor



Prof. Radhika Chapaneri has more than 10 Year of teaching experience to Undergraduate Electrical and Computer Engineering courses. Her research interests include Cryptography and Network Security, Image encryption and Machine learning. She is a Technical Guide and Mentor for projects of under graduate students

Attendees

List of attendees of all two days:

- Aditi Mohan
- Aajinkya Singh
- Nirali Kabli
- Vedant Bapodra
- Siddharth Sekar
- Aman Roy
- Krithika Iyer
- Samkit Shah
- Harshee Pitroda
- Rajvi Porwal
- Janki Kanakia
- Mokshit Jain
- Parthav Joshi
- Pariti Jain
- Bhagyesh Shah
- Nisarg Sheth
- Ravi Patel
- Abhishek Gupte

- Yug Kathiriya
- Meghan Patil
- Abhi Shah
- Sakshi Butala
- Esha Shah
- Rishil Vaidya
- Nishita Panchal
- Aryan Kapoor
- Uraaz Gorimar
- Tuhina Banerjee
- Rohit Pandey
- Rishab Singh
- Arundhati Mishra
- Manasvi Gandhi
- Mohit Kewalramani
- Param Sejjal
- Siddhi Desai
- Param Jadhav
- Nitin Mishra
- Naitika Goenka
- Harshit Thakkar
- Yashvi Agrawal
- Diya Hirani
- Dhruv Thakkar
- Rohit Patil
- Kiran Shete
- Rahil Dattani
- Vicky Rajesh Maru
- Mihir Panchal
- Dhruvin Shah
- Shramika Kanekar
- Maitre Varia
- Ansh Jain
- Dhvani Parikh

E-Certificates were given to all these attendees.

Summary

Data is the new oil of digital economy. Like oil, for those who see Data's fundamental value and learn to extract and use it there will be huge rewards.

Data can help an organization understand its customer needs, recruit the right talent, and define a strategy for the 21st century.

We're in a digital economy where data is more valuable than ever. It's the key to the smooth functionality of everything from the government to local companies. Without it, progress would halt.

To get students on board with Data Visualization, NOW Mozilla Club along with Computer Engineering Department conducted a 2 day workshop on Data Visualization using Python which was hosted by Prof. Radhika Chapaneri.

Following topics were covered during the workshop:

- Reading and Loading datasets
- Numpy and Pandas
- Exploratory data analysis
- Data Visualisation using matplotlib and seaborn libraries
- Visual analysis of benchmark datasets
- Visual analysis of Covid-19 data

Screenshots

4:13 PM Thu 21 May

colab.research.google.com/drive/1jmeYV6jGHVH7Y2xmEzdLvaoZVjn27e7authuser=4

DV_1_PythonBasics_RC.ipynb

File Edit View Insert Runtime Tools Help Last saved at 11:19 AM

+ Code + Text

Data Visualization using Python

Organized by NOW Mozilla Club in Collaboration with Computer Engineering Department

Instructor: Radhika Chapaneri

May 2020

Types of data

Quantitative: Continuous / Discrete

RC

RC_Visualization-2...zip Demo (2).ipynb Demo_RC.html Demo.html Show all

Radhika C.

4:48 PM Thu 21 May

File | C:/DV/Day1/DV_1_PythonBasics_RC.html

Python Libraries

Python has an abundance of additional modules or libraries that augment the base framework and functionality of the language. Library is a collection of functions that can be accessed to complete certain programming tasks without having to write your own algorithm.

We will focus on the following libraries which we will need for Data Visualization:

- **Numpy** is a library for working with arrays of data.
- **Pandas** provides high-performance, easy-to-use data structures and data analysis tools.
- **Matplotlib** is a library for making graphs.
- **Seaborn** is a higher-level interface to Matplotlib that can be used to simplify many graphing tasks.

RC_Visualization-2...zip Demo (2).ipynb Demo_RC.html Demo.html Show all

Radhika C.

5:35 PM Thu 21 May 39%

Lecture 1: Data Visualisation using Python
01:01:13

RC_Visualization - Google Drive | DV_2_RC.ipynb - Colaboratory | DV_2.ipynb - Colaboratory | DV_2_RC

File | C:/DV/Day1/DV_2_RC.html

```
In [4]: from math import pi
x = np.linspace(-pi, pi, 200)
y = np.sin(4*x)
z = np.cos(4*x)

plt.plot(x, y, color='k', linestyle='--', linewidth=3, marker='.')
plt.plot(x, z, color='r', linestyle='-', marker='o')
plt.legend(['sin', 'cos'])
plt.grid()
plt.show()
```

RC

RC_Visualization-2...zip | Demo (2).ipynb | Demo_RC.html | Demo.html Show all

Radhika C.

5:48 PM Thu 21 May 38%

Lecture 1: Data Visualisation using Python
01:14:15

RC_Visualization - Google Drive | DV_2_RC.ipynb - Colaboratory | DV_2.ipynb - Colaboratory | DV_2_RC

File | C:/DV/Day1/DV_2_RC.html

```
plt.show()
```

Bar blot of student distribution for workshop

Programme Type	Count
BTechIntegrated	60
MCA	20
BTech	35

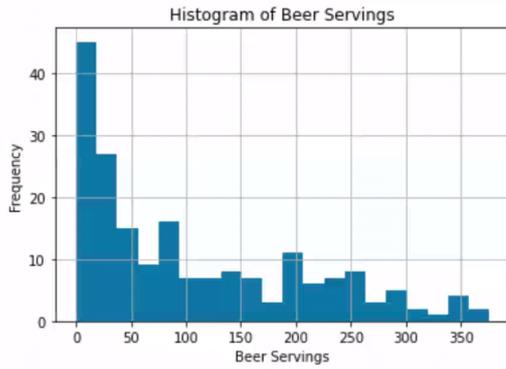
RC

RC_Visualization-2...zip | Demo (2).ipynb | Demo_RC.html | Demo.html Show all

Radhika C.

```
plt.ylabel('Frequency')
```

Out[5]: Text(0, 0.5, 'Frequency')

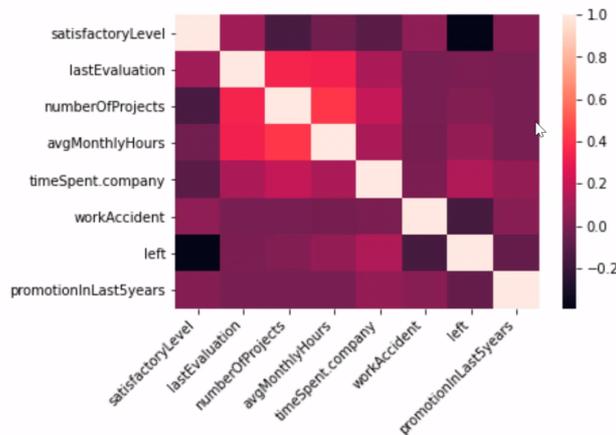


```
In [6]: # compare with density plot (smooth version of a histogram)
```

drive-download-20...zip drive-download-20...zip Show all

Radhika C.

```
Text(6.5, 0, 'left'),  
Text(7.5, 0, 'promotionInLast5years')]
```



drive-download-20...zip drive-download-20...zip Show all

Radhika C.

Sample copy of certificate



The certificate features a central blue and yellow graphic with the name 'Aditi Mohan' in a large, bold font. The text is surrounded by decorative elements: a grey and white striped circle with blue and orange dots on the left, a green and yellow triangle with a red 'n' and 'w' logo on the top right, a blue and orange abstract shape on the bottom left, and a teal and orange circular graphic on the bottom right.

 SVKM'S
NMIMS
Deemed to be UNIVERSITY

**MUKESH PATEL SCHOOL OF
TECHNOLOGY MANAGEMENT
& ENGINEERING**

CERTIFICATE

OF PARTICIPATION

THE CERTIFICATE IS PROUDLY PRESENTED TO

Aditi Mohan

For participating in the 2 day online workshop on **DATA VISUALIZATION WITH PYTHON** organised by NOW Mozilla Club in collaboration with Computer Engineering Department.


DR. PRAVIN SHRINATH
HOD
Computer Engineering Department
MPSTME


RADHIKA CHAPANERI
Course Instructor and
Assistant Professor
Computer Engineering Department
MPSTME

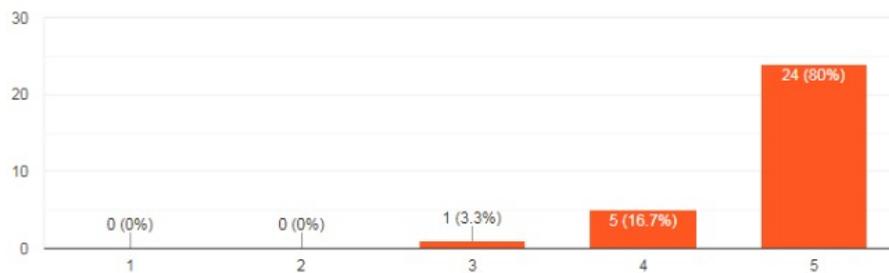

PROF. PRATHAMESH CHURI
Mentor, NOW and
Assistant Professor
Computer Engineering Department
MPSTME

Feedback Responses

Feedback was taken from attendees. The feedback responses were extremely positive.

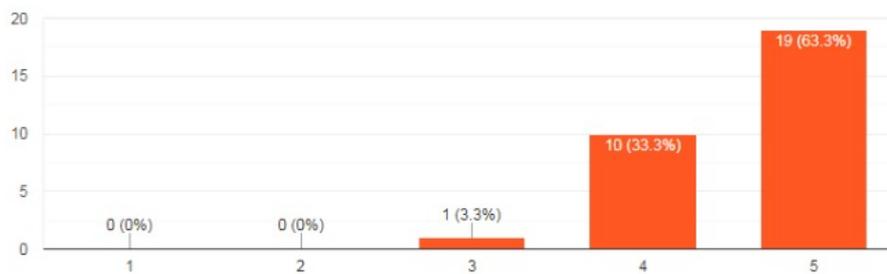
Are you able to understand basics of Python after attending the session?

30 responses



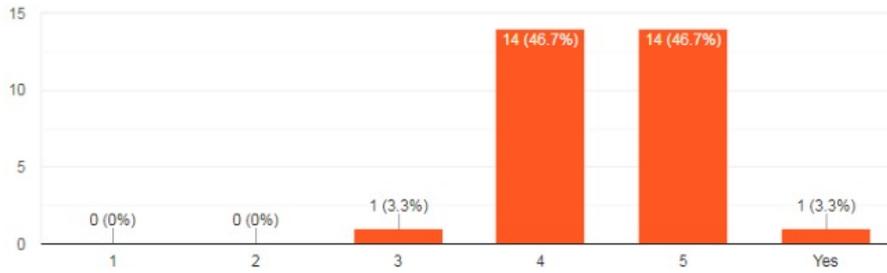
Will you continue to work based on the skills you acquired through the session and will be able to apply all that you have learnt?

30 responses



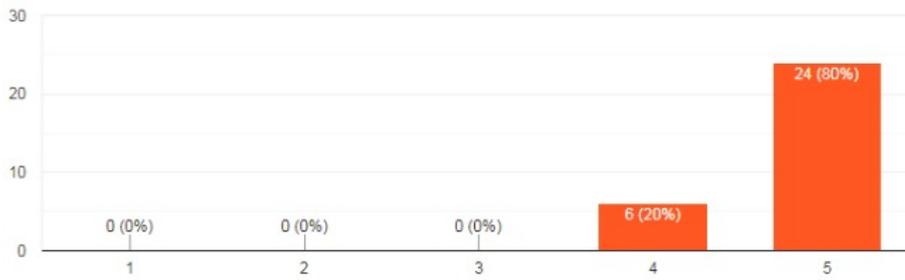
Are you able to visualize the data on different datasets effectively using the libraries that were taught?

30 responses



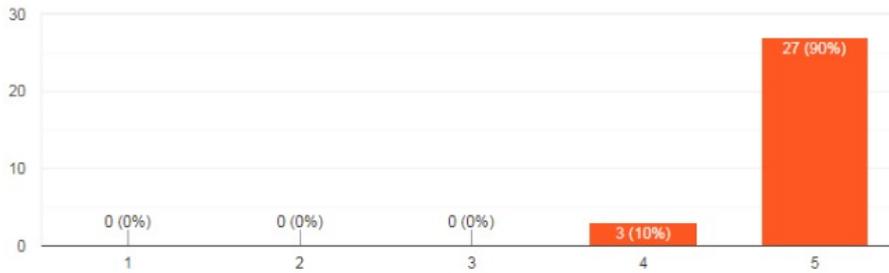
Did the session live up to your expectations?

30 responses



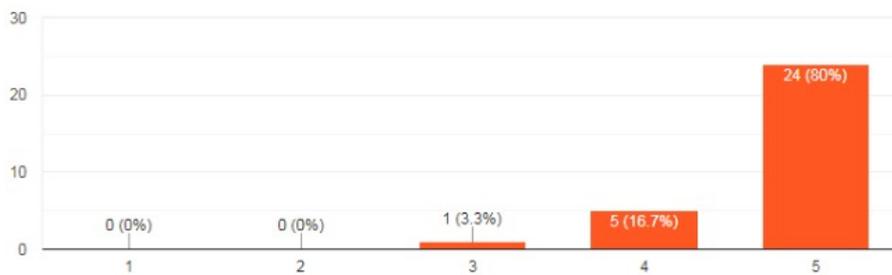
How interactive was the session?

30 responses



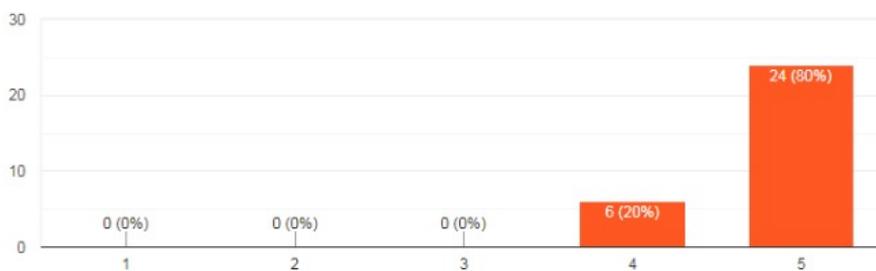
In future, will you be interested in sessions on topics such as machine learning, deep learning, TensorFlow etc?

30 responses



Overall, how satisfied were you with the session?

30 responses



Conclusion

Data visualization is the act of taking information (data) and placing it into a visual context, such as a map or graph. Data visualizations make big and small data easier for the human brain to understand, and visualization also makes it easier to detect patterns, trends, and outliers in groups of data. Good data visualizations should place meaning into complicated datasets so that their message is clear and concise.

The workshop was conducted to get students on board with Data Visualization and give them the knowledge required to get started in this field. The workshop was well-received by all the attendees and the feedback was extremely positive.