Introduction to Machine Learning

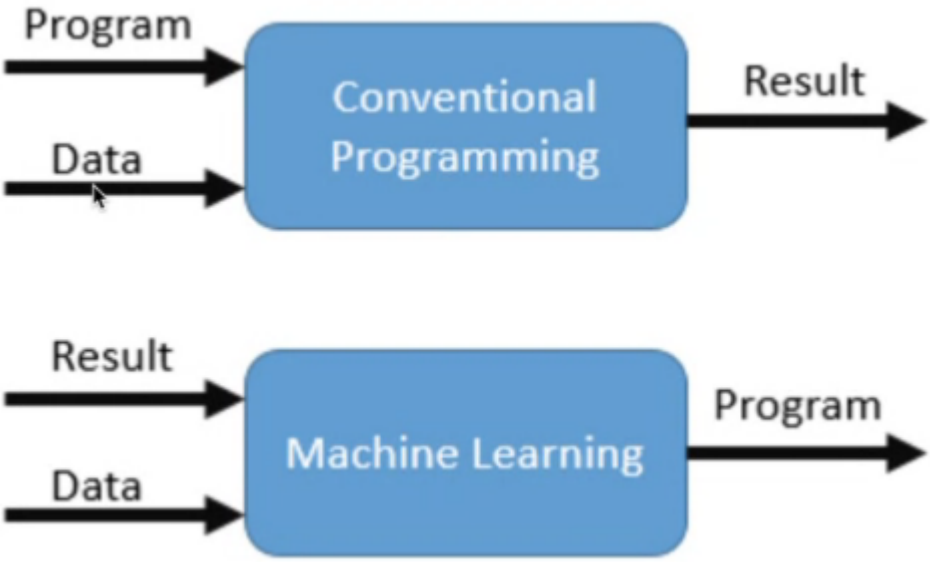
There are two types of AI

- AGI > Artificial General Intelligence
    - Can do all tasks that a human can do.
- ANI > Artificial Narrow Intelligence
    - Machine Translations
    - Classifications
    - Computer Vision etc.

Self Learning

- Python with Type Hints
- SQLModel
- Vector Databases (Pinecone etc.)
- FastAPI
- Docker (Write Once, Run Anywhere)
- CNAI (Cloud Native AI)

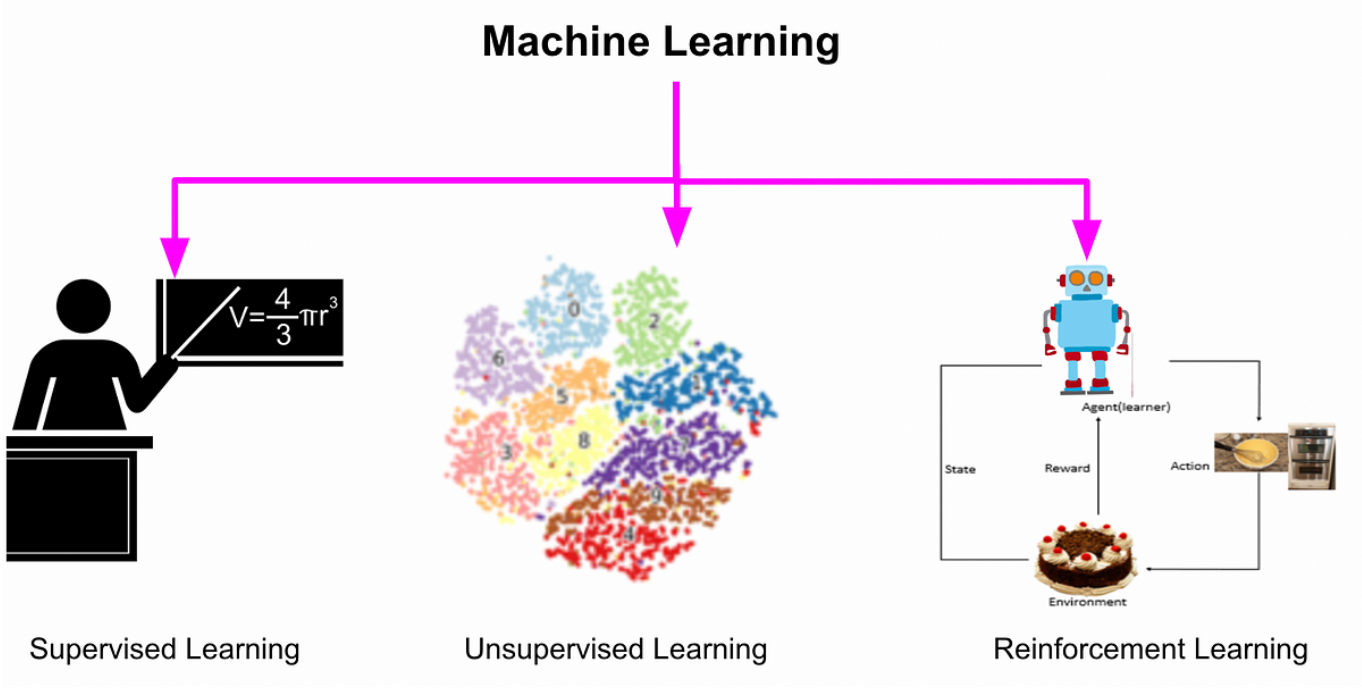
Conventional Programming vs Machine Learning



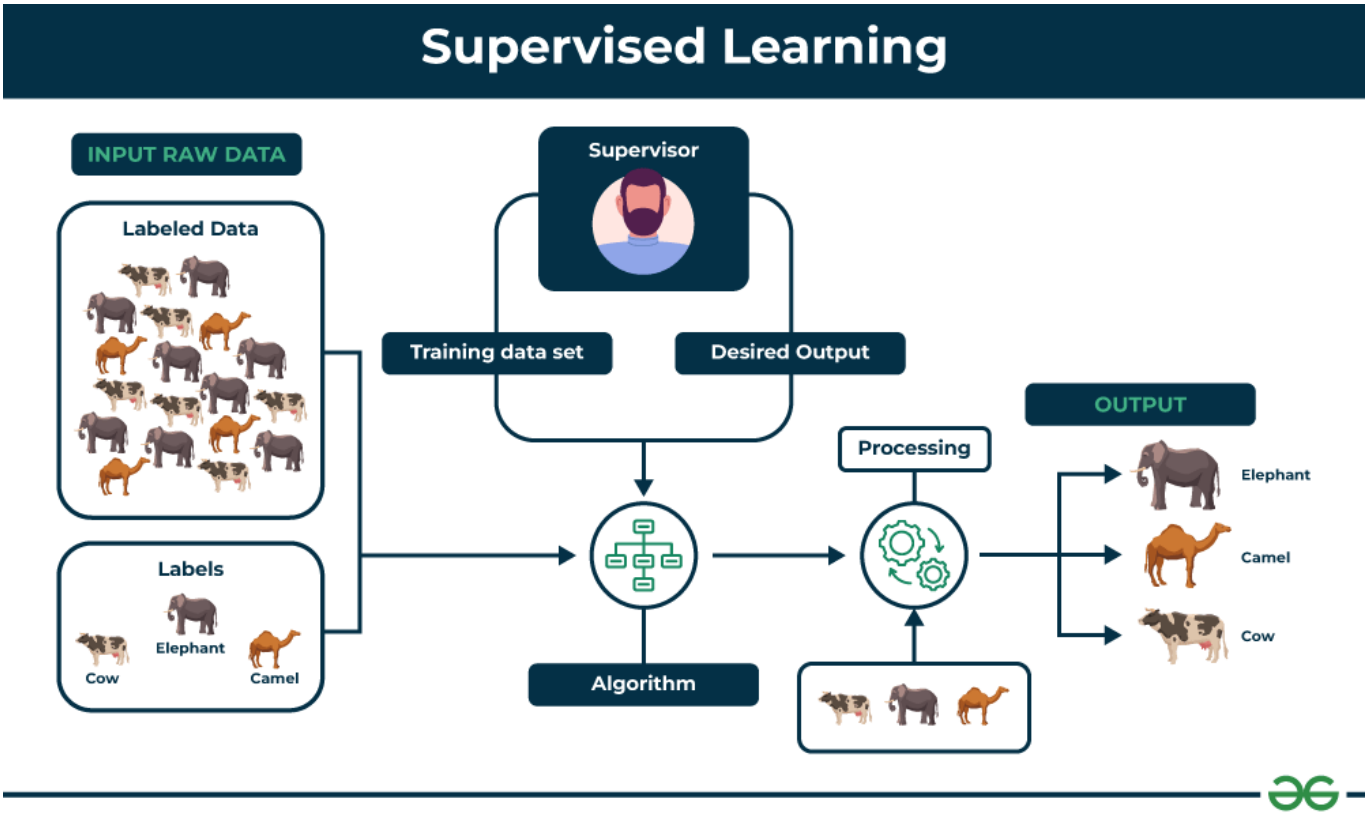
- ML Model > Knowledge Graph

Types of Machine Learning

*There are **03** types of Machine Learning*



01- Supervised Learning



- Supervisor/ML Engineer will filter out all the non-essential information in input.
- Supervised Learning is limiting because Human Intervention is required.
- ML Engineer will perform *Feature Extraction / Feature Engineering*.
- Solution is to use Deep Learning which uses ANN (Artificial Neural Networks) which automatically performs Feature Engineering.

Example of Feature Extraction

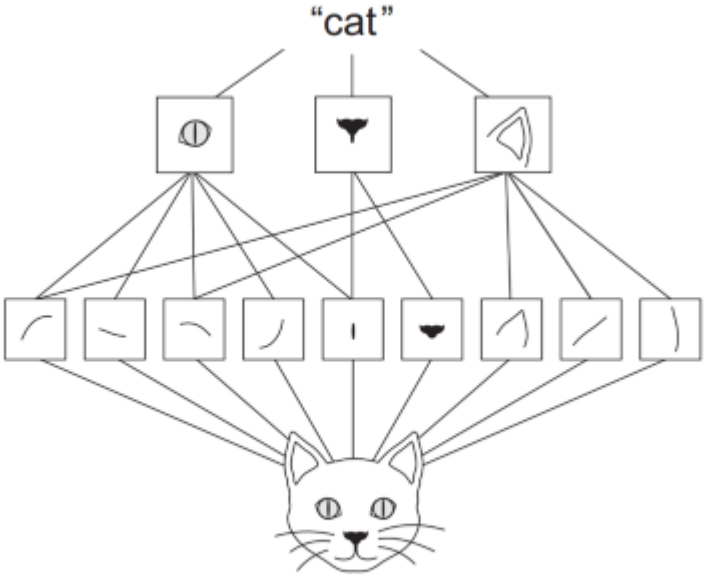
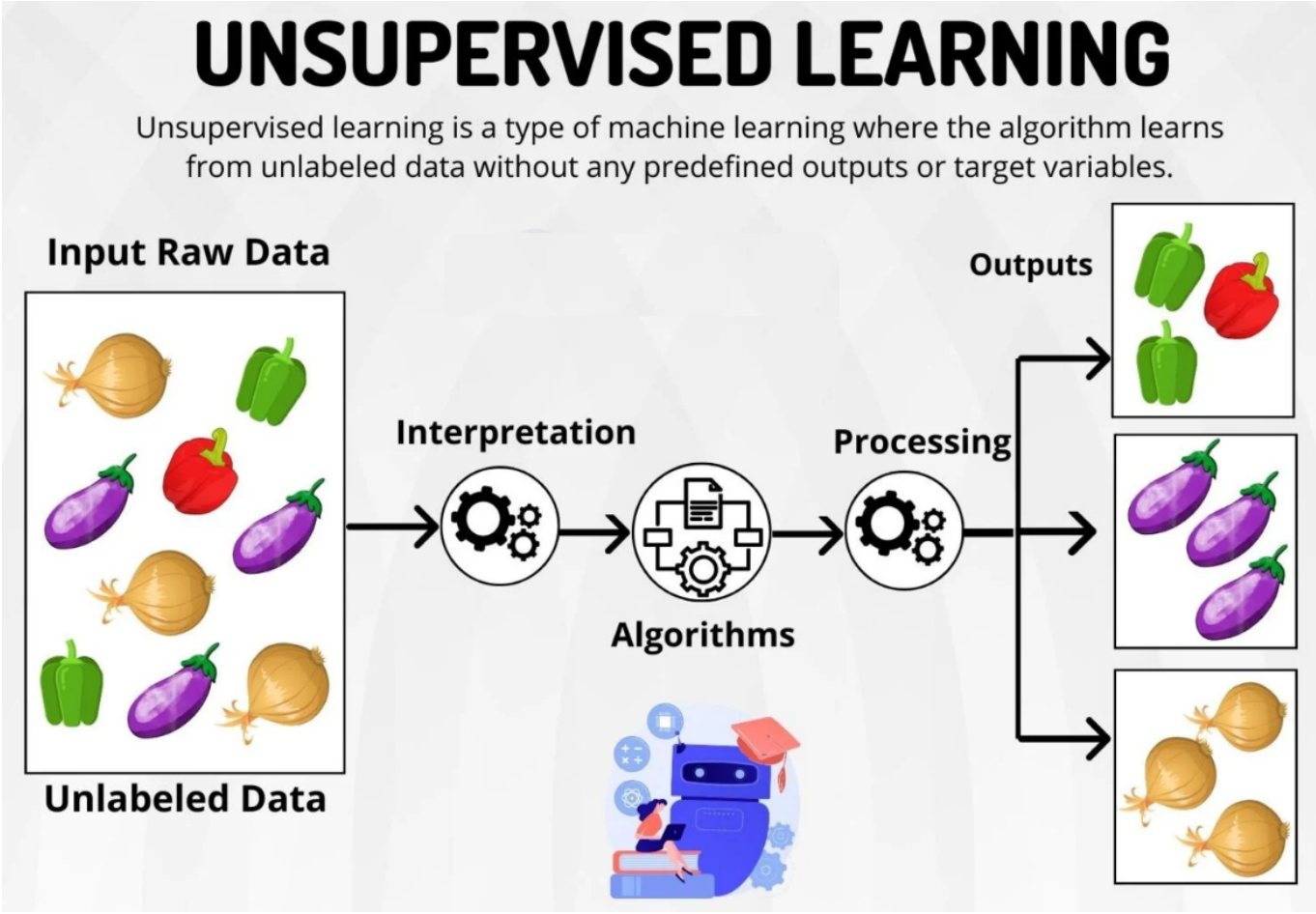


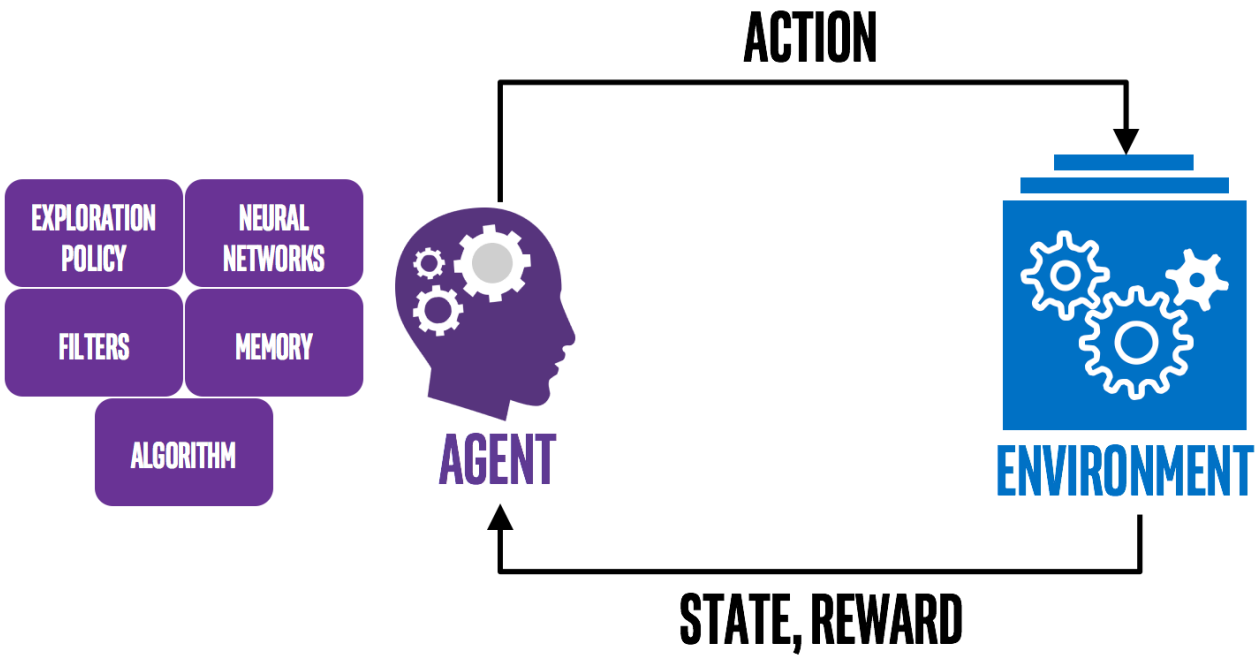
Figure 5.2 The visual world forms a spatial hierarchy of visual modules: hyperlocal edges combine into local objects such as eyes or ears, which combine into high-level concepts such as "cat."

02- Unsupervised Learning



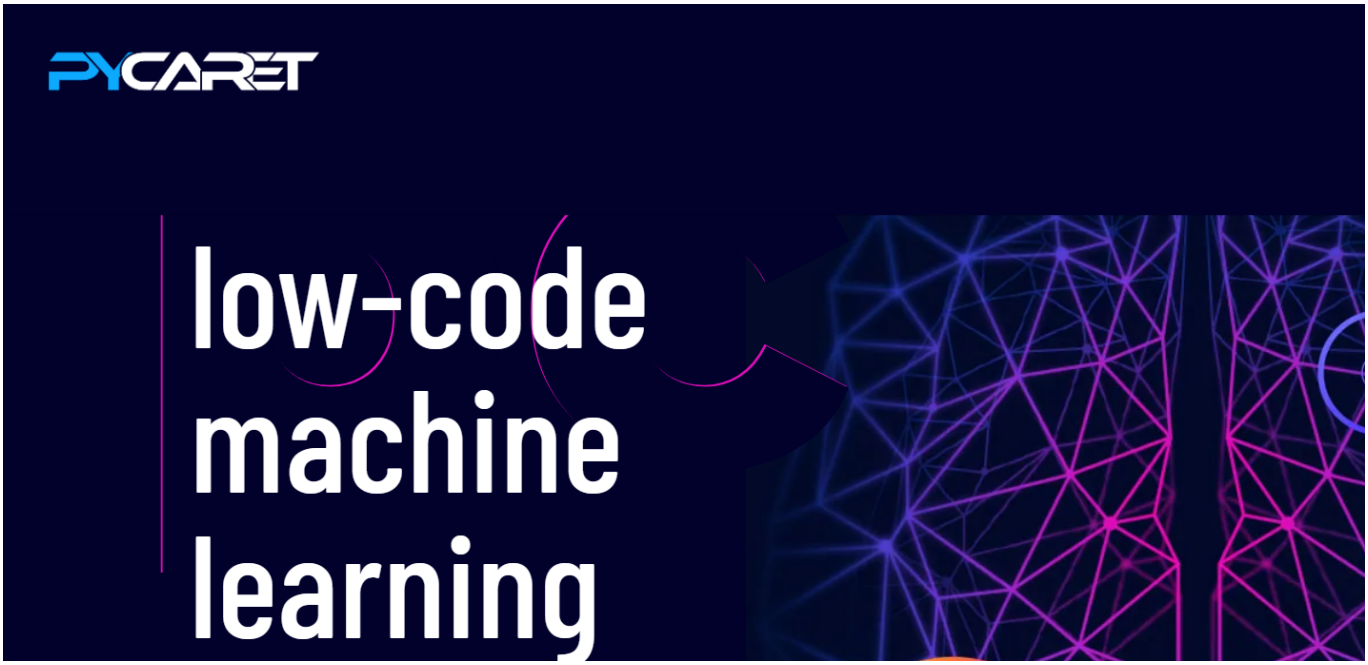
- We do not provide labels/result with Data.
- ML Algorithms apply labels itself.

03- Reinforcement Learning



- AI Agent will get current State from Environment.
- AI Agents perform some Action on Environment.
- Environment will give some Reward (either Positive / Negative)
- The AI Agent will change its future Actions based on previous Rewards.

PyCaret



- Provide ML Solutions in a single library.
- Low Code solution.