

# Technical Workshop

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Data Visualization and  
Machine Learning

Sign in!



# Agenda

## Introduction

Intro to **Data Visualization** and **Machine Learning**

## Demonstration

Walkthrough of **AzureML** and **Matplotlib**

## Challenge

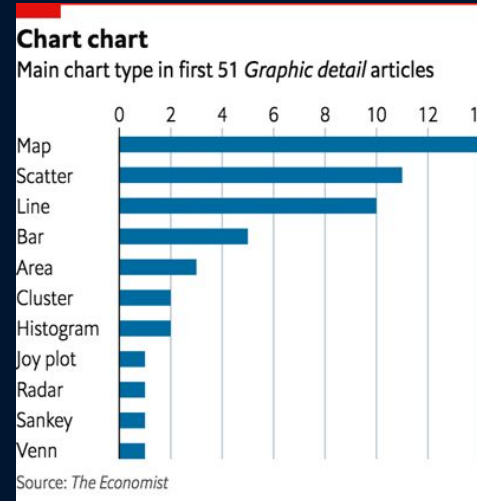
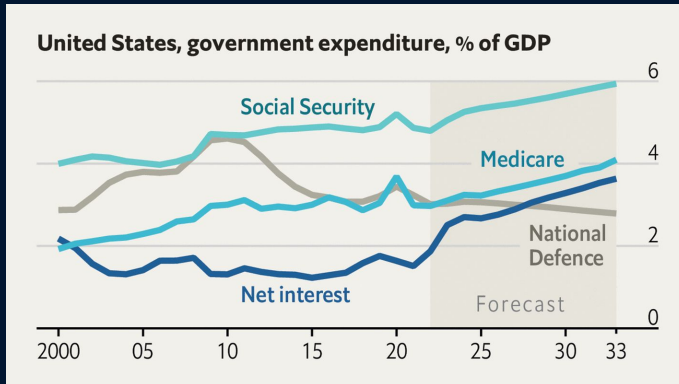
Win a **sticker** 🏷️

## Questions

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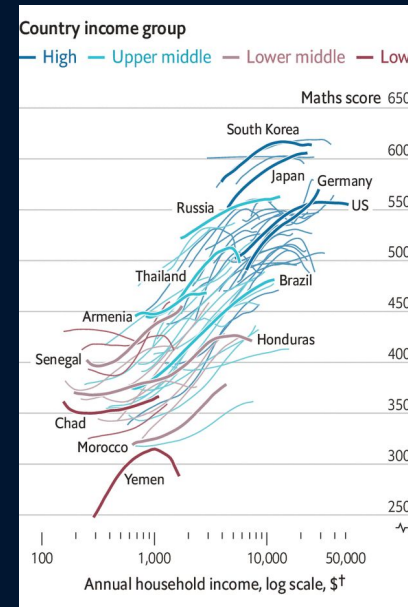
# What is Data Visualization

- Graphical representation of data to help people understand information more easily
- Involves charts, graphs, maps, etc., to convey complex patterns concisely



# Why is Data Visualization Important?

- Helps uncover hidden relationships, identify trends, and provide visual context for data
- Enables users to make informed decisions and gain insights from data

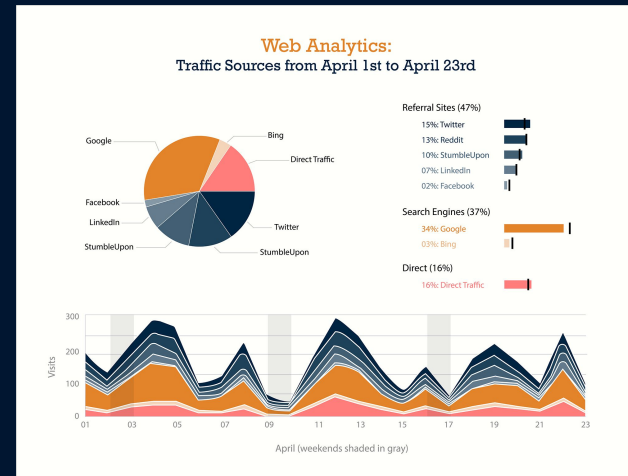


# Use Cases of Data Visualization

- Computer Science: Algorithm performance
- Sciences: Research results
- Business: Financial data
- Economics: Economics data

What we will use it for today

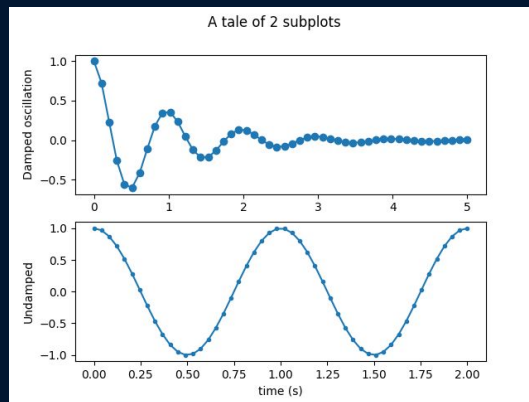
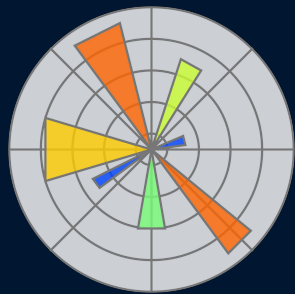
- Visualize input data
- Visualize results from AzureML





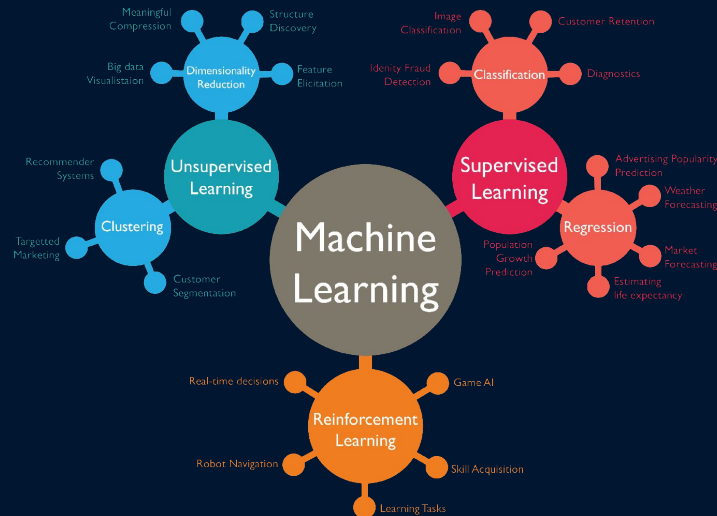
# What is Matplotlib?

- Python library used for data visualization
- Provides wide range of functions for creating plots, charts, and graphs from data,
- Offers extensive customization, from colors and styles to annotations and labels



# What is Machine Learning?

- A machine learning model enables computers to learn and make predictions from data
- The machine learning cycle includes data collection, data cleaning, and model training phases, among others.



# Use Cases of Machine Learning

- Computer Science: Designing image and video recognition systems for computer vision
- Science: Assisting in medical image analysis for disease diagnosis
- Business: Demand forecasting and inventory management

What we will use it for today

- Building a regression model to predict values



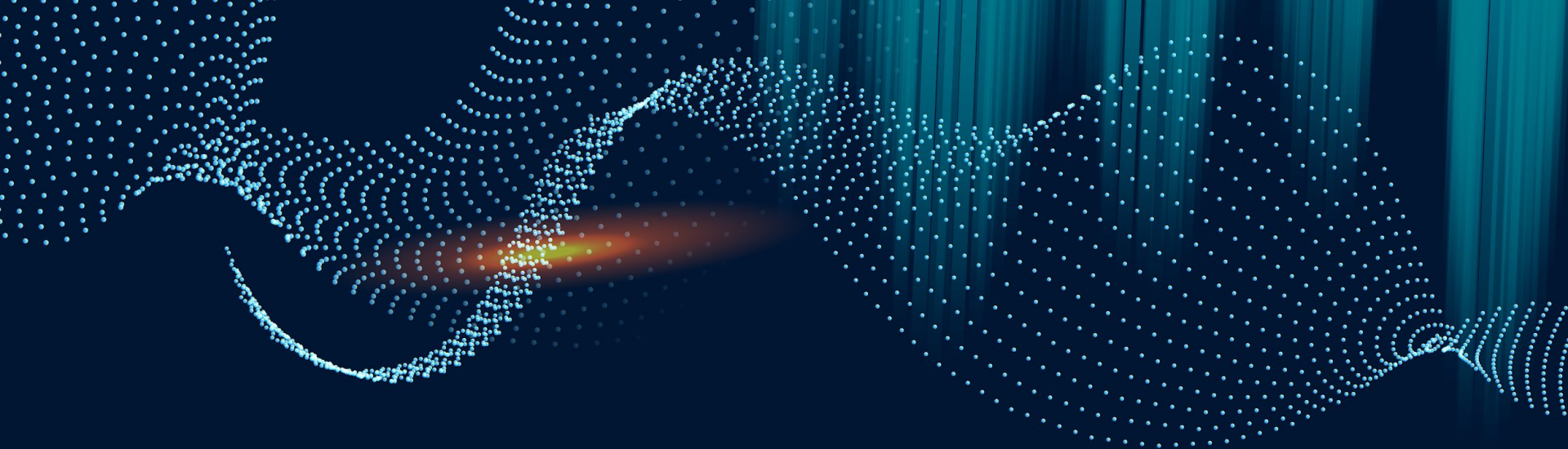


# What is Azure Machine Learning?

- Cloud service for accelerating and managing the machine learning project lifecycle
- Adaptable to all skill levels
  - More skilled: Code model with PyTorch or TensorFlow
  - Less skilled: Create model directly in AzureML



Azure Machine Learning



# Azure Machine Learning

# The Dataset

- The goal of this dataset is to predict the movements of Nasdaq listed stocks in the last 10 minutes of each trading day

[https://drive.google.com/file/d/17zbqonizGGegzRu3A6aaYDo00ewwDLsA/view?usp=drive\\_link](https://drive.google.com/file/d/17zbqonizGGegzRu3A6aaYDo00ewwDLsA/view?usp=drive_link)



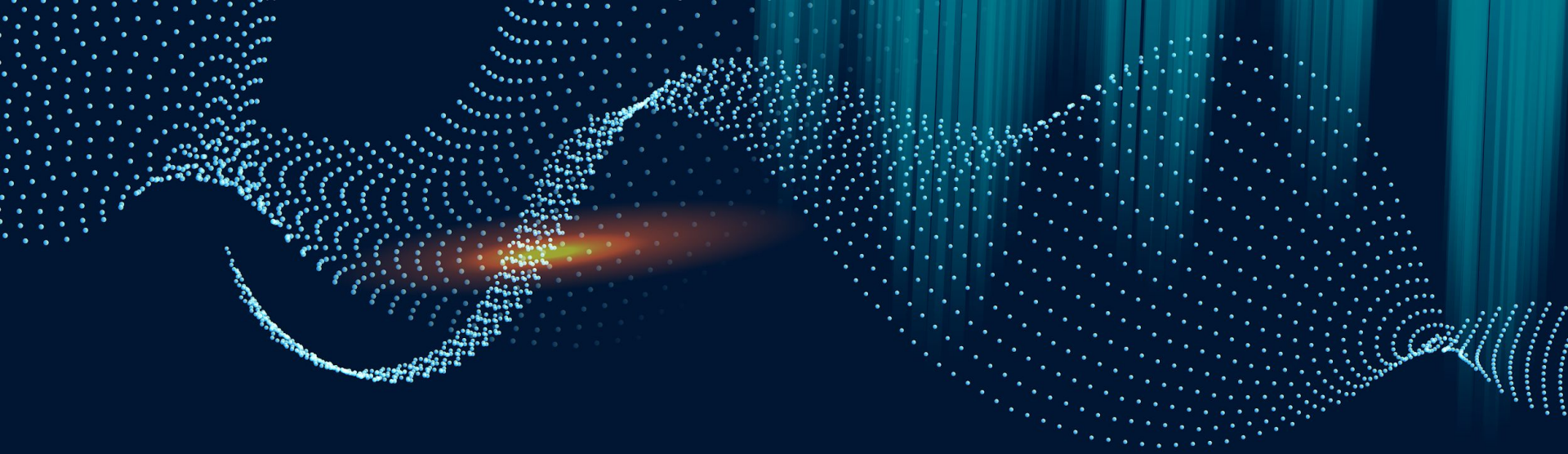
# Walkthrough

1. Go to [ml.azure.com](https://ml.azure.com)
2. Click “Create Workspace”
3. Click “Automated ML” on sidebar
4. Click “New Automated ML Job”
  - a. If you want to use your own code, click “1. Training Method” on the left
5. Type in experiment name
6. Click “Create”
7. Type in name and select “Tabular” for type
8. Select “From local files”
9. Leave datastore settings default
10. Upload file
11. Leave file settings default
12. Leave schema settings default
13. Click “Create”

## Walkthrough continued...

1. Select “Regression” for task type
  - a. There are other types of models as well
2. Select newly created dataset
3. Click on “Limits” dropdown
4. Type in “15” for Timeout
5. Select “Standard\_DS11\_v2” for Virtual Machine Size
6. Click “Submit Training Job”





# Data Visualization

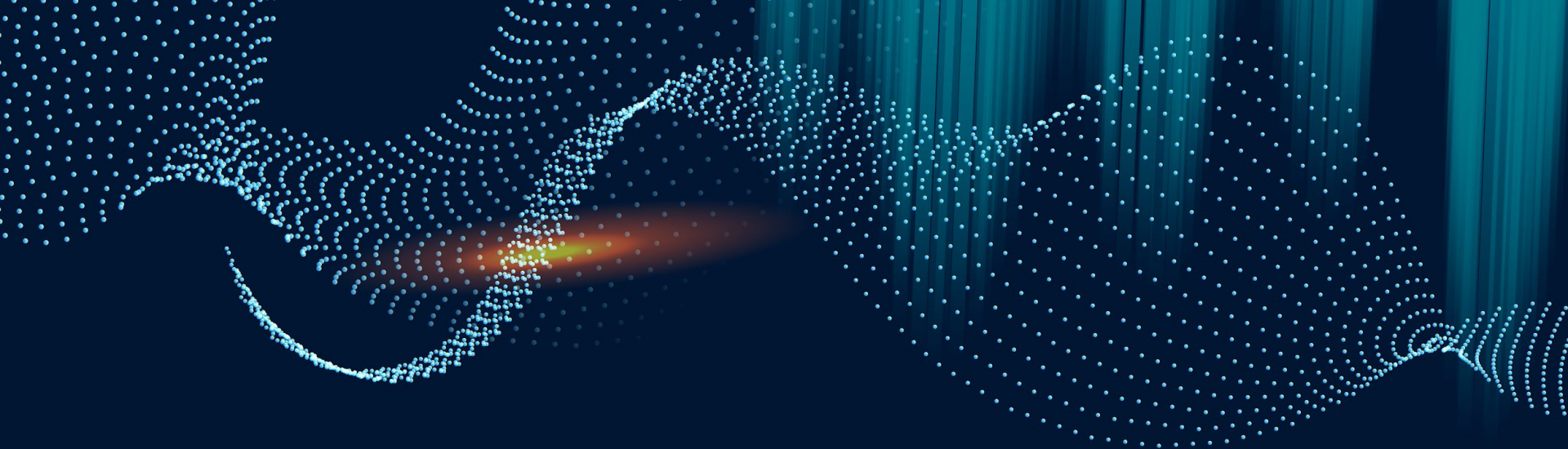
# Setup

- Go to <http://bit.ly/3MgNytE>



# Resources

- Matplotlib documentation:  
<https://matplotlib.org/stable/api/index.html>
- AzureML documentation:  
<https://learn.microsoft.com/en-us/azure/machine-learning/?view=azureml-api-2>



**Thanks for coming :D**