Introduction to Data Science
(with Python)

What, Why & Where

The Data Scientist

“the sexiest job in the next 10 years will be statisticians.”
— Hal Varian (Chief Economist @Google)

“The data age has arrived. From crowd-sourced product reviews to real-time traffic alerts, data science has become a regular part of our daily lives.”— Dr. D.J. Patil (first U.S. Chief Data Scientist)

What is Data Science?

The extensive use of data,
statistical and quantitative analysis, explanatory and predictive models, and fact-based management to drive decisions and actions.

— Thomas H Davenport, Competing on Analytics

A **scientific art** of doing anything **meaningful** with data that makes business decision making more **accurate & easier**.

What is Data Science?

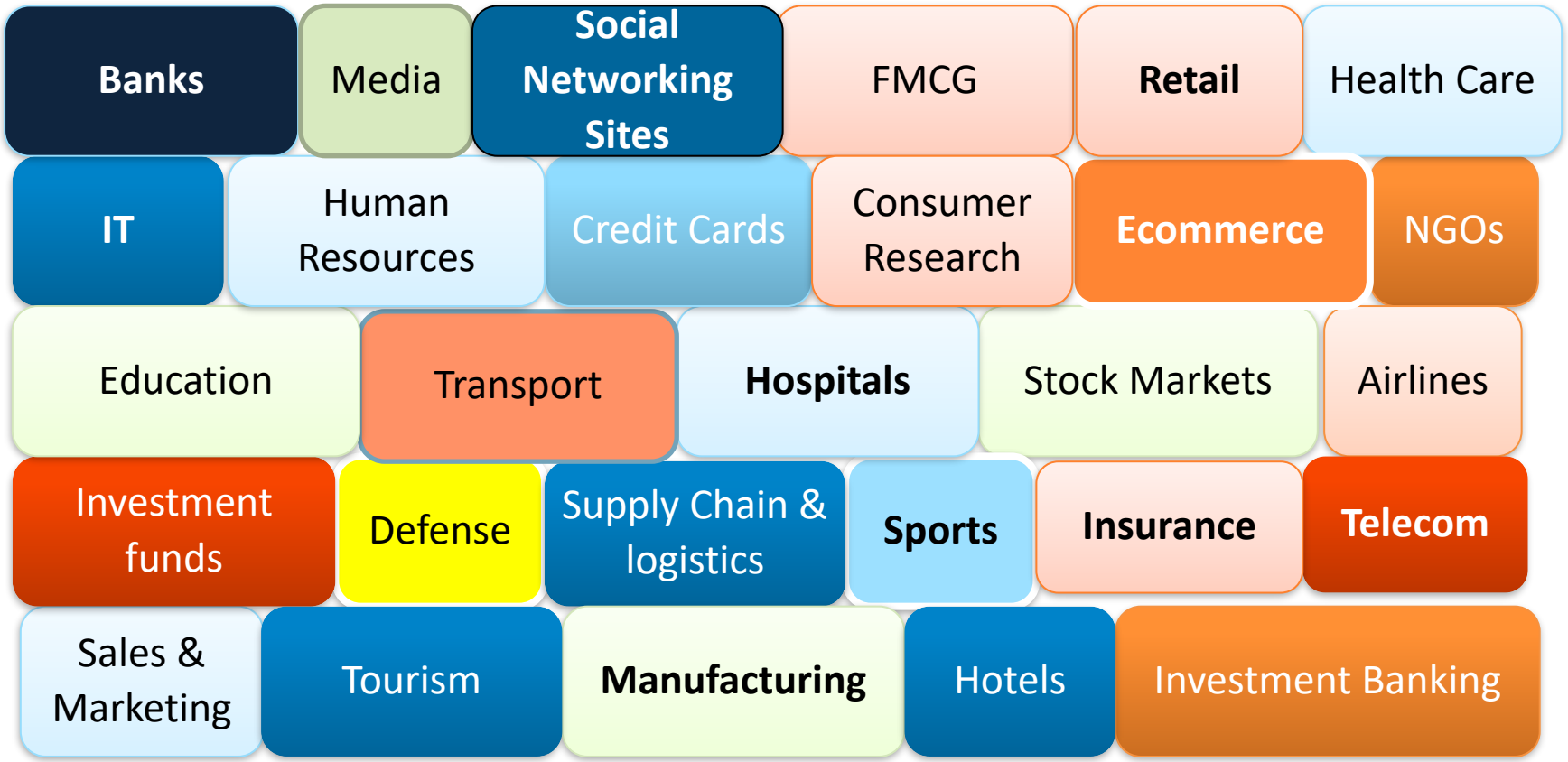
- Data Science is the application of: **computer technology, machine learning and domain knowledge** to solve problems in business and industry, to aid efficient and effective decision making
- Data Science is simply the **scientific process of converting raw data into knowledge** to support decision making
- Data Science involves **finding patterns in data**
- The goal of Data Science is to **improve business, society or personal performance** by gaining knowledge from data
- Data Science is **moving decision making from gut feel and guesstimates** to better, more informed ones driven by data

So why is Data Science so important all of a sudden?

Why is Data Science used?

- Decision making is now fact and performance based
- Intuition is out, metrics are in
- Intense competition, shorter time-to-market, demanding customers
- Make each and every dollar count and increase return on investment
- Take real-time decisions

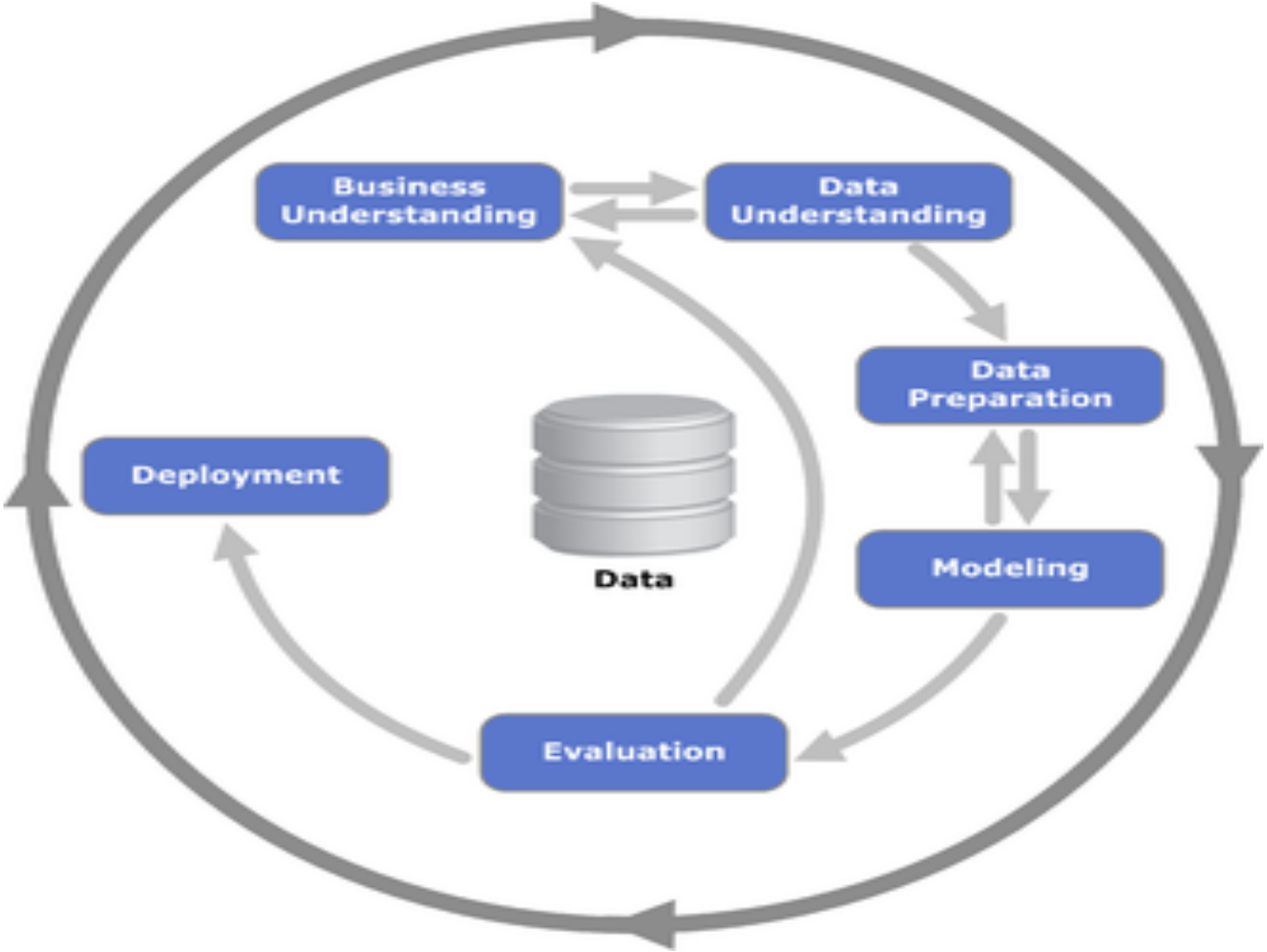
Industries using Data Science



Insights ➡ Actionable

How: Data Science Methodology

Data Science process



Data Scientist Toolbox

Capabilities of A data Scientist

- Conversant with at least one relevant programming language
- Can handle project level problems , version control
- In addition to traditional sources, knows how to collect data from web, social media platforms etc
- Conversant with multiple machine learning algorithms
- Knows how to build prototype end product , data driven solutions
- Is a good storyteller !!

What Is Python?

Python : The Programming Language

Google

ABN·AMRO

NASA

Walt Disney Pictures

redhat

Python & Scikit-Learn: That Data-science Duo

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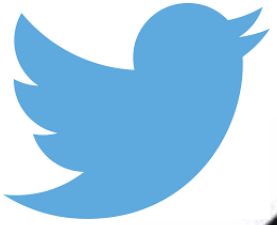
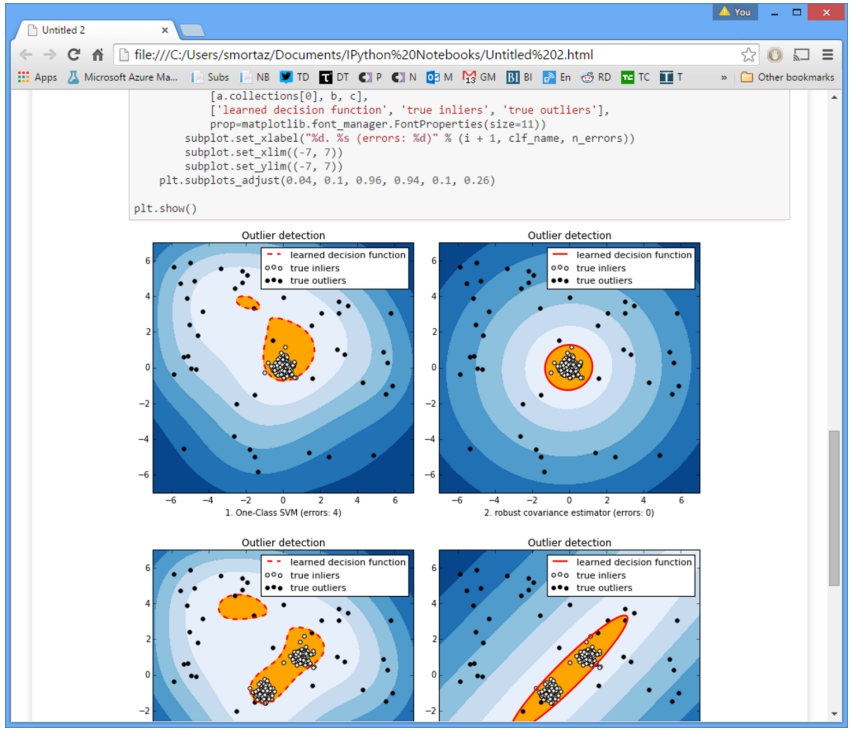


Course Components

Getting Ready with Python

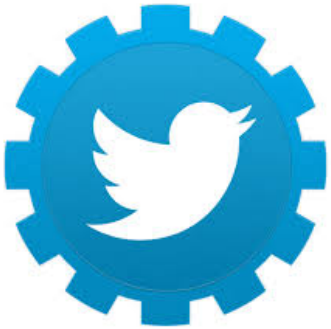
ANACONDA



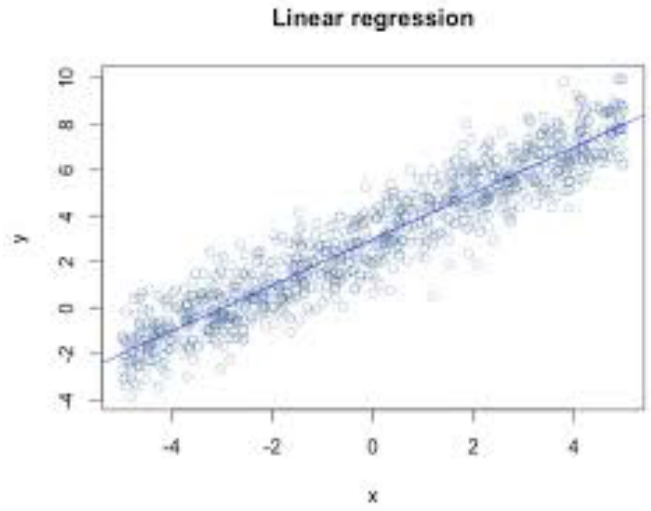
jupyter

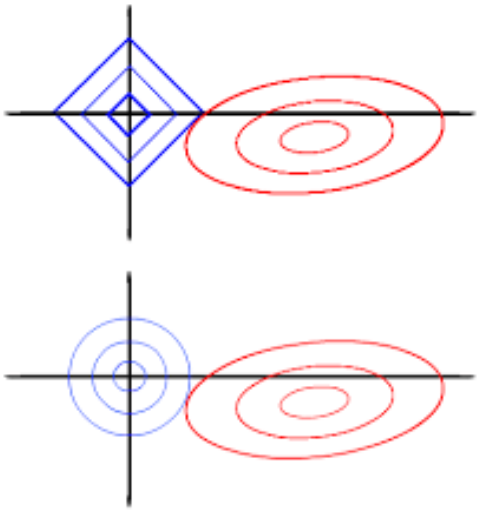
EDVANCER EDUVENTURES

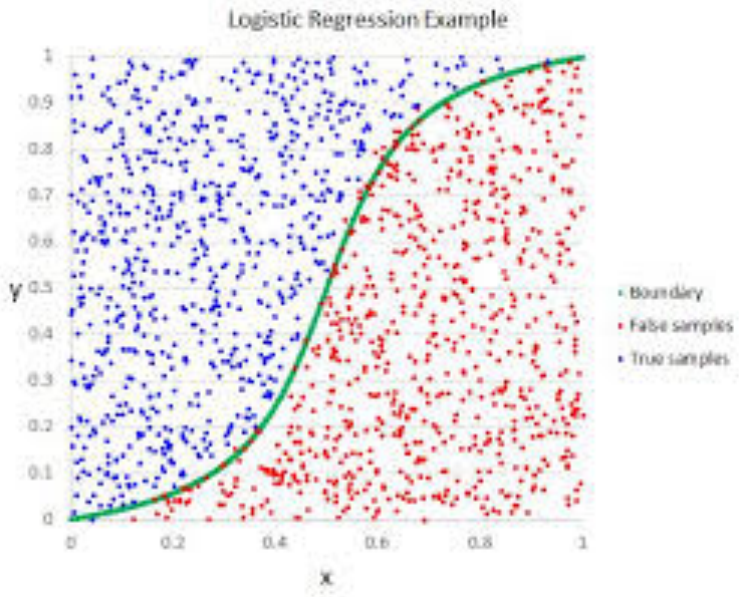
Version Control , Web Scraping and APIs



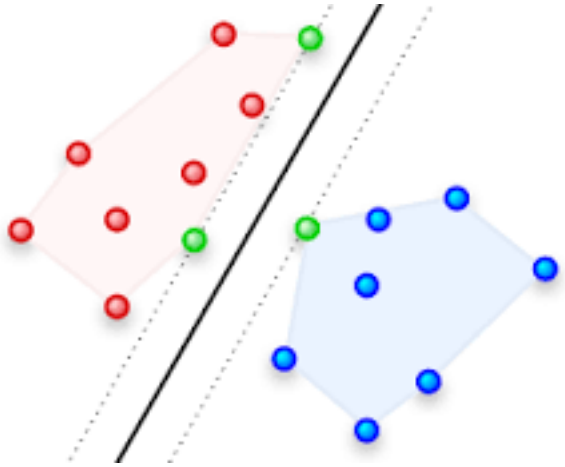
ML algorithms : Generalised Linear Models

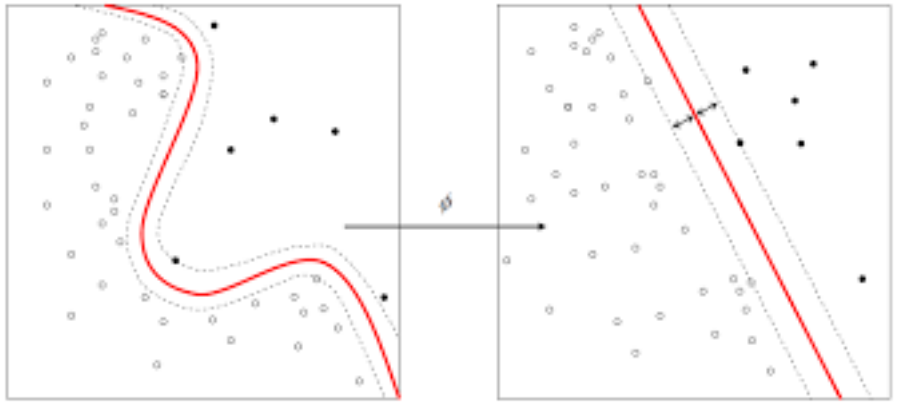


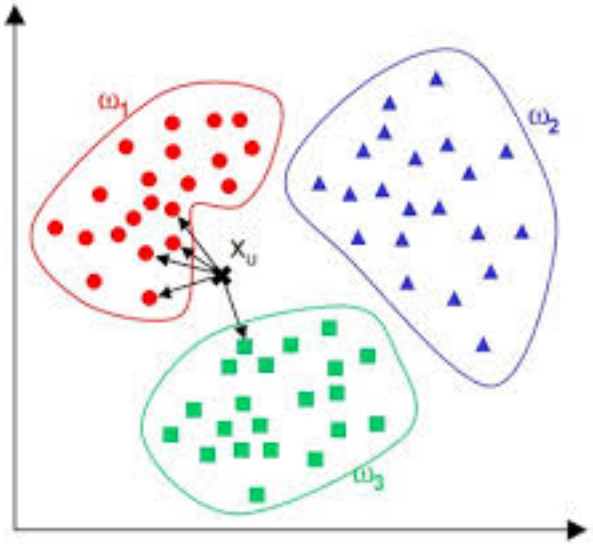


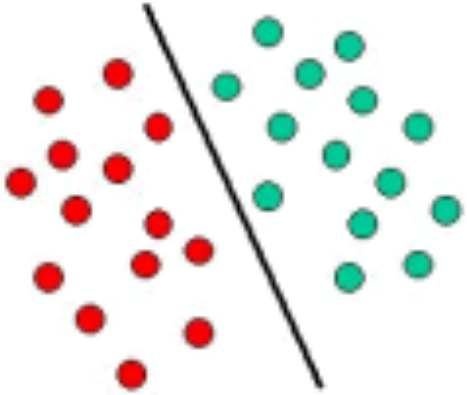


ML algorithms : Naive Bayes, KNN, SVM

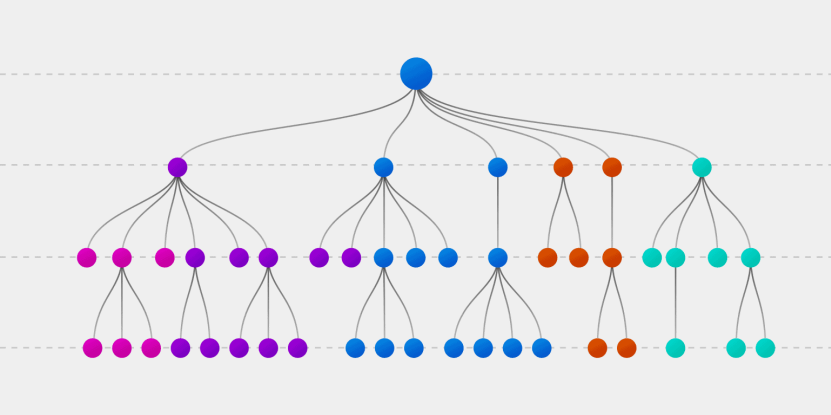


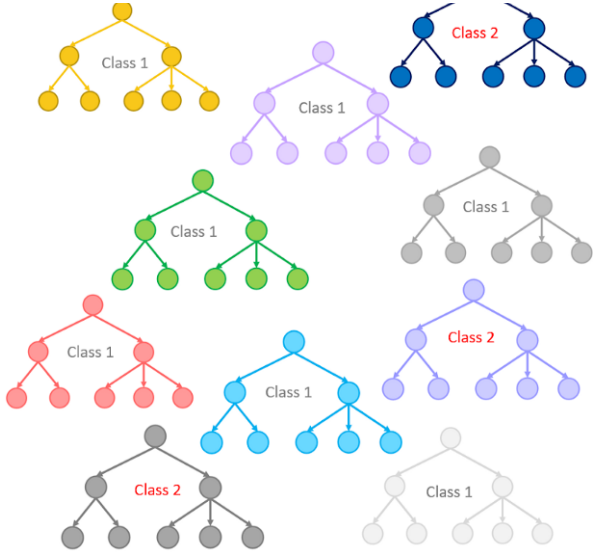




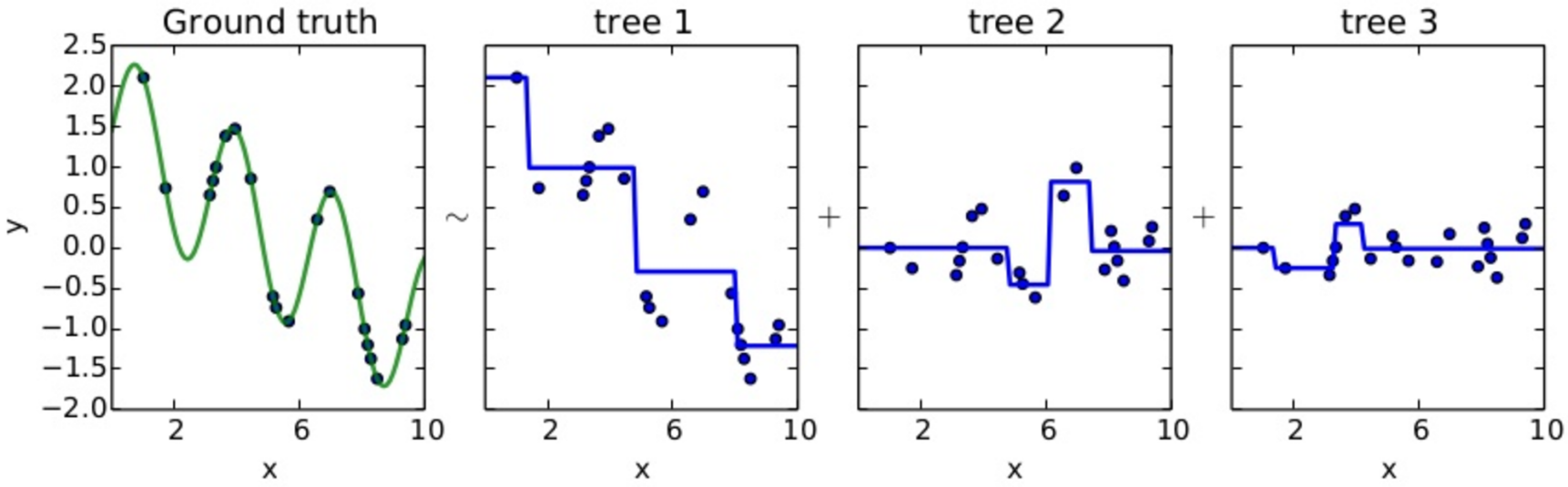


ML algorithms : D-trees & RandomForests

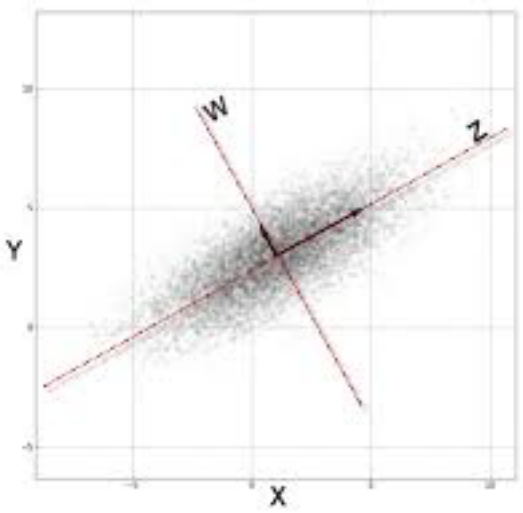


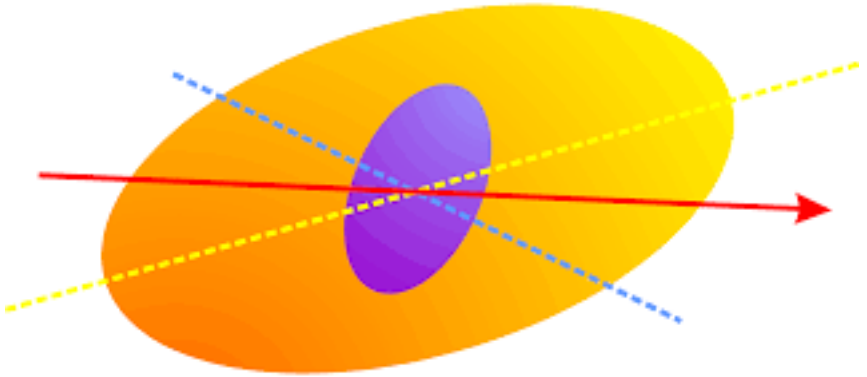


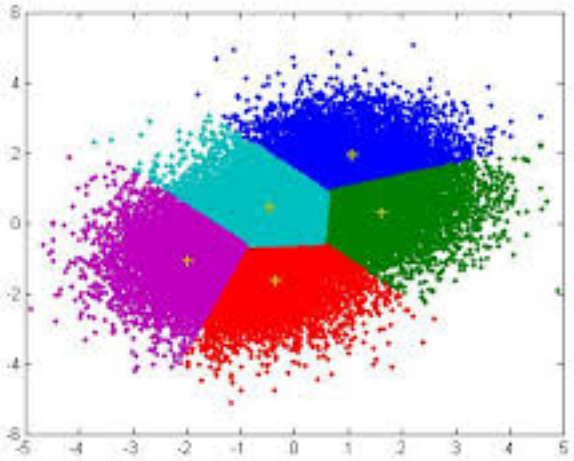
ML algorithms : Boosting Algorithm

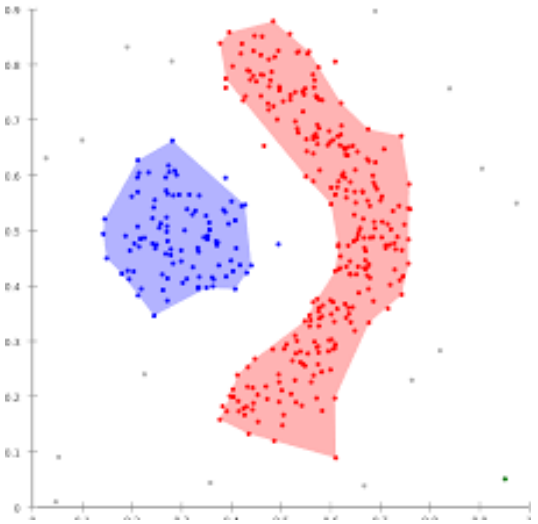


ML algorithms : PCA,Factor, K-means, DBSCAN

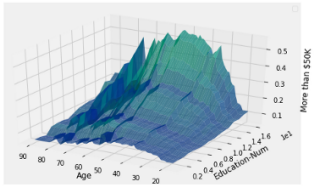


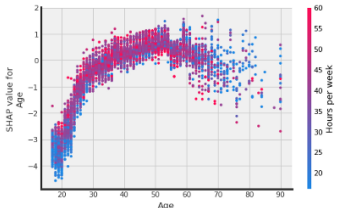




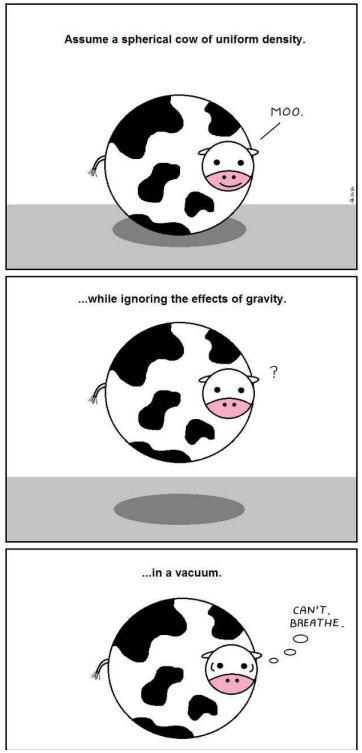


Interpretation of ML Models and insights from them

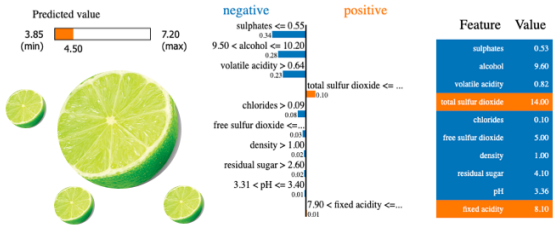




How are different factors are being utilised by our solutions



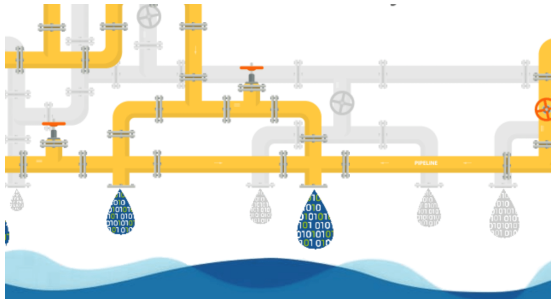
Whats at work for any particular decision



Simplifying complex solutions into easier to interpret versions

ML Solutions in Production

Feature Engineering



Data flow and solution pipeline

Converting Solution into an APP

How Will we do it?

How…..

- Go through the quick learning videos before the session
- Don’t just watch the videos , run the scripts , play around
- Ask questions : Things need not make sense to you because they make sense to someone else
- I will not have all the answers , explore!
- Practice exercises at the end of every class ; except today.

Thank you