



# Data Visualization using DASH

## INTRODUCTION

Why Plotly Dash?

Topics 1, 2 and 3 are optional.

### 1. PYTHON

#### Lists functions

- Adding & Removing Elements
- Sorting & Reversing Lists
- Indexing List Elements

#### Slicing techniques

#### Dictionaries

#### Comprehension of list

#### Object-Oriented Programming

- Classes and Objects

#### Decorator Functions and Annotation

### 2. INTRO TO PYCHARM

#### Installing PyCharm

#### Create a Project

#### Run a Dash App

#### Installing Dash

### 3. INTRO TO PANDAS

#### Installing pandas

#### Data structures in pandas

- Series
- DataFrames

#### Selecting Elements in DataFrames

- Select by Column, Index and Label
- Select by Slice

#### Modifying a DataFrame

### 4. INTRO TO DASH APP

#### Setup the Project

- Importing the Libraries
- Data Management
- Layout and Styling
- Styling: Make Your App Interesting

#### Dash Components

- Core Components

HTML Components

**Dash Callbacks**

Callback Decorator

Callback Function

Callback Diagram

**Express Line Charts**

## 5. ADVANCED LAYOUTS AND GRAPHS

**Setting Up the Project**

Importing the Libraries

Data Management

Dash Bootstrap Styling

**Core Components**

**Dash Callbacks**

Data Retrieval Callback

Figure Creation Callback

Callback Diagram

Callback Ordering

**Express Choropleth Maps**

## 6. BUILDING LARGER APPS: INVESTMENT PORTFOLIO

**Asset Allocation**

**Download and Run the App**

**App Structure**

**Setting Up the Project**

Importing the Libraries

Adding the Stylesheets

Data Management

**Layout and Styling**

**Components**

Tabs

Card Containers and Sliders

Input Containers

Tool Tips

Data Tables

Content Tables

Markdown Text

**Pie Chart with Plotly Graph Objects**

**Line Chart with Plotly Graph Objects**

**Dash Callbacks**

Interactive Figures

Callbacks Using State

Circular Callbacks and

Synchronizing Components  
Callbacks with Multiple Inputs and Multiple Outputs

## 7. EXPLORING MACHINE LEARNING

### Dashboard Apps to Make Machine Learning Models More Intuitive

Classification: A Short Guide

Support Vector Machines

### The SVM Explorer App

Python Libraries

Data Management

### Layout and Styling

Layout

Styling

### Reusable Components

Defining a Card

Defining a Formatted Slider

Defining a Named Slider

Defining a Named Dropdown

Using a Dash Graph

Creating a Plotly Contour Plot

Using Dash Loading

### Dash Callbacks

## 8. TIPS AND TRICKS

### Dash Enterprise App Gallery

### Enhancing Your Learning with the Plotly Forum

### App Theme Explorer

### Debugging a Dash App

### dash-labs

### Formatting Code with Black

