

SC310005 Artificial Intelligence

Lecture 1: Introduction

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Reference:

1. <https://pytorch.org/tutorials>
2. <https://stanford.edu/~shervine/teaching/cs-229/>
3. <http://introtodeeplearning.com/>
4. <https://www.simplilearn.com/tutorials/deep-learning-tutorial/introduction-to-deep-learning>
5. <https://www.geeksforgeeks.org/introduction-deep-learning/>
6. <https://databasetown.com/supervised-learning-algorithms/>
7. <https://databasetown.com/unsupervised-learning-types-applications/>
8. <https://realpython.com/learning-paths/pandas-data-science/>

About Me



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Panboonyuen

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AI Research Scientist

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Education: Ph.D. (AI) Chula

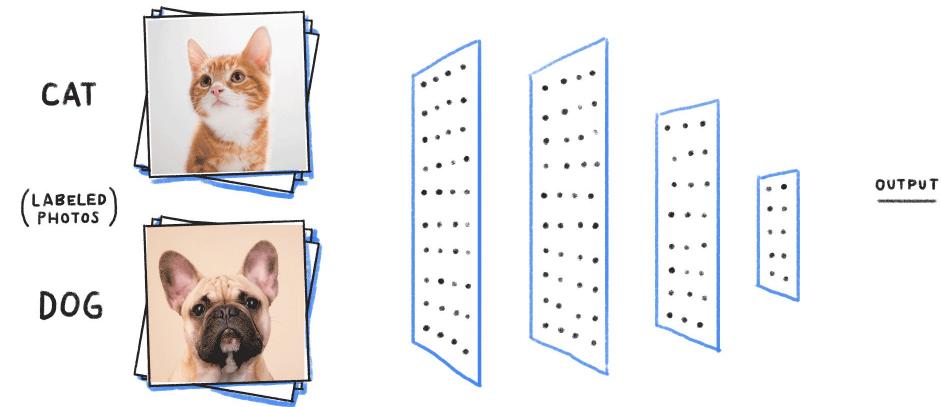
Position: AI Team Lead, MARS

PostDoc, Chula

Interests: Computer Vision, Deep Learning

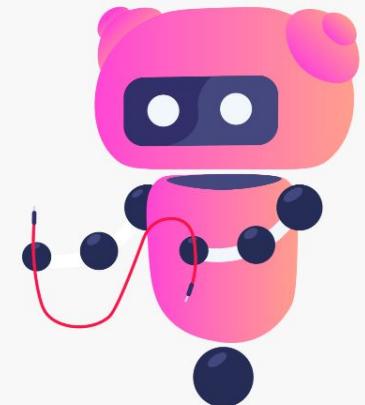
Machine Learning, Remote Sensing

Basic AI

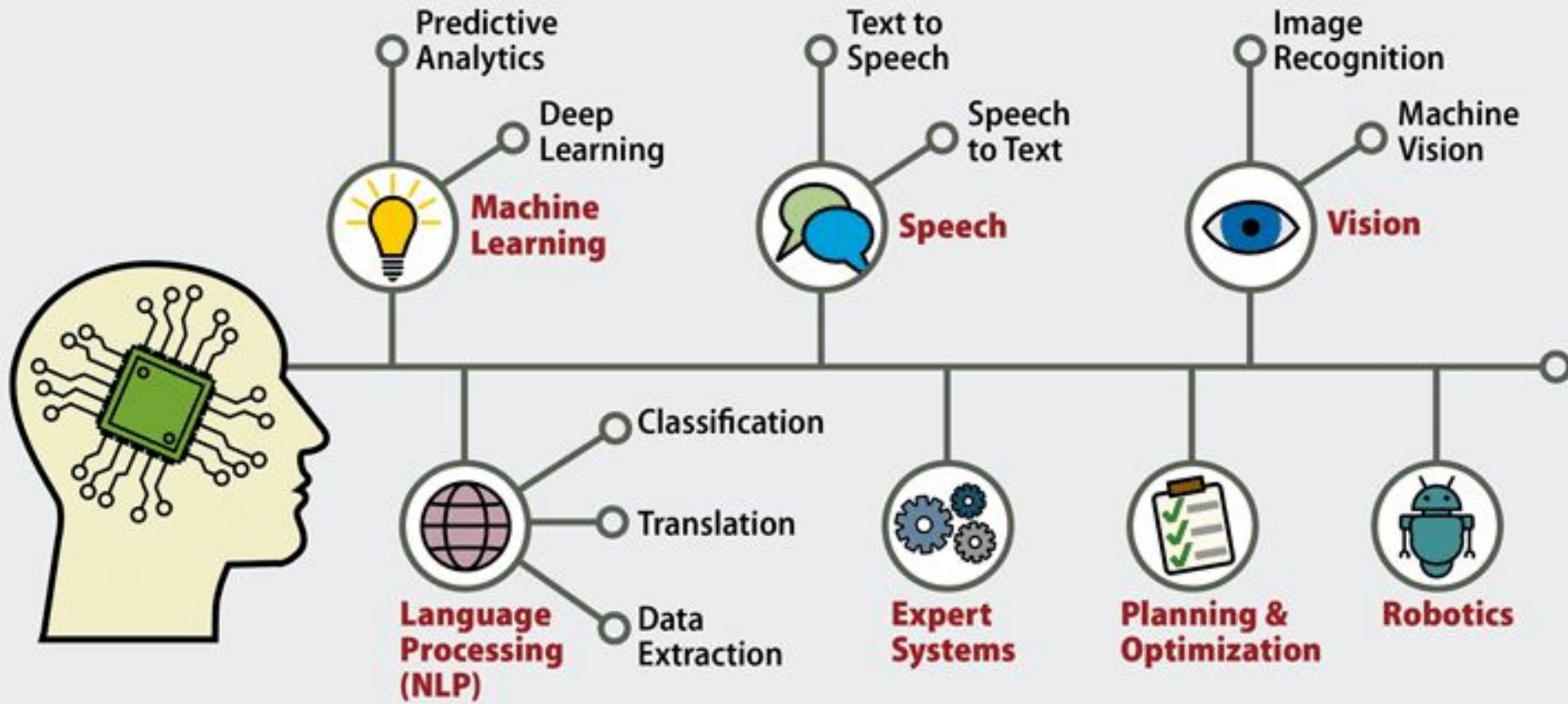




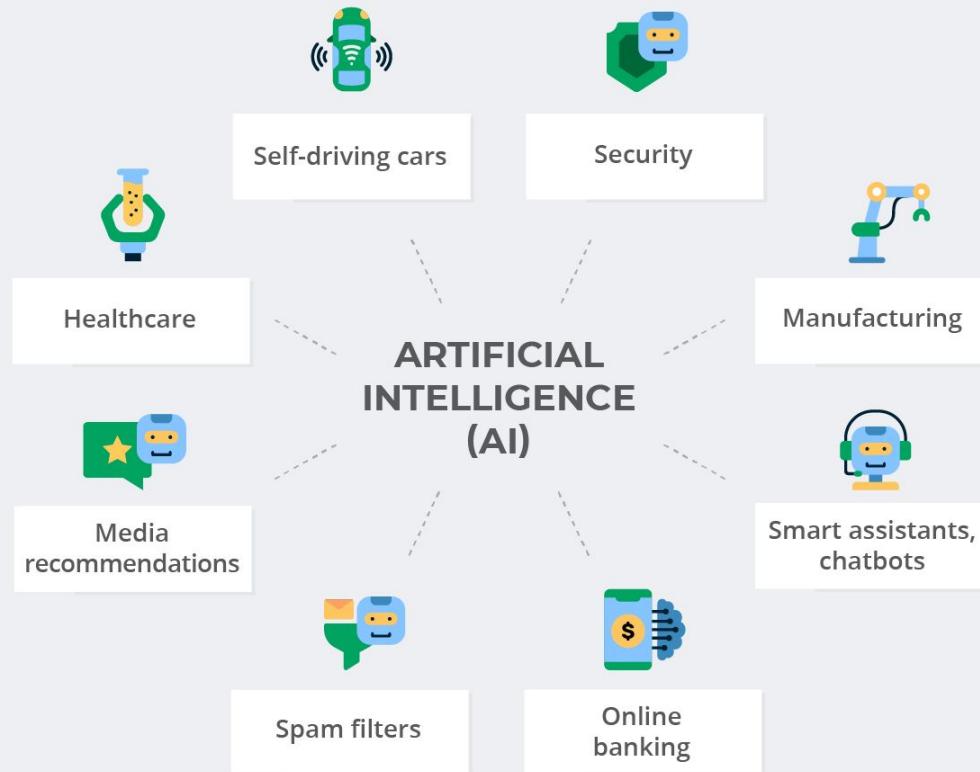
Artificial Intelligence (AI) is
the ability for a computer to
think and learn.



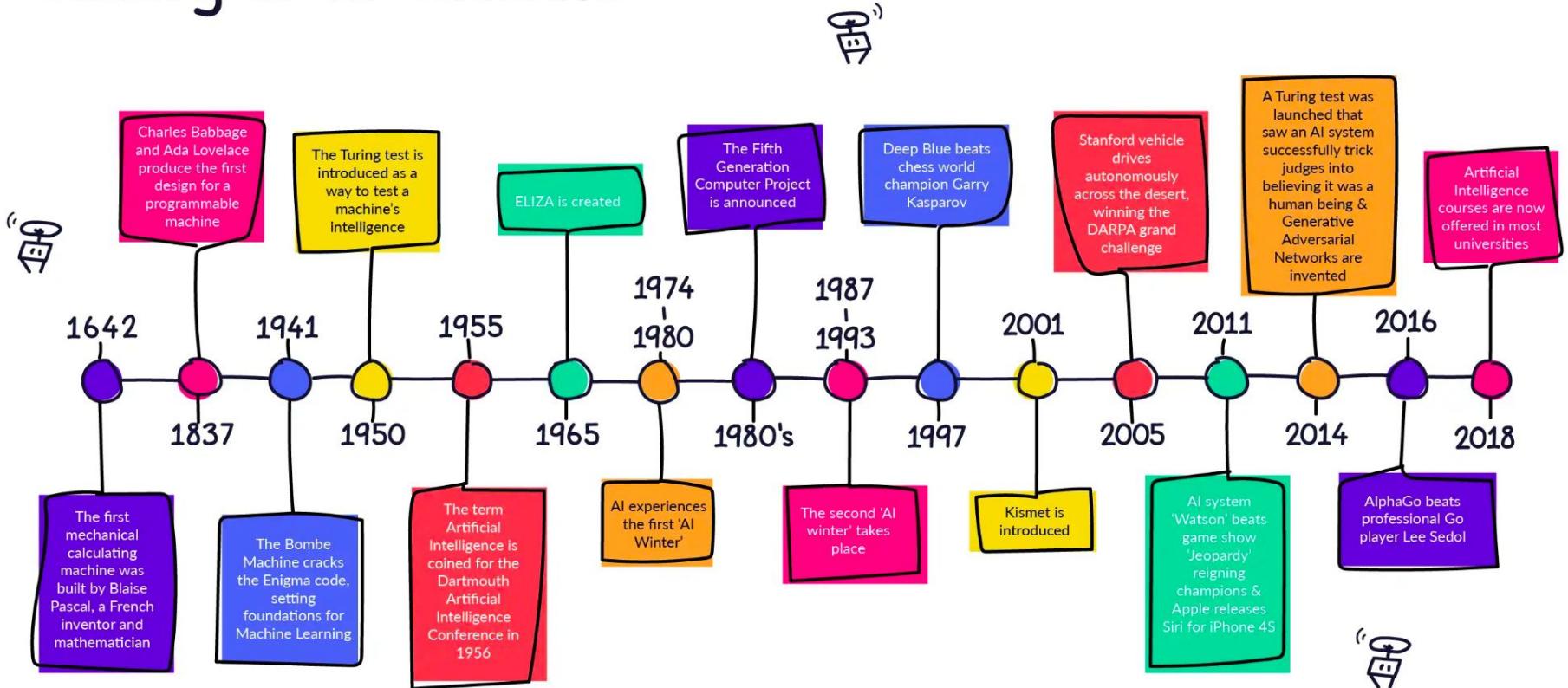
Artificial Intelligence



Examples of Artificial Intelligence in Everyday Life



History of AI Timeline



6 ARTIFICIAL INTELLIGENCE JOB TITLES



Machine Learning Engineers

focus on research, design, and implementation of models to help machines make choices.



Data Scientists

create predictive models to solve real-world problems, obtaining insights from data and presenting them.



Data Engineers

cleanse the data, massage the date, pipeline the data, etc. ensuring it is formatted correctly for the intended usage.



Software Engineers

typically create software, but may have a focus on data and AI – look for keywords like "Python" and "Artificial Intelligence" in the job posting.



Product Managers

identify what users find valuable in a product. if the product is using AI/machine learning techniques - they would have to understand these concepts.



Architects

have a deep understanding of the entire machine learning ecosystem – this is a long-term career goal!



Big Data Engineer



AI Data Analyst



Business Intelligence
Developer



AI Software Engineer



AI Consultant



NLP Processing
Specialist



AI Research Scientist



Machine Learning
Engineer

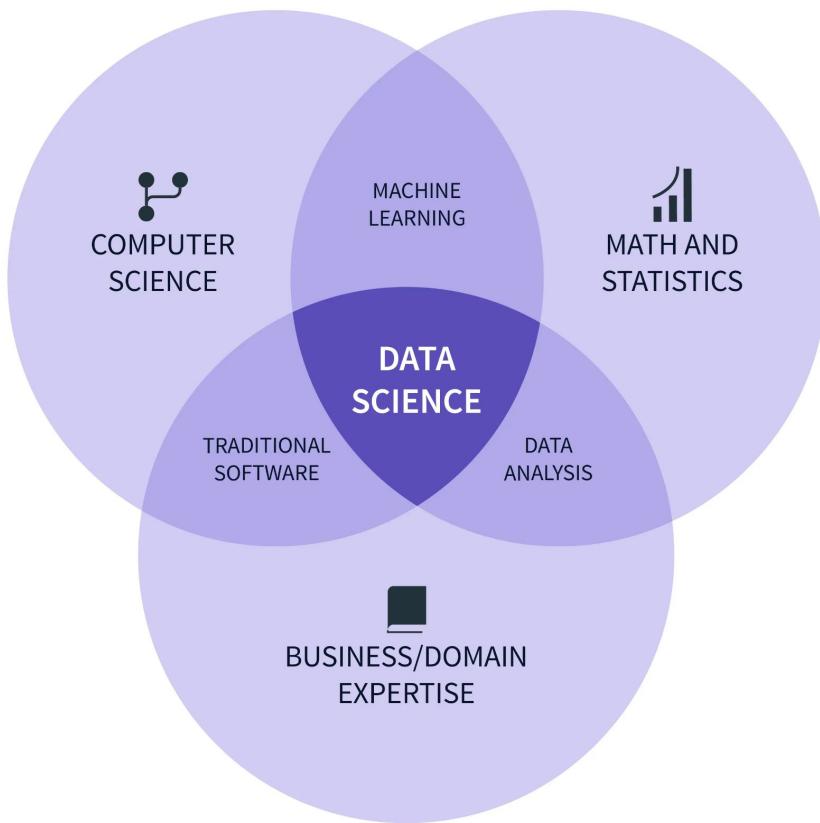


User Experience
Specialist



AI Wrangler

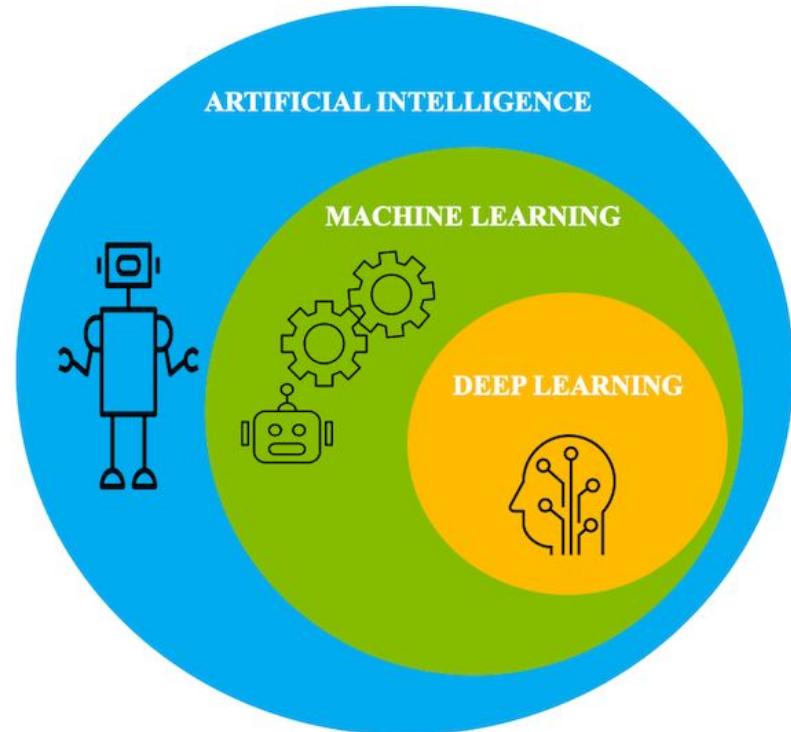




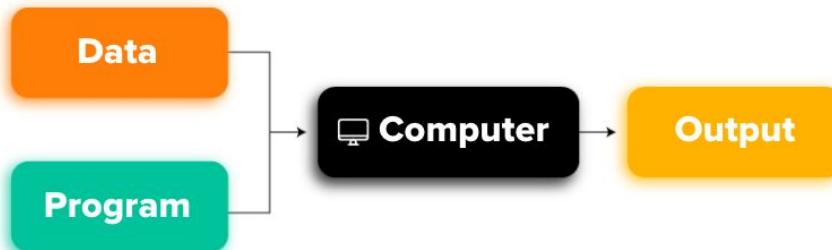


AI vs Machine Learning vs Deep Learning

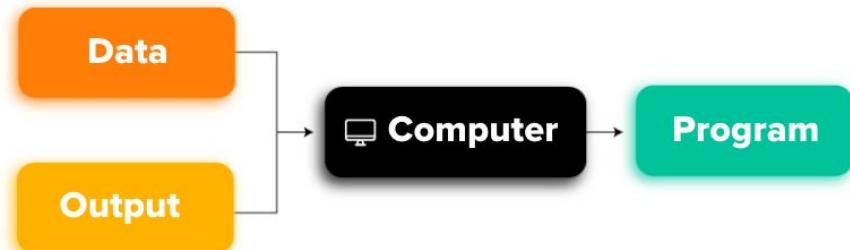
- **Artificial Intelligence (AI)** is the concept of creating smart intelligent machines.
- **Machine Learning (ML)** is a subset of artificial intelligence that helps you build AI-driven applications.
- **Deep Learning** is a subset of machine learning that uses vast volumes of data and complex algorithms to train a model.



TRADITIONAL PROGRAMMING



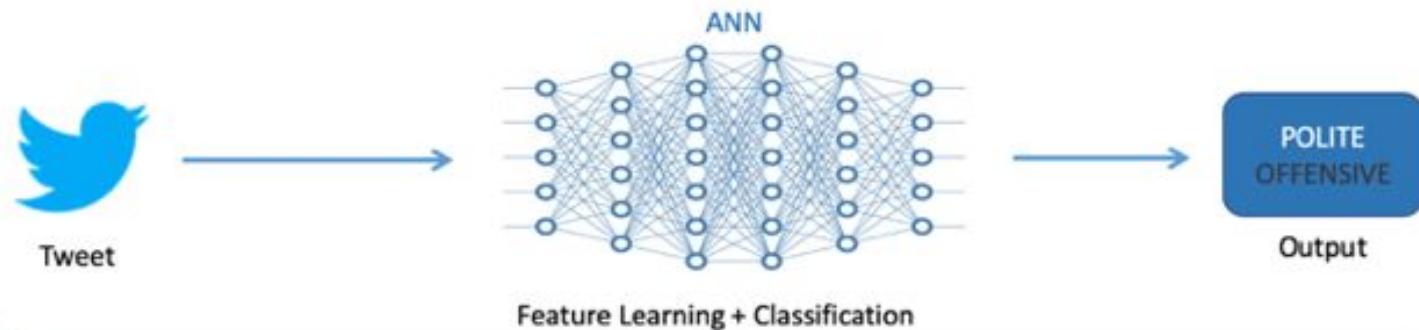
MACHINE LEARNING

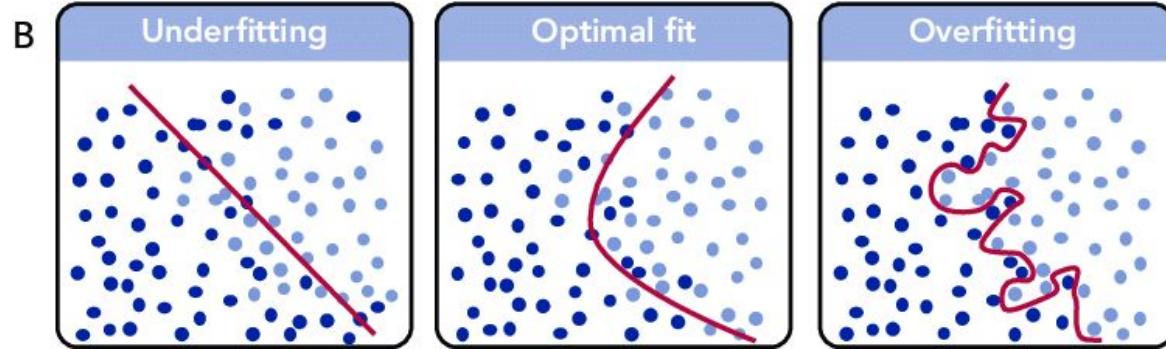
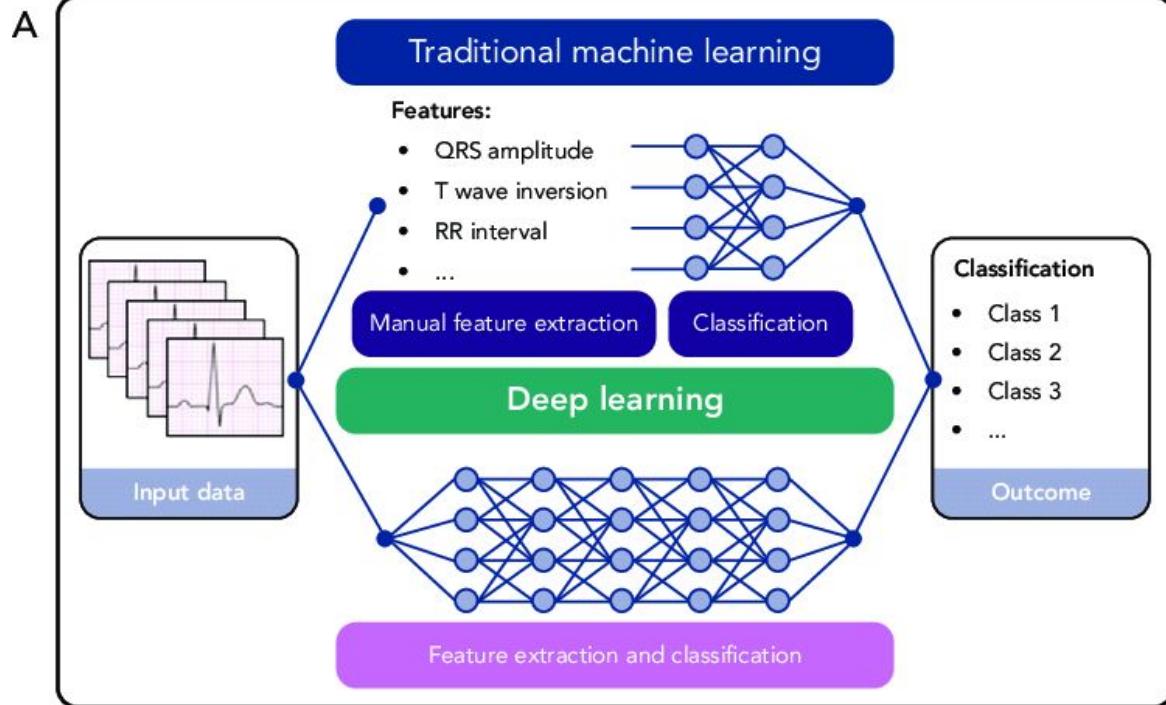


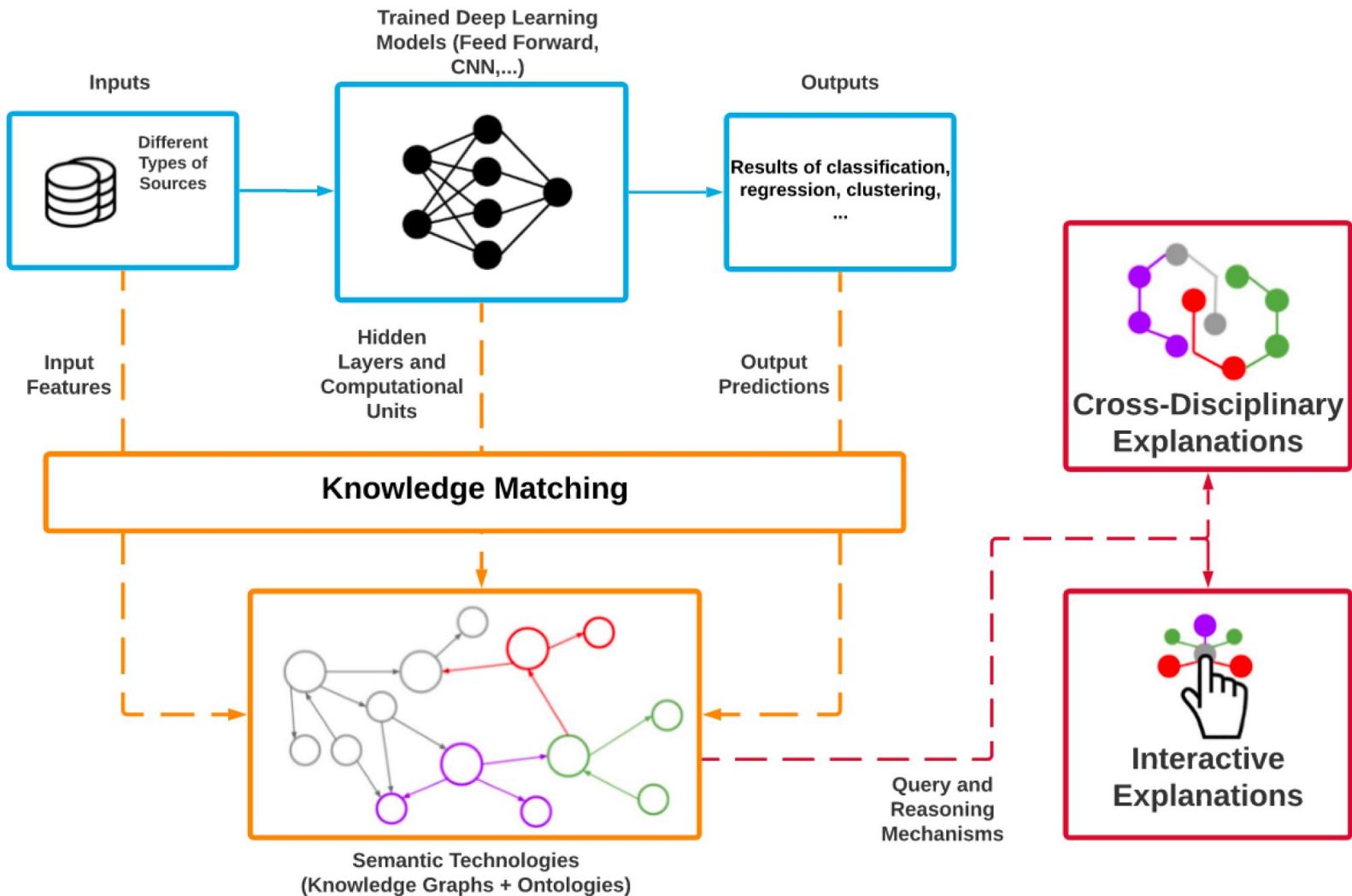
TRADITIONAL MACHINE LEARNING

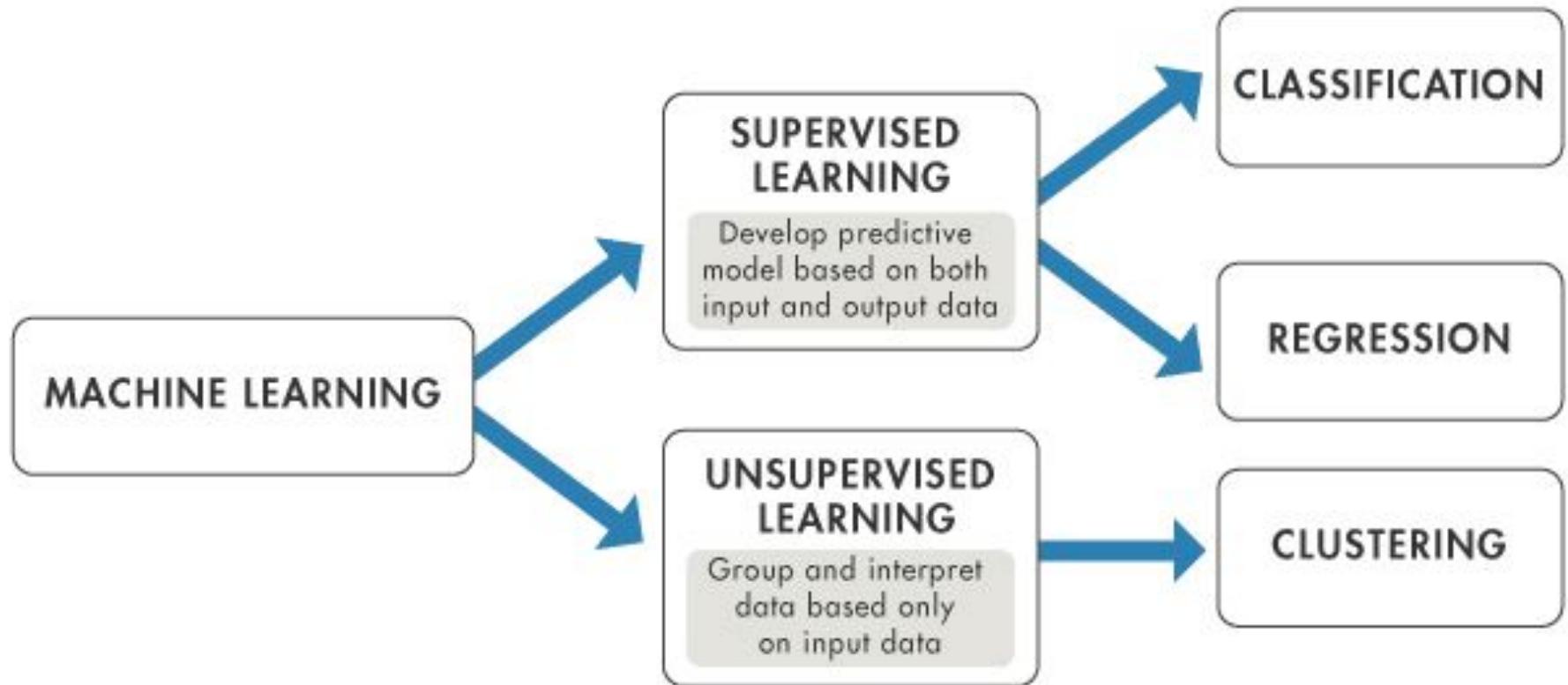


DEEP LEARNING





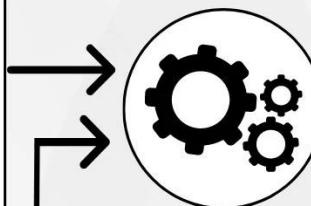
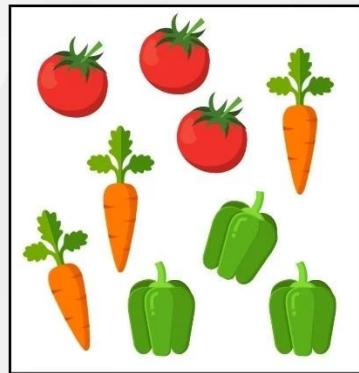




SUPERVISED LEARNING

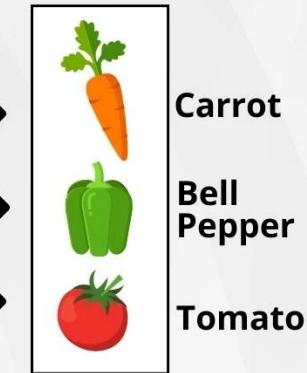
Supervised machine learning is a branch of artificial intelligence that focuses on training models to make predictions or decisions based on labeled training data.

Labeled Data

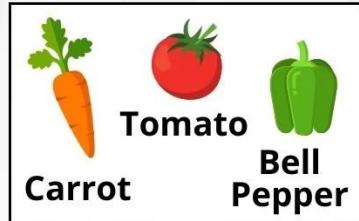


Model Training

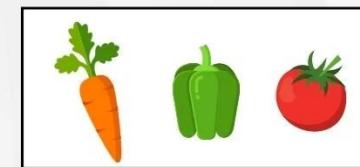
Prediction



Labels



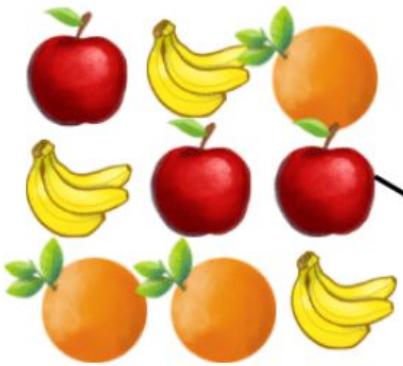
DatabaseTown



Test Data



Input Data



Machine Learning
Model



Prediction

It's an Apple

Partial Labels

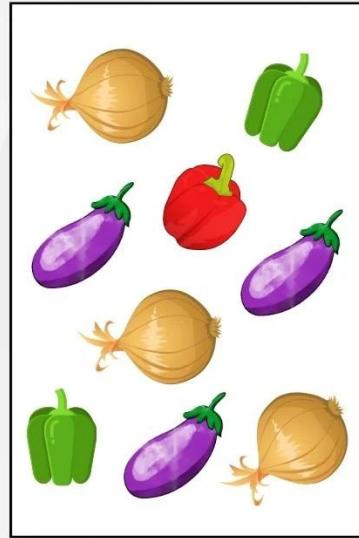


Unlabelled Data

UNSUPERVISED LEARNING

Unsupervised learning is a type of machine learning where the algorithm learns from unlabeled data without any predefined outputs or target variables.

Input Raw Data

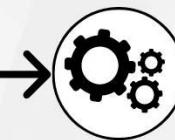


Unlabeled Data

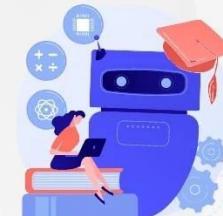


DatabaseTown

Interpretation

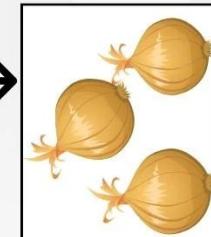
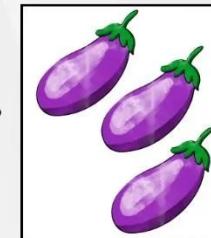
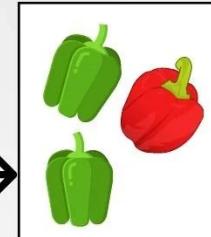


Algorithms

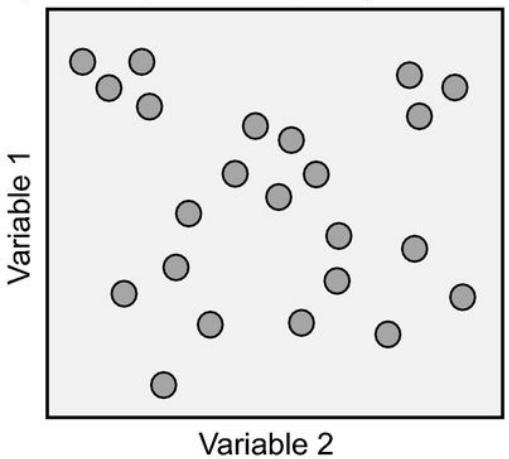


Processing

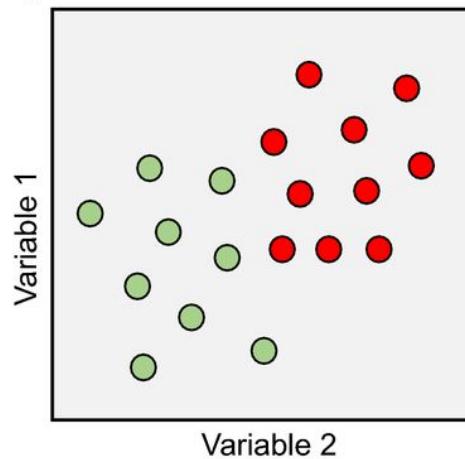
Outputs



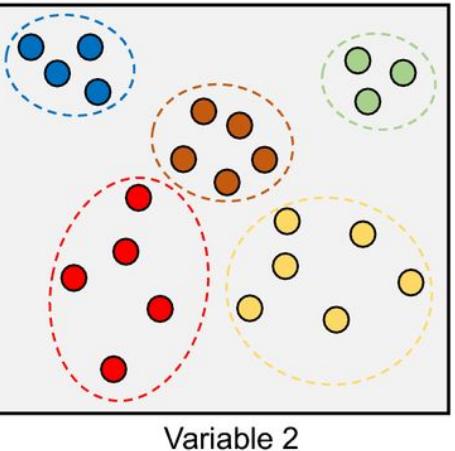
a) Unsupervised learning



b) Supervised learning

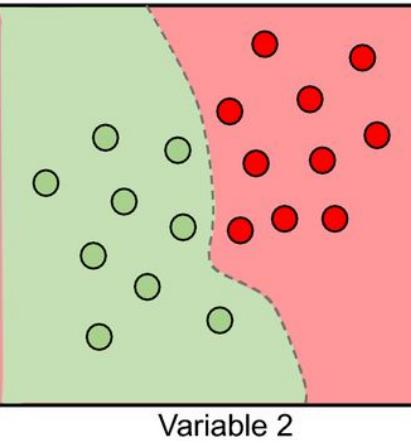


Variable 1



Variable 2

Variable 1



Variable 2



MACHINE LEARNING



SUPERVISED LEARNING



UNSUPERVISED LEARNING



CLASSIFICATION



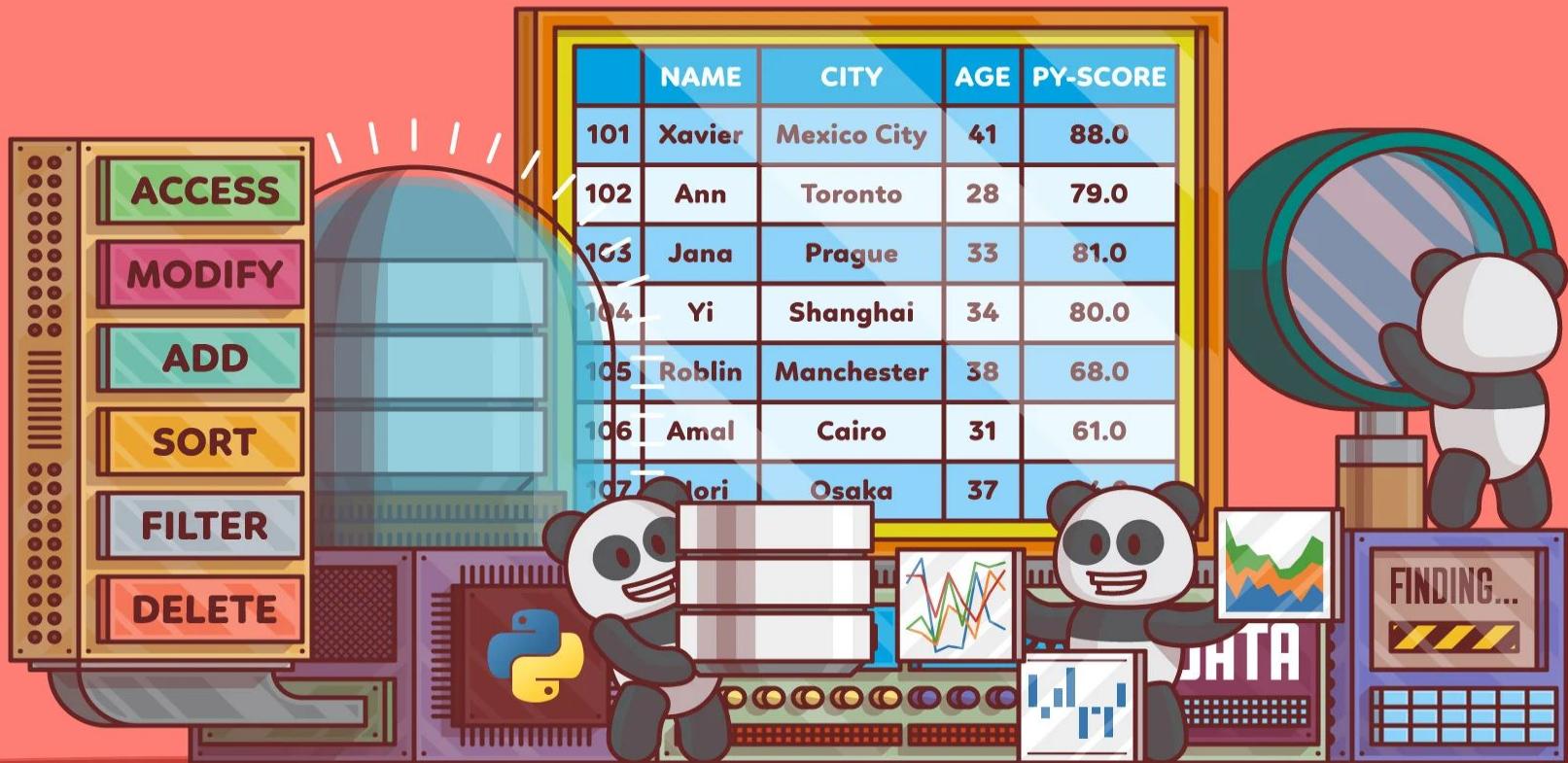
REGRESSION

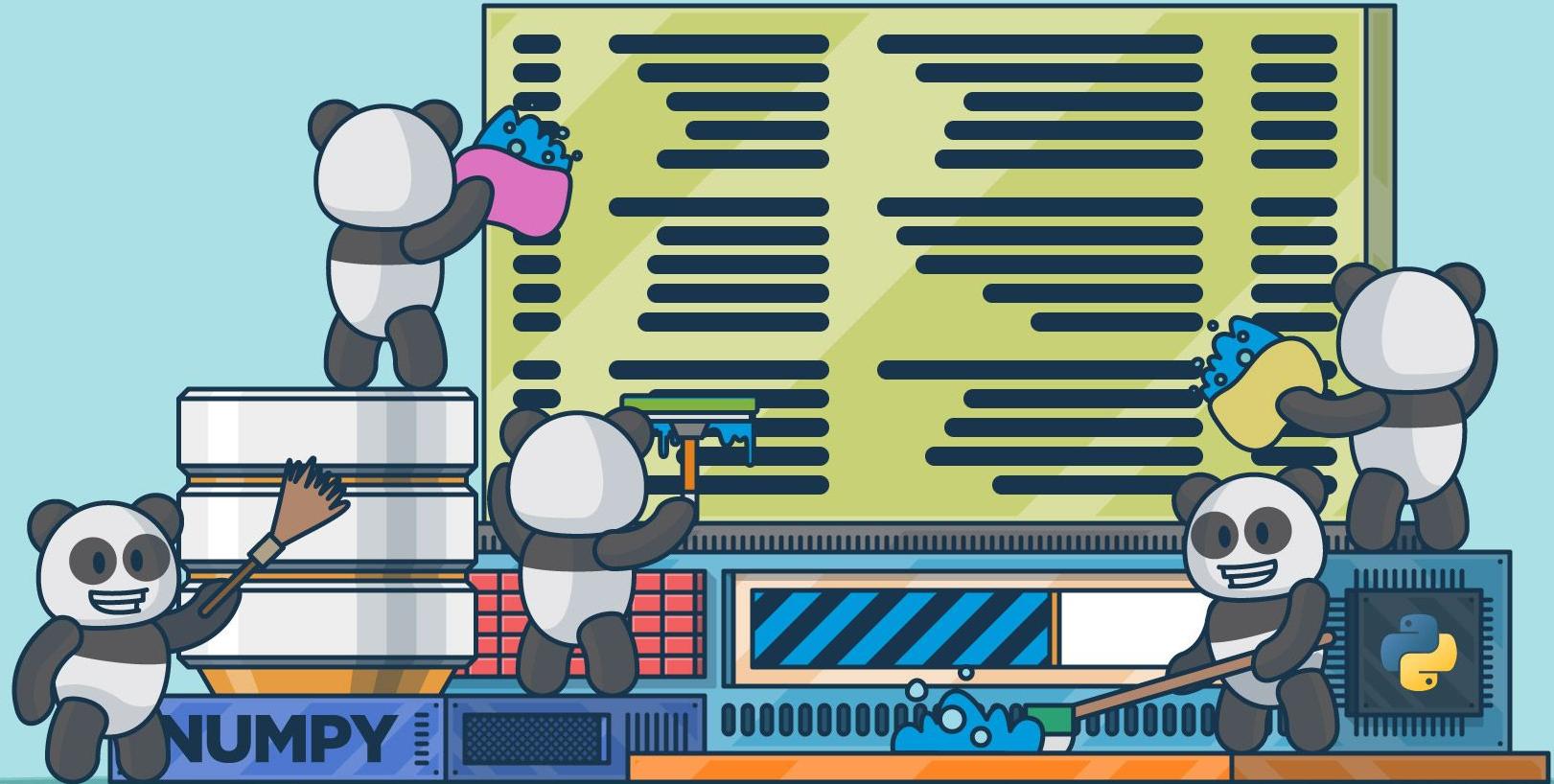


CLUSTERING

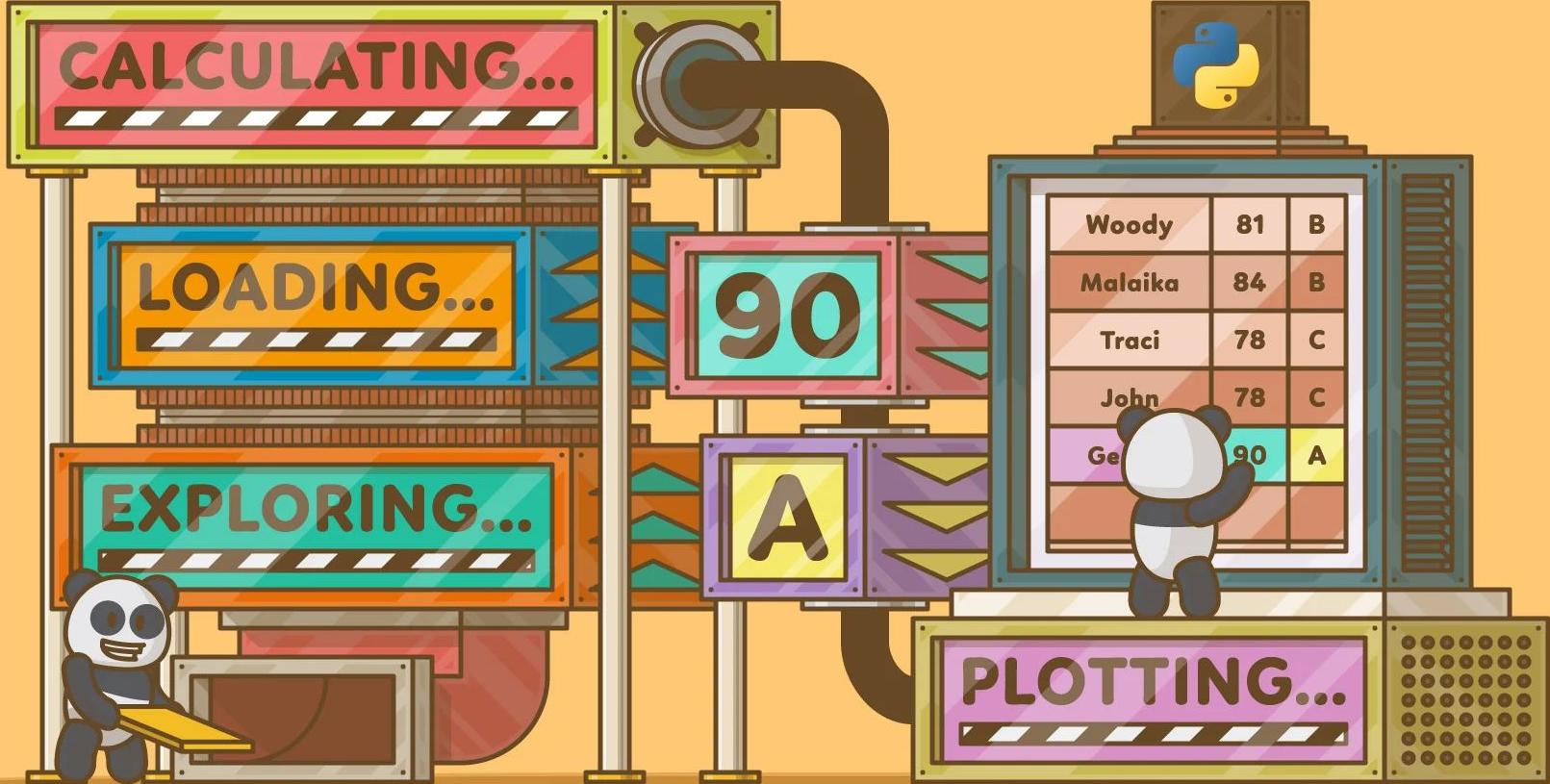


ASSOCIATION

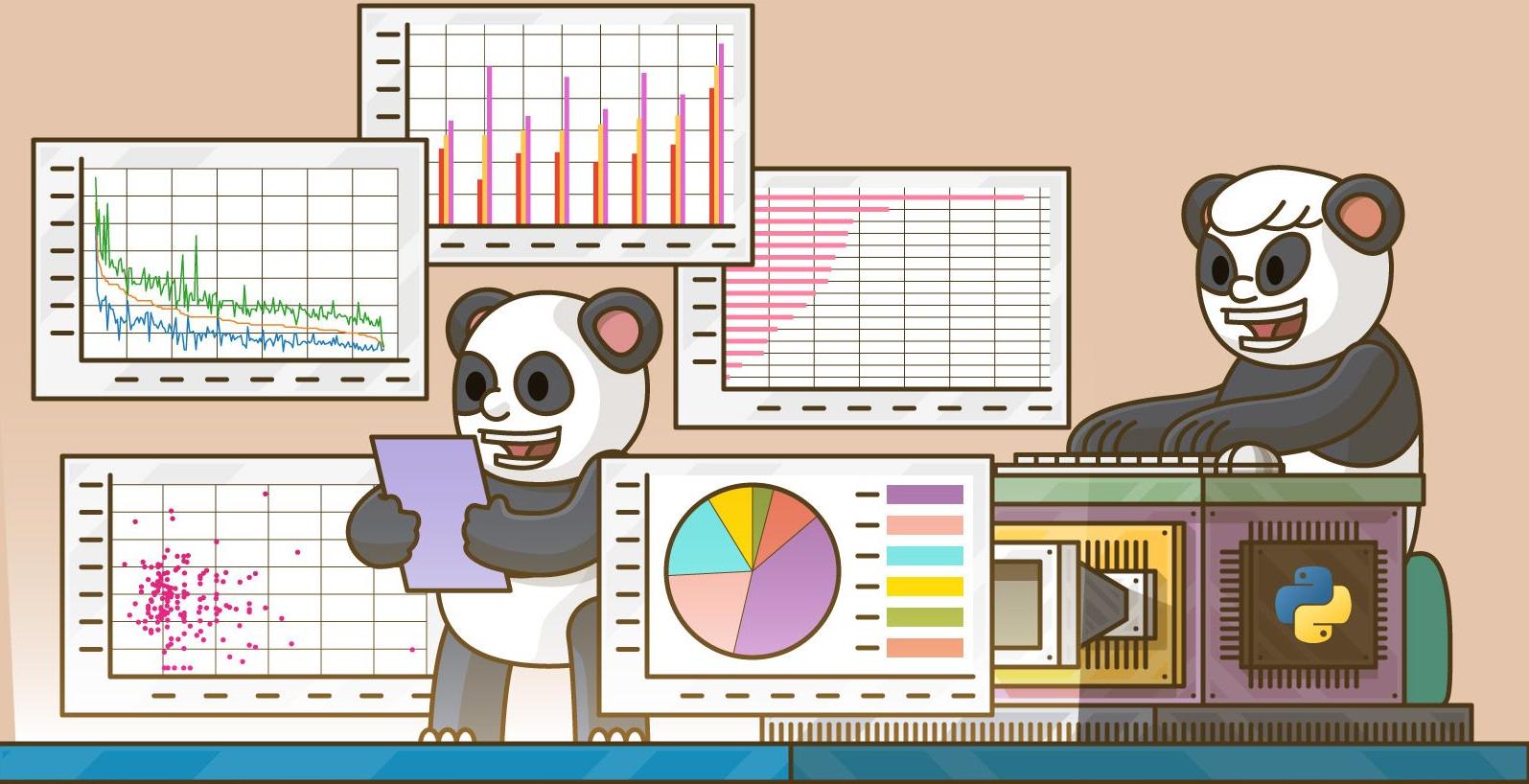




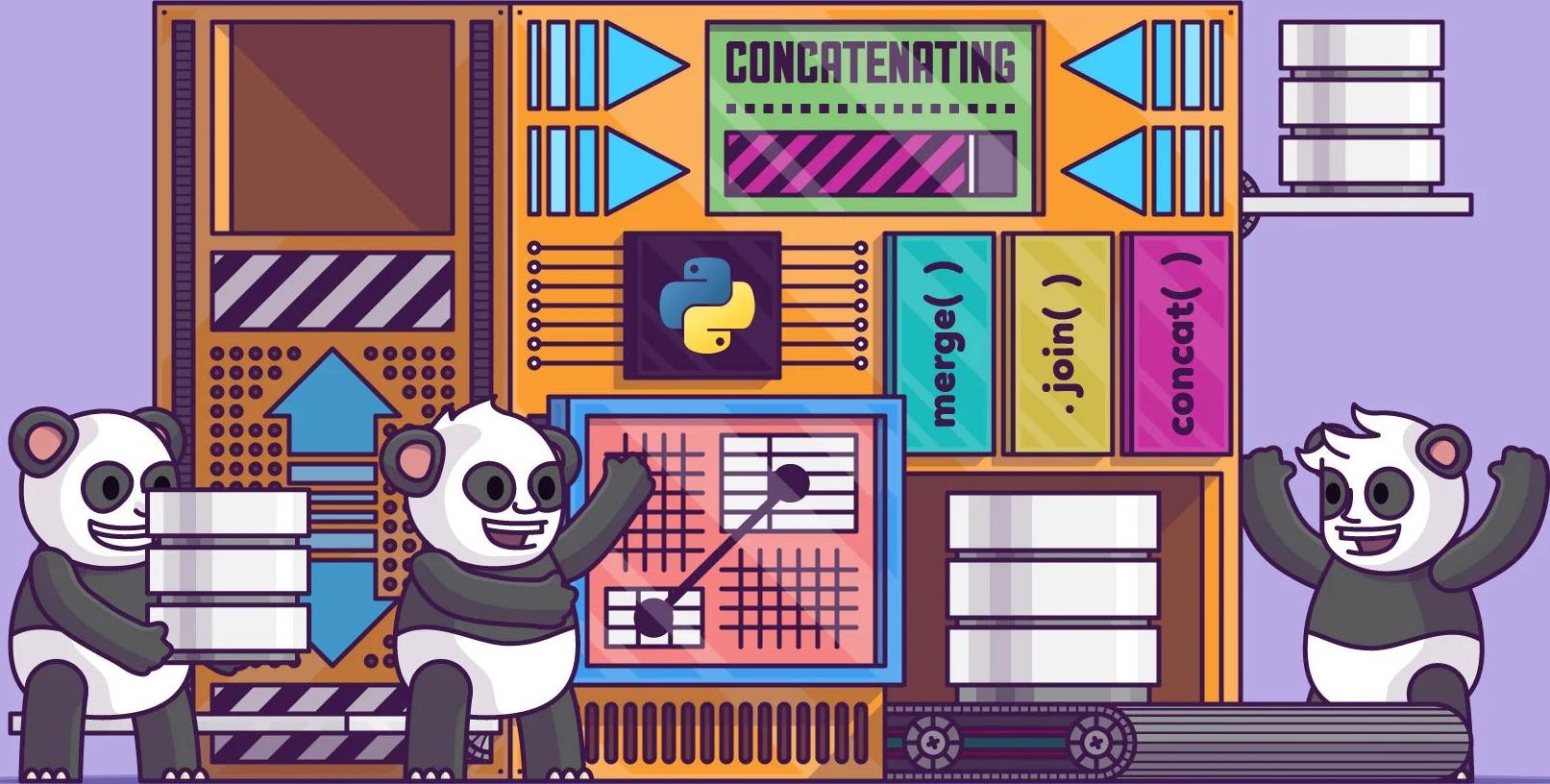
Real Python



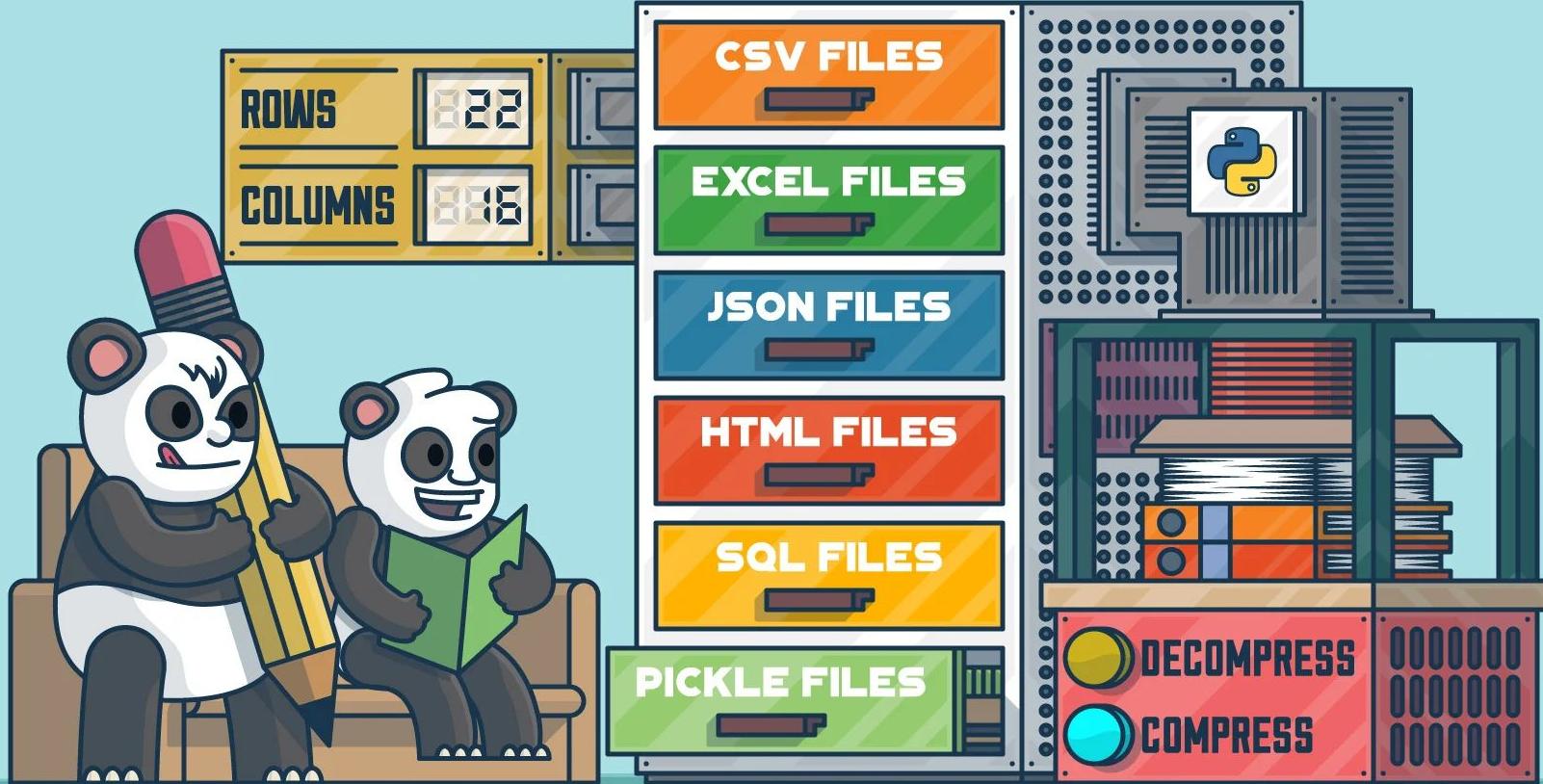
Real Python



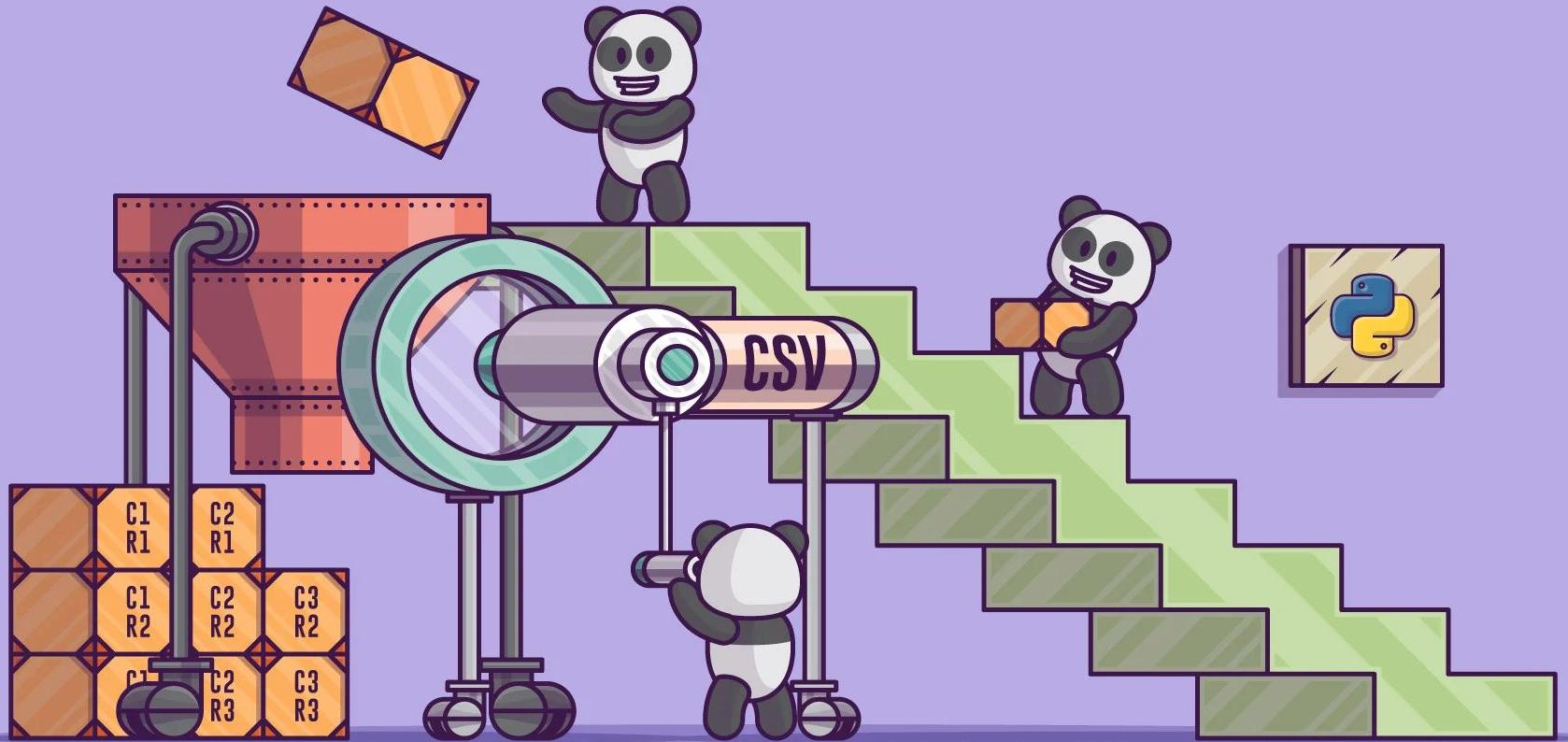
Real Python



Real Python



Real Python



Real Python

