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SCIKIT-LEARN

A Python Package for Machine Learning

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Agenda

1. What is Scikit-Learn?
2. Data Modelling
3. Machine Learning
4. Installation
5. Hands-on Implementation

What is Scikit-Learn?

What is Scikit-Learn?

- Scikit-Learn (Sklearn) is a powerful and robust open-source machine learning library for Python.
- Sklearn provides tools for efficient implement of classification, regression, clustering and dimensionality reduction techniques.
- Sklearn is written on top of NumPy, SciPy and Matplotlib packages. Basic knowledge of these packages plus Pandas is required to successfully use Sklearn for machine learning.

What is Scikit-Learn?

- 2007: Sklearn was initially developed by David Cournapeau as a Google summer code project.
- 2010: Developers from French Institute for Research in Computer Science and Automation took sklearn to another level and made its first public release (v0.1)
- Since then there have been 12+ versions of iterations and improvements. The latest version is 0.21.0.

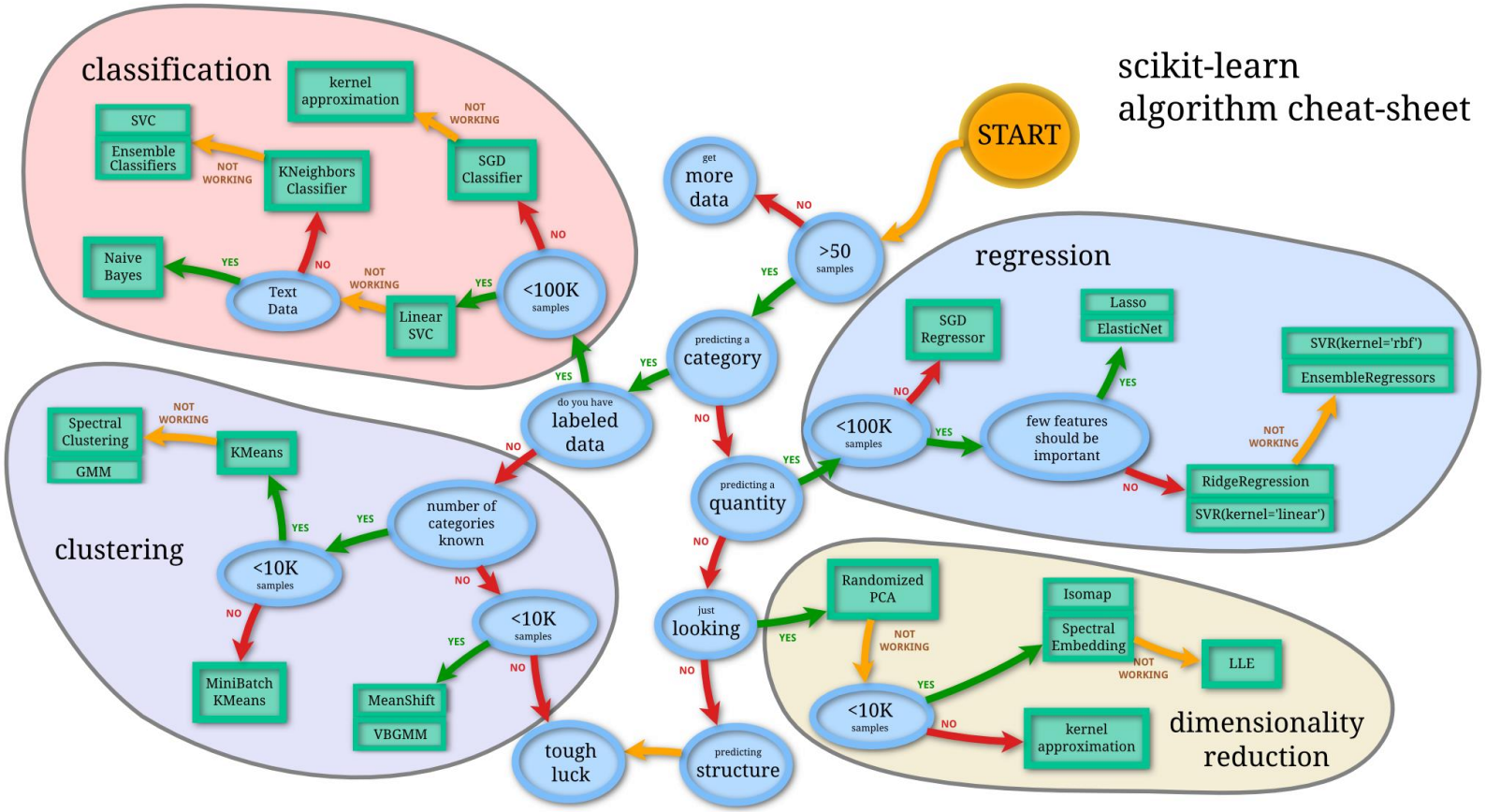
What is Scikit-Learn?

- Sklearn is an community project and anyone can contribute to it.
- Currently, there are more than 2058 contributors on its github repository.
- Various organizations including booking.com, JP Morgan, Evernote, Spotify use Sklearn.

Data Modelling

Data Modelling

- **Sklearn is focused on modelling the data rather that reading or writing data.**



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Data Modelling

- **Sklearn offers numerous tools for**
  - **efficient data modelling**
  - **preprocessing support such as data encoding**
  - **feature selection / extraction**
  - **hyper-parameter search tools**
  - **end to end data modelling pipeline**

Machine Learning

Machine Learning

- Machine Learning (ML) is a study of algorithms that can learn to solve a specified task using data.
- ML models are trained using a sample of historical data called the training data and the model itself is evaluated based on its performance on an unseen data called the test data.
- ML has wide variety of application from research to health to finance to speech recognition and language translation.

Machine Learning

- **Machine Learning (ML) is a study of algorithms that can learn to solve a specified task using data.**

- **There are two main types of ML models:**

1. **Supervised:**
   - **Model learns to identify pattern in data using inputs and desired outputs called labels.**
   - **Each training example has an array of properties, known as feature vector or input vector and a label, known as output.**
   - **Examples: Linear Regression, Logistic Regression, Random Forest Classifier, Decision Trees**

2. **Unsupervised**
   - **Model learns to identify pattern and structure in the data without any labels**
   - **Examples: K-means Clustering, Principal Component Analysis, etc.**

Installation

Installation

To install sklearn:

```
conda install -c anaconda scikit-learn
```

Type and enter on your Anaconda prompt application

Prerequisite packages will also be installed

Installation

To check sklearn version installed:

```
conda list scikit-learn
```

Type and enter on your Anaconda prompt application

OR to see list of installed packages:

```
conda list
```

Hands-on Implementation

Hands-on Implementation 5/5

- Go to [link]
- To open on google drive
  - Click on introtosklearn.ipynb to
  - Download data file and upload on google drive
  - Mount your google drive to the folder where the data is uploaded
- To open on your local jupyter notebook
  - Download introtosklearn.ipynb file
  - Download data file
  - Save both file in one folder
  - Open jupyter notebook

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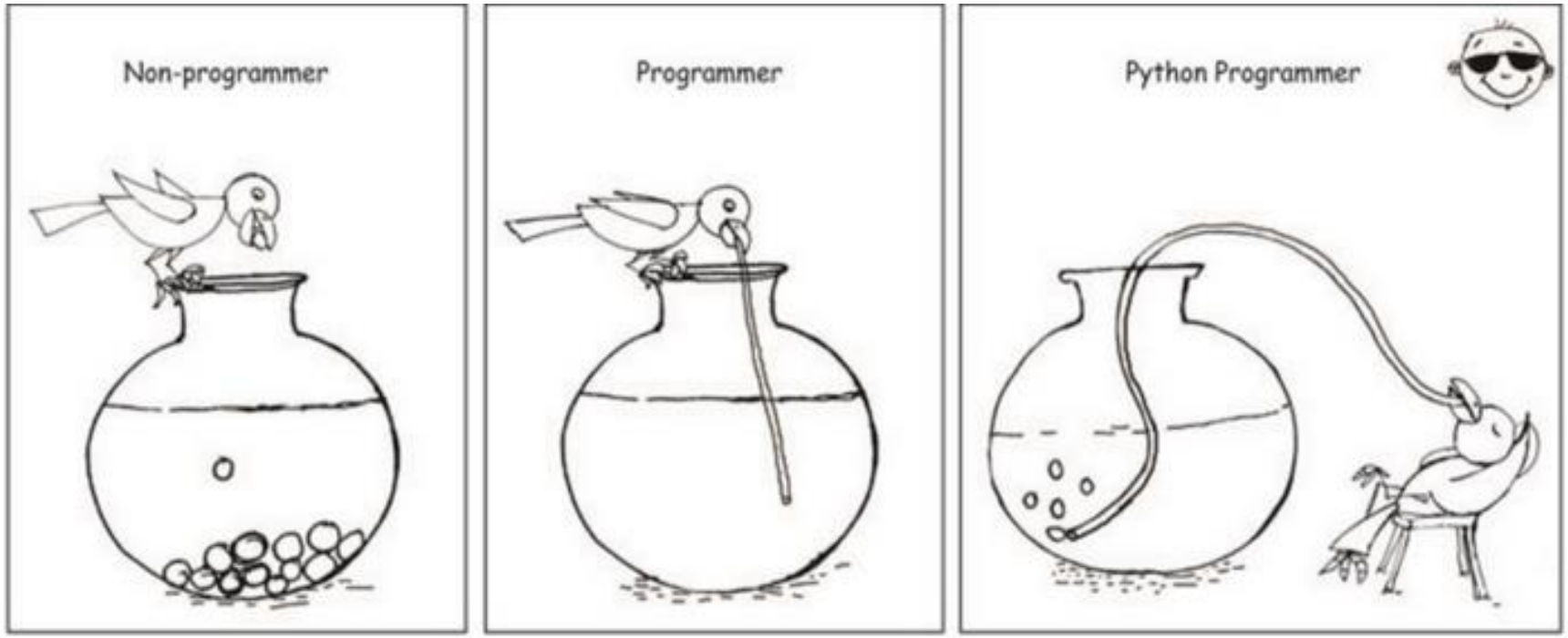

Who wants to become a Python Programmer?

Questions?

Thank you