

# Python Applications

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*Introduction to Python. Fall 2019*

# Outline

**What can you do with Python?**



# Easy! Useful! Powerful!

- The first step into the world of programming
- Released in 1991, has become popular in the last couple of years



Easy to read and learn

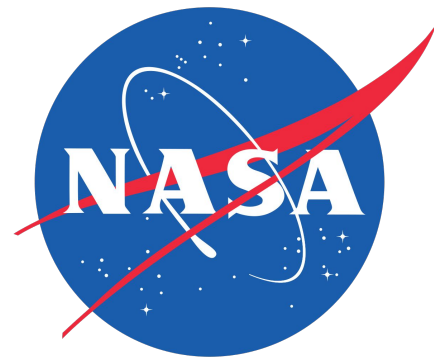


No programming skills required



Beginner or expert

# Popular in big and small companies

The Google logo, featuring the word "Google" in its signature multi-colored font.The Yahoo! logo, featuring the word "YAHOO!" in a purple, outlined font.

mozilla

The IBM logo, featuring the word "IBM" in its characteristic blue horizontal-striped font.

# Popular in big and small companies (Armenia)



# Some additional features

- Open source language
- Libraries for basically everything! (What are libraries?)
- Small, medium and large projects in different spheres

# Web Development



- Use python to create web applications of different complexities
- Python web frameworks include: Pyramid, Django and Flask

Are you surprised?

Google



Quora



YAHOO!





# Data Analysis



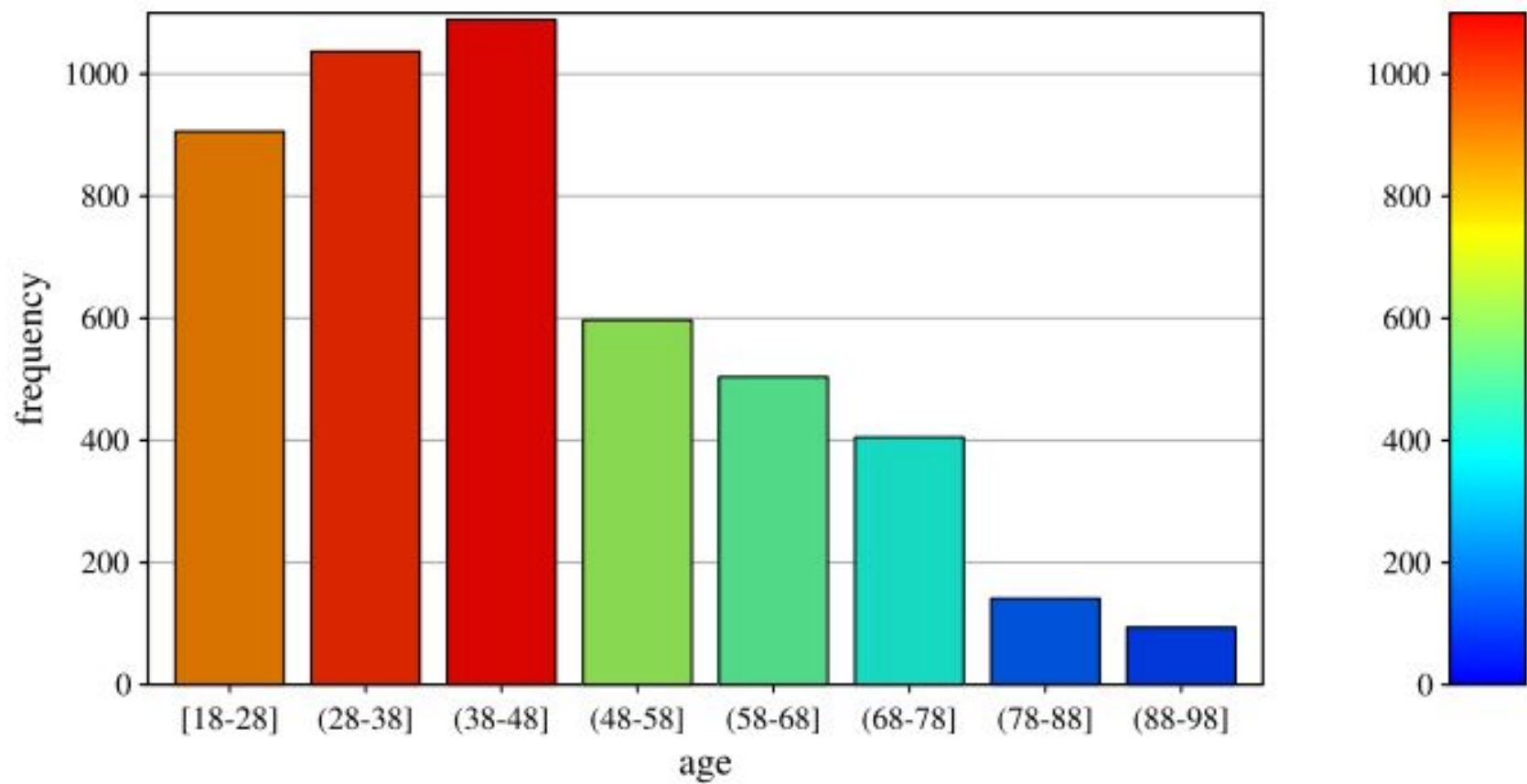
- Leading language of choice of many data scientists
- Python libraries like NumPy, Pandas and data visualization libraries Matplotlib and Seaborn.

## Example: Age distribution of customers

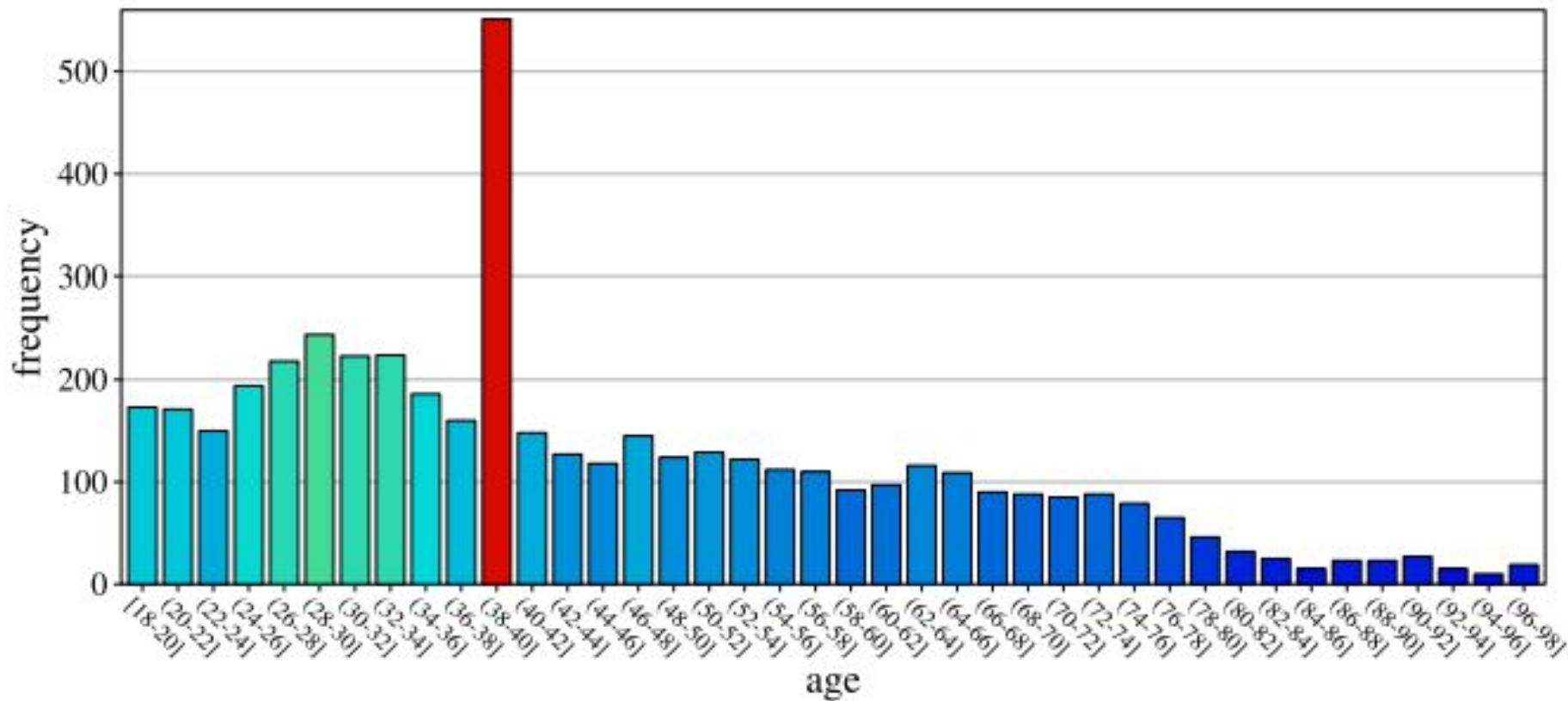
- 500000 customers -> sample 5000
- Simplest -> use a histogram



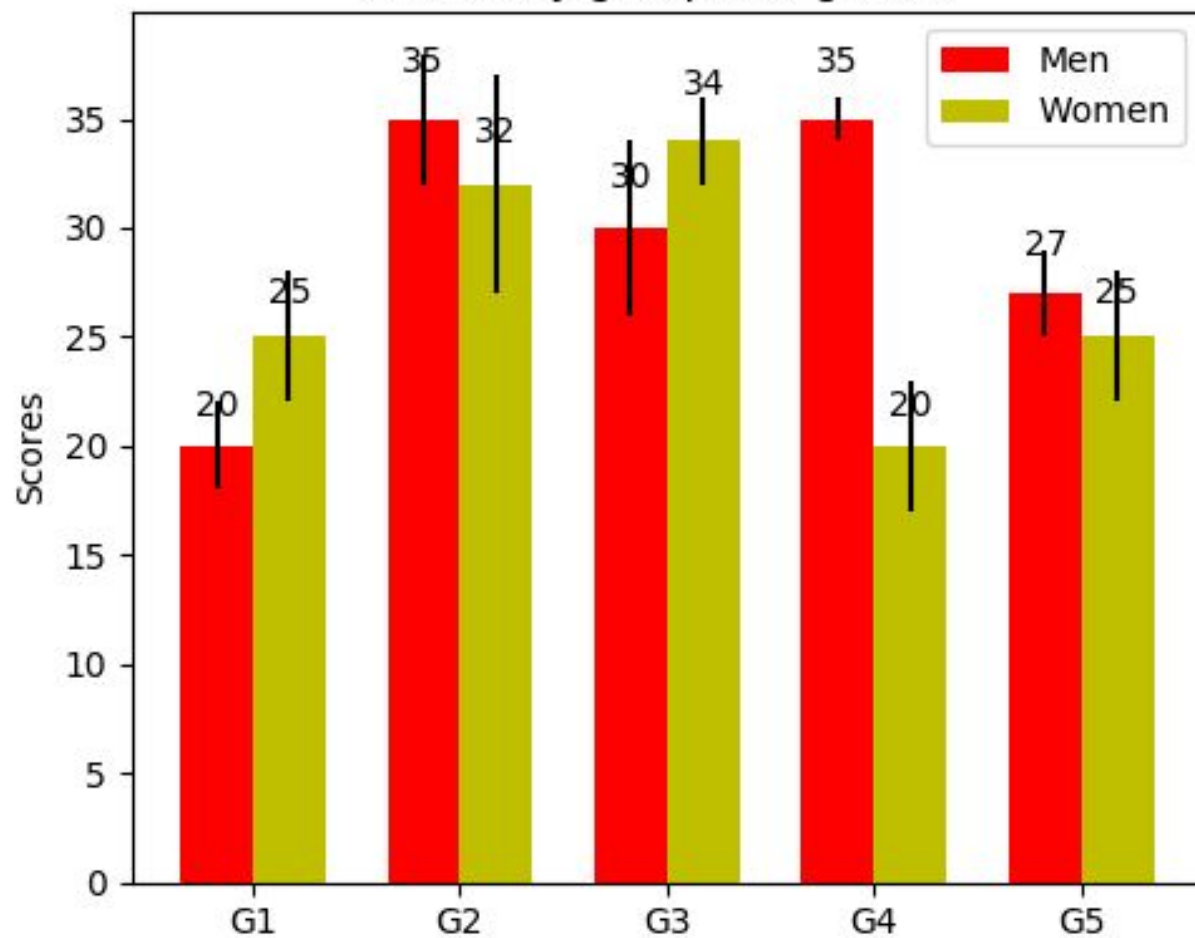
## 8 bins



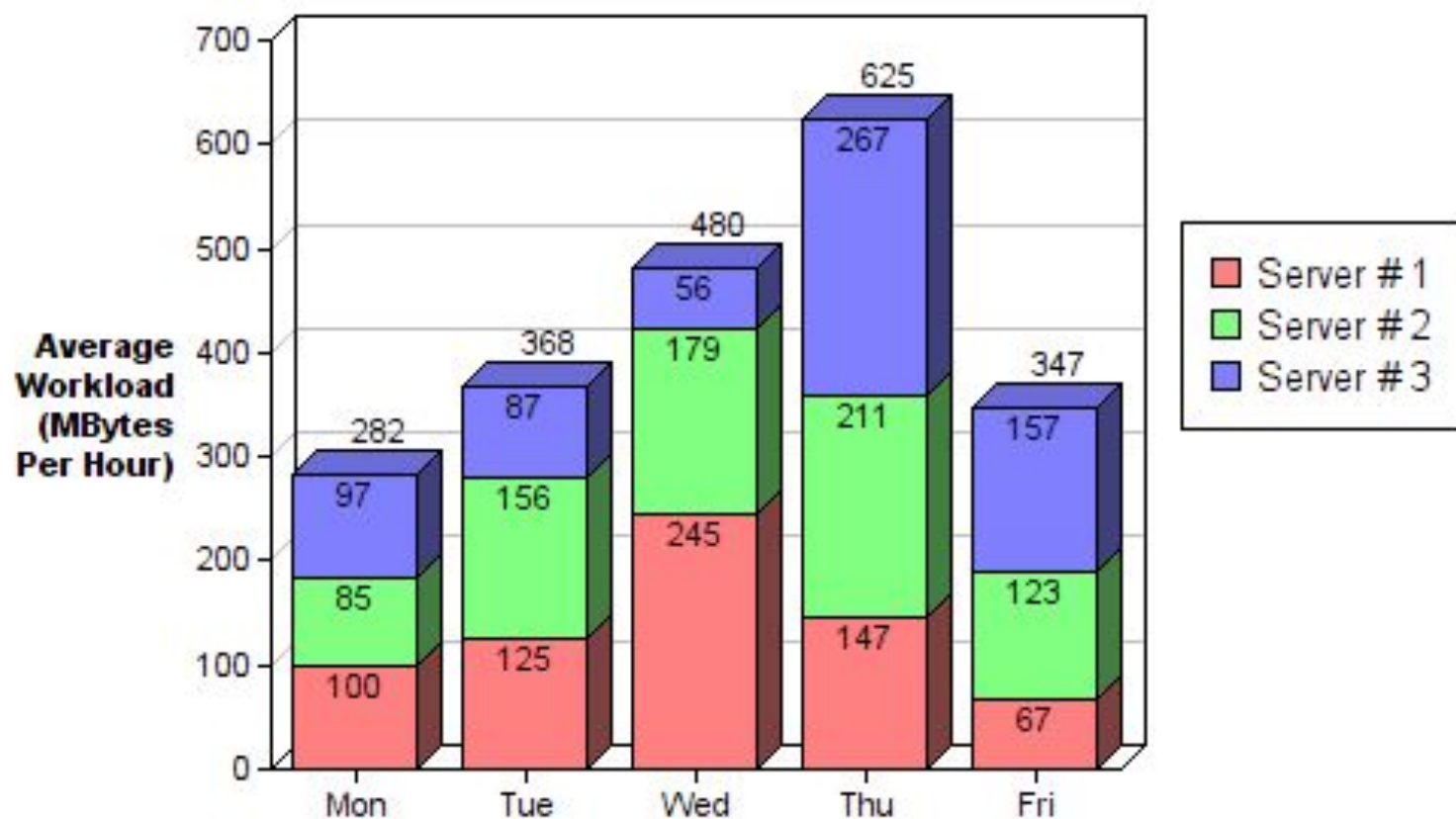
# 40 bins - we have limited resources



Scores by group and gender



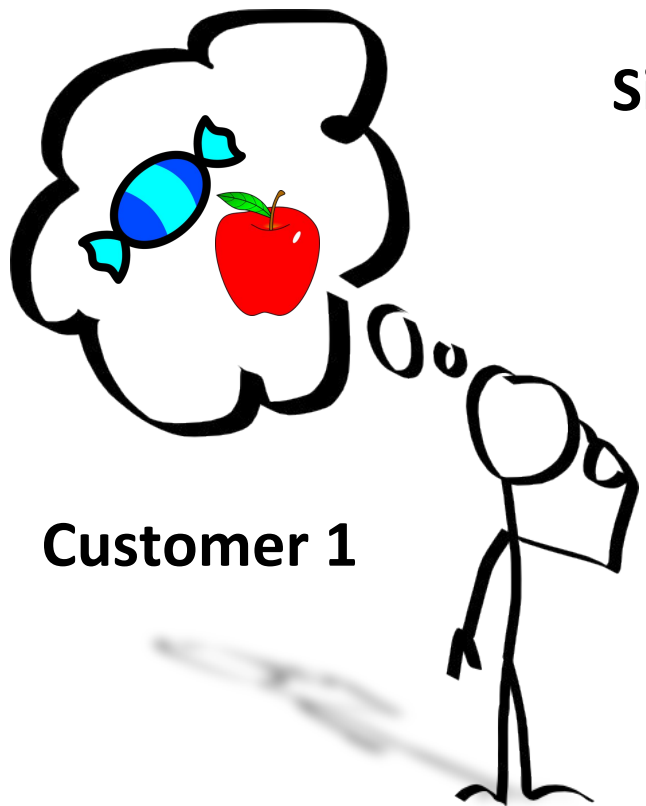
## ***Weekday Network Load***



## Example: recommendation

Similarity:

- **Similar customers**
- Products that are correlated
- Etc.



Customer 1



Customer 2

# Example: continued

## Similarity:

- Similar customers
- **Products that are correlated**
- Etc.



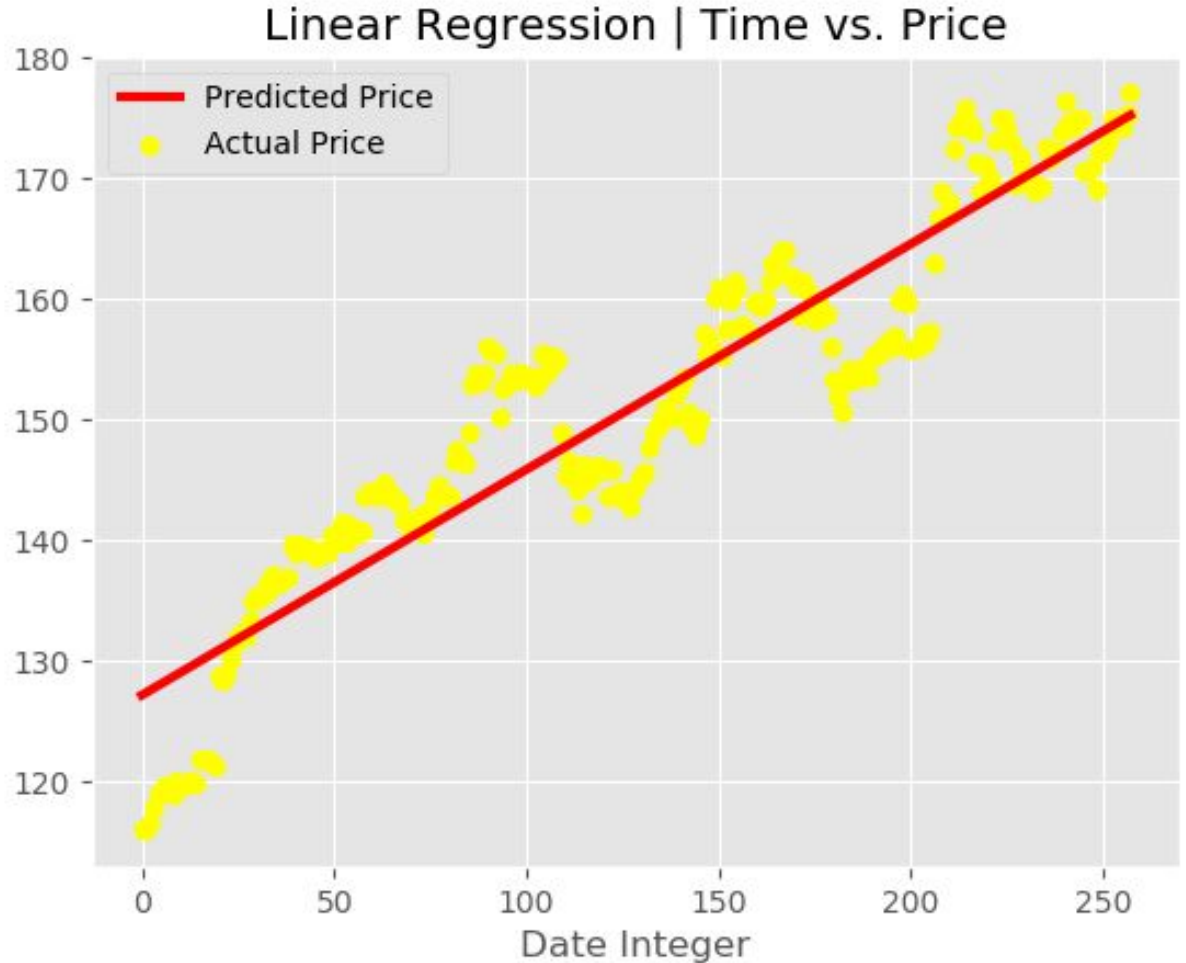


**Machine Learning** - the science of getting computers to learn and act like humans do, and improve their learning over time

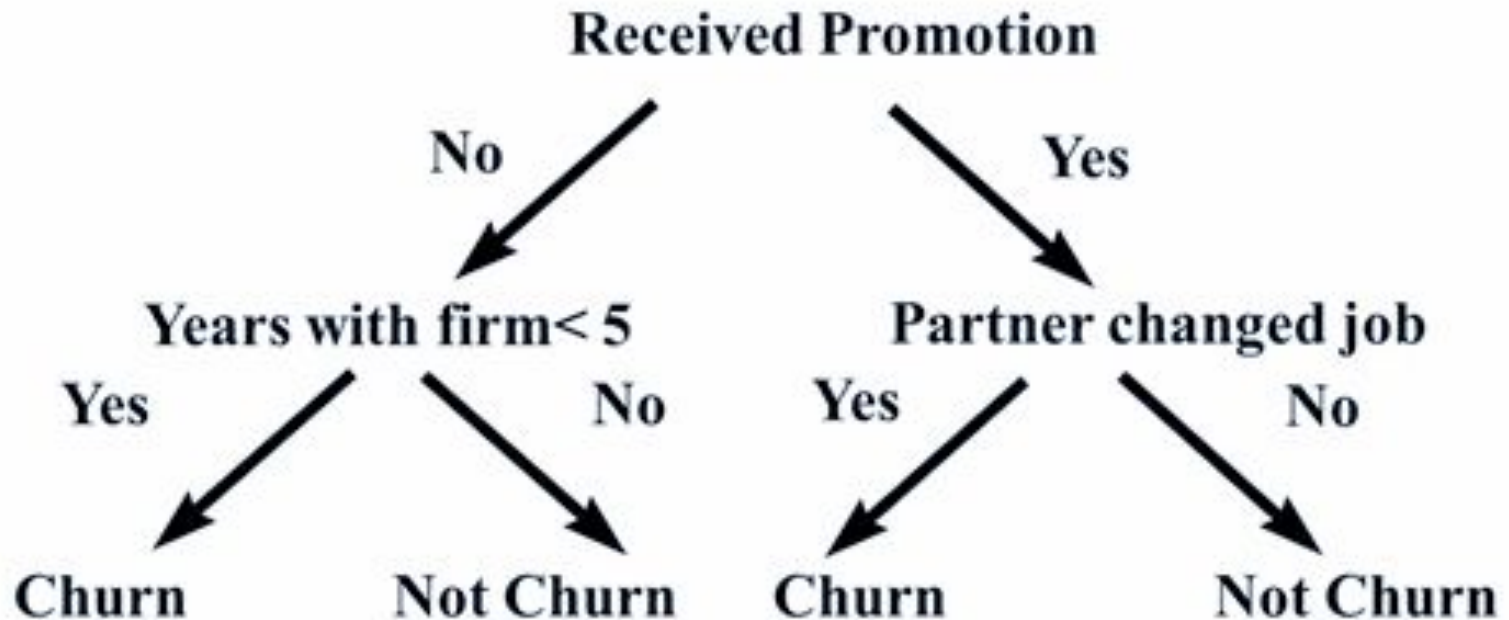


- Predict customer satisfaction
- What factors will affect the demand of the product?
- Machine learning libraries include Scikit-Learn, NLTK and TensorFlow.

## Example: Stock price over time



## Example: Employee churn analysis

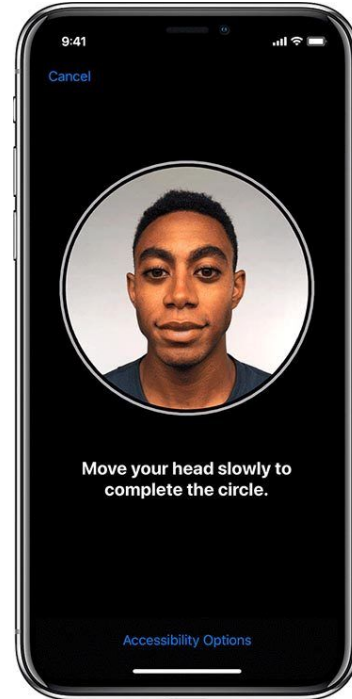


# Computer Vision

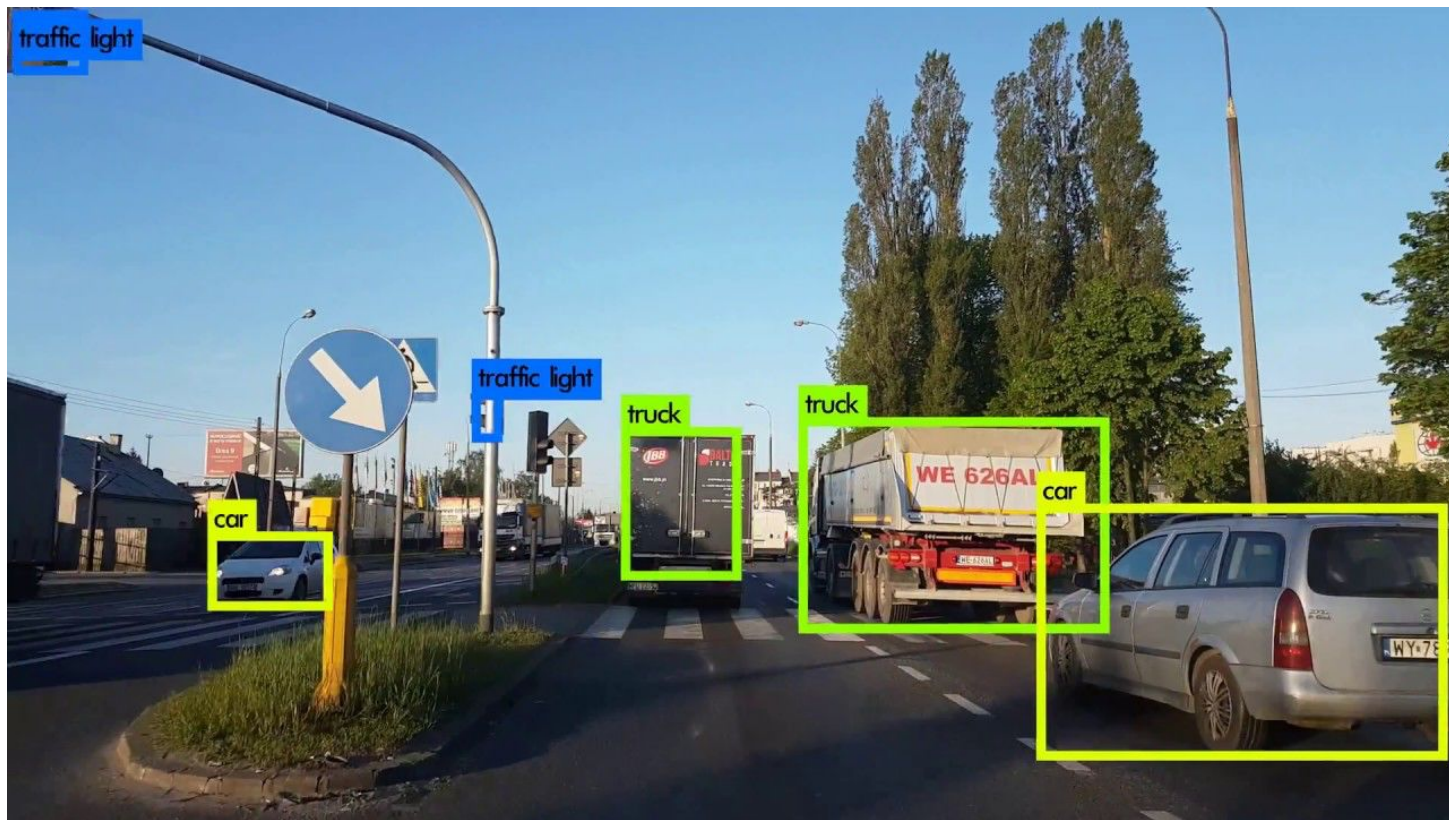


- Face detection, Color detection, Image recognition
- Using OpenCV and Python

# Example: Face ID on iPhone X



# Example: Object recognition



# Game Development



- Create a video game using the module Pygame
- Use Python to write the logic of the game
- Apps can run on Android devices



# Star Trek: Bridge Commander





# Civilization IV



With over 6 million units sold and unprecedented critical acclaim from fans and press around the world, Sid Meier's Civilization is recognized as one of the greatest PC game franchises of all-time. Now, Sid Meier and Firaxis Games will take this incredibly fun and addictive game to new heights by adding new

RECENT REVIEWS: [Very Positive](#) (16)  
ALL REVIEWS: [Very Positive](#) (931)

RELEASE DATE: 25 Oct, 2005

DEVELOPER: [Firaxis Games](#)  
PUBLISHER: [2K Games](#)

Popular user-defined tags for this product:

[Strategy](#) [Turn-Based Strategy](#) [Turn-Based](#) [4X](#) [+](#)



# Web Scraping



- Grab some data from a website that doesn't allow convenient export
- BeautifulSoup, Selenium

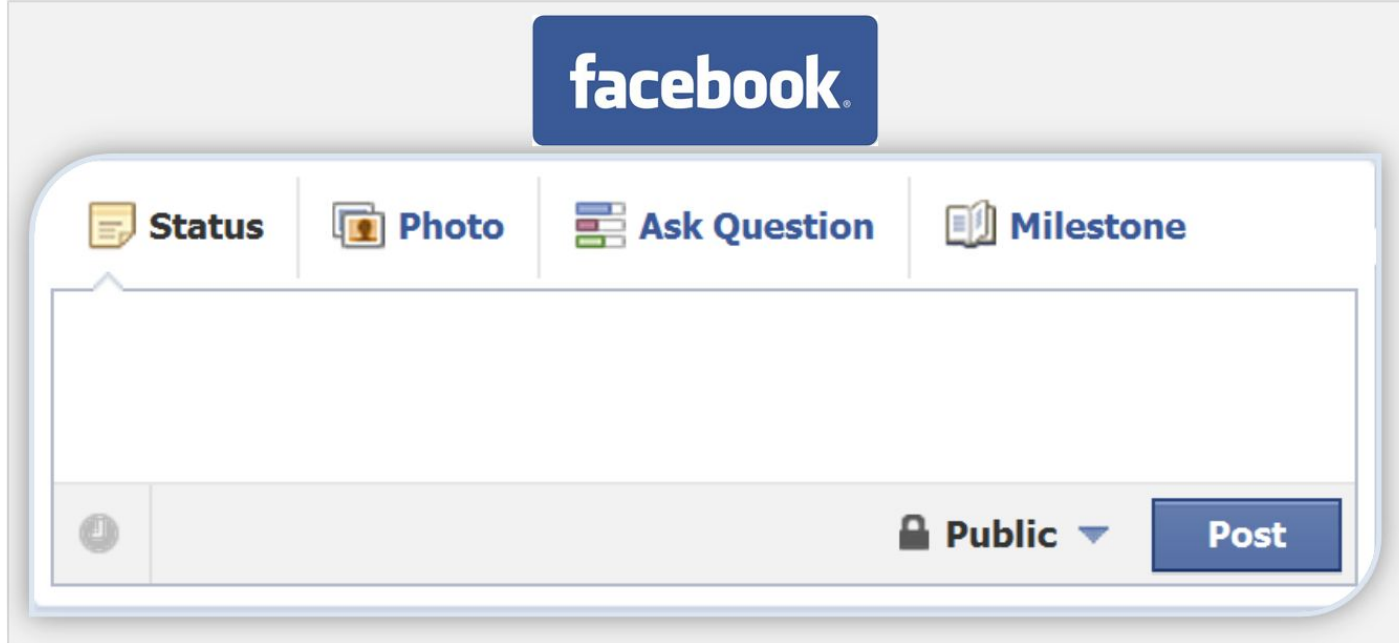
## Example: Business uses

- Gathering email addresses from social networks
- Product review scraps
- Scraping data from other websites

e.g.

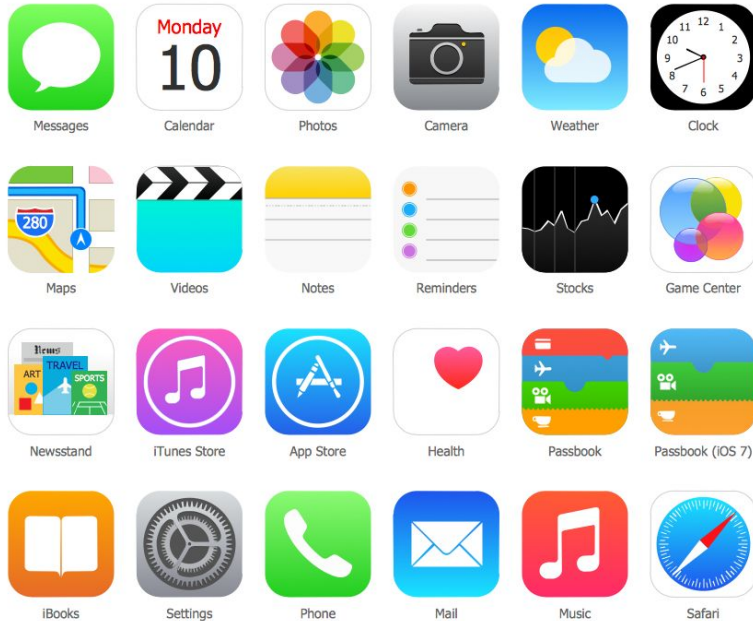
- Scraping of funny video titles with more than 1 million views in YouTube to understand what kind of titles are doing well.
- Scraping Amazon for specific category of books.

# Browser Automation



- Use Selenium with Python

# GUI (Graphical User Interface) Development



- Create a Desktop application
- Use modules Tkinter and PyQt to support it

## Share Your Screenshots Using Dropbox



### Share your screenshots in a snap

Whenever you take a screenshot, we'll save it to your Dropbox and copy a link to your clipboard so you can quickly share it.

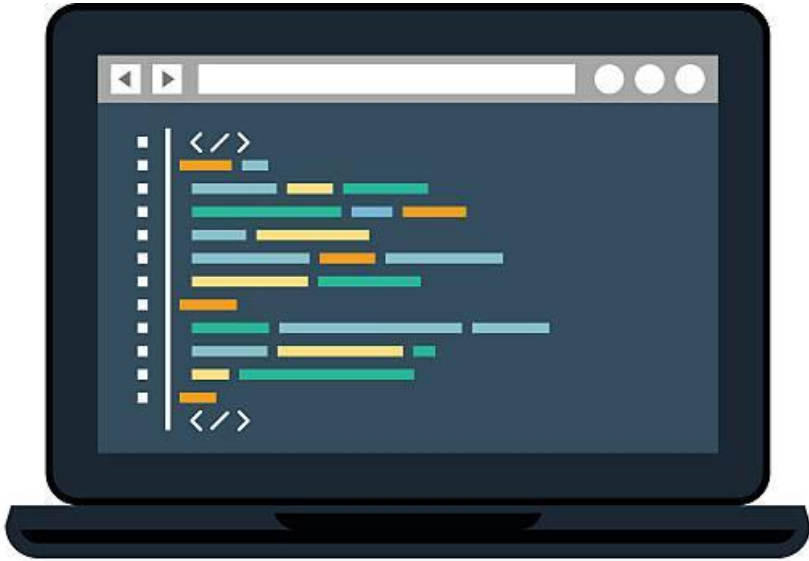
No, Thanks

Save Screenshots to Dropbox



# Dropbox

# Writing Scripts



- Just as in any other language

**Thank you!**