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SUNRISE INSTITUTE

MACHINE LEARNING

EMBARKING ON A JOURNEY INTO DATA SCIENCE

YA MANON

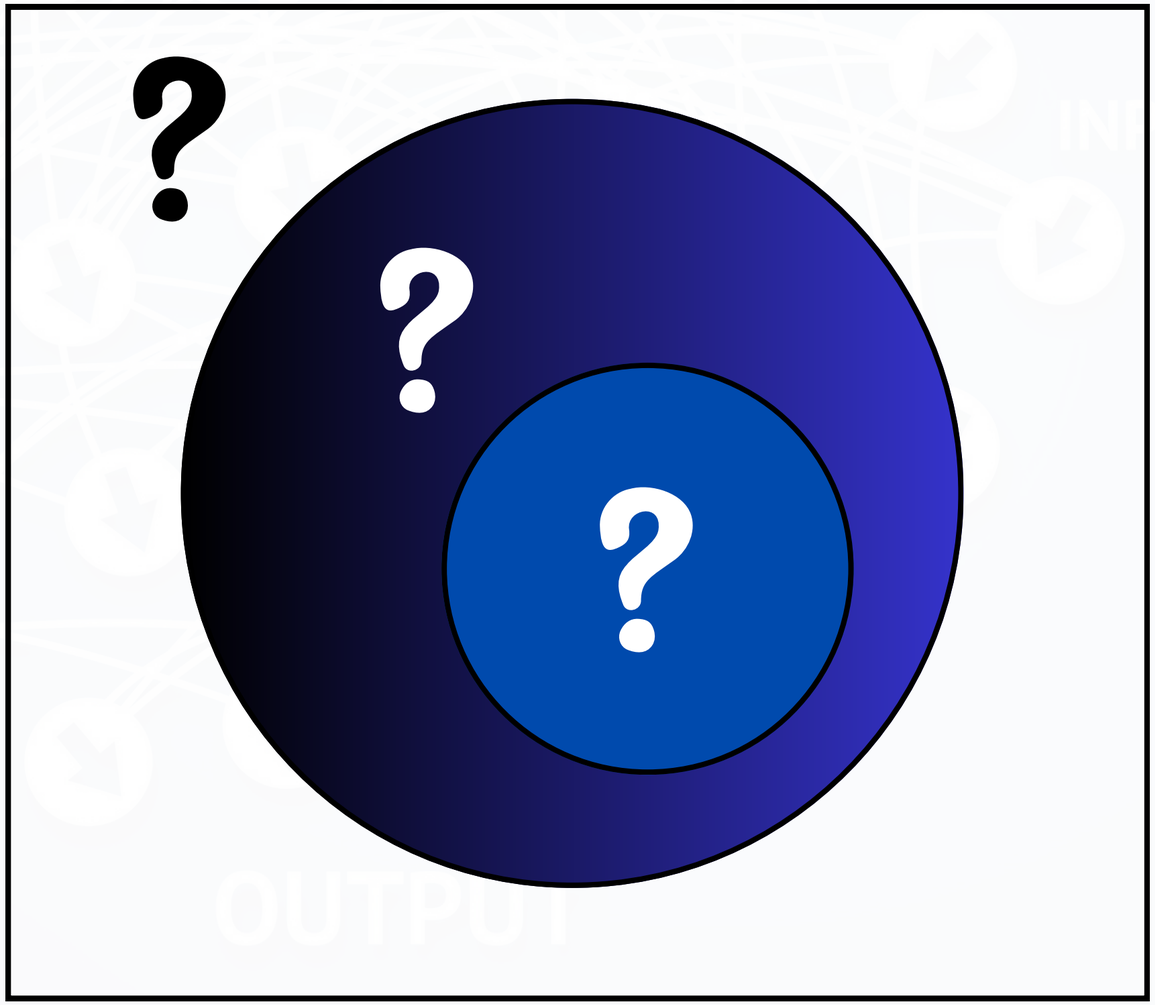
You can have data without information but you cannot have information without data.

-Daniel Keys Maran

Meet Artificial intelligence

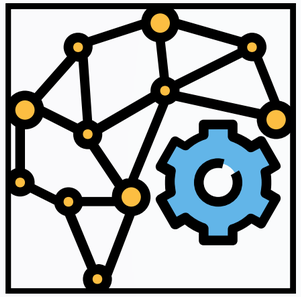
- Face recognization
- ChartGPT (Generative AI)
- Recommendation System

Machine Learning

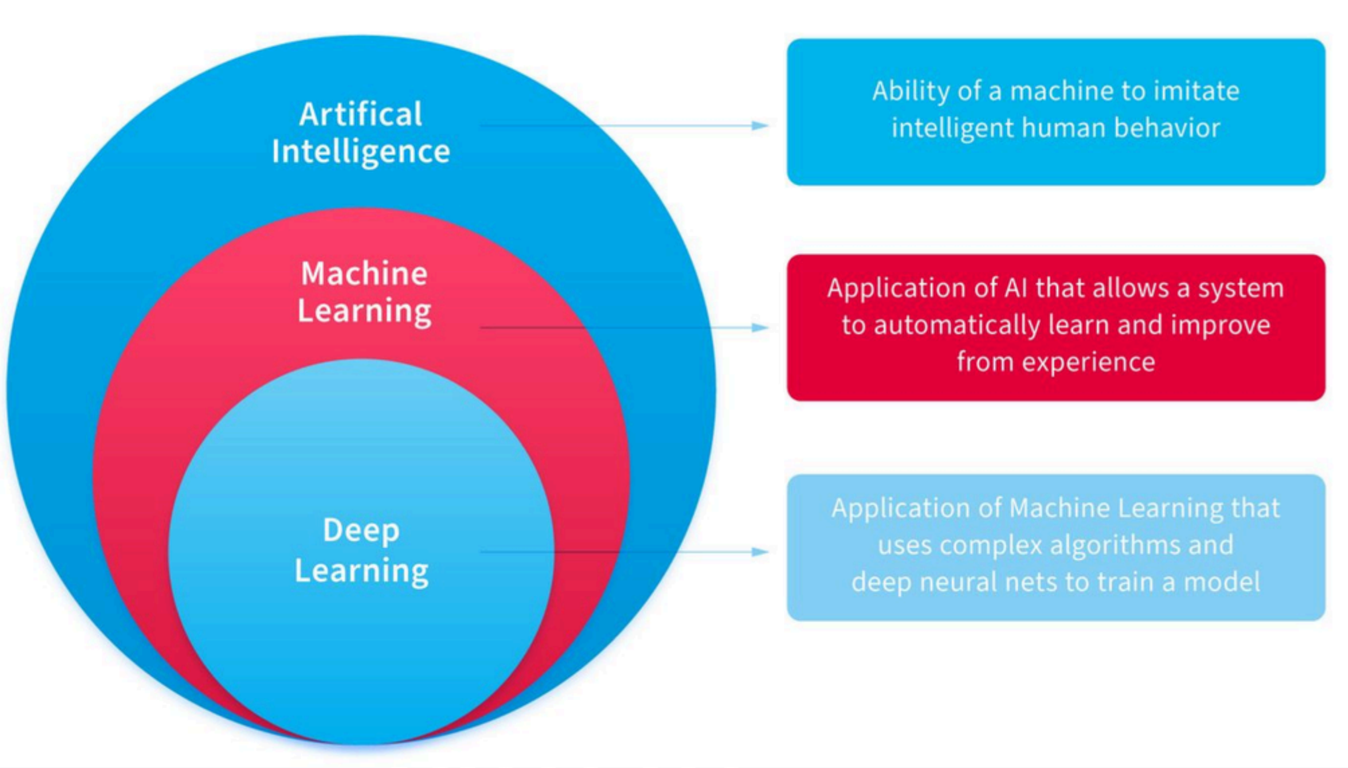


Deep Learning

Meet Machine Learning

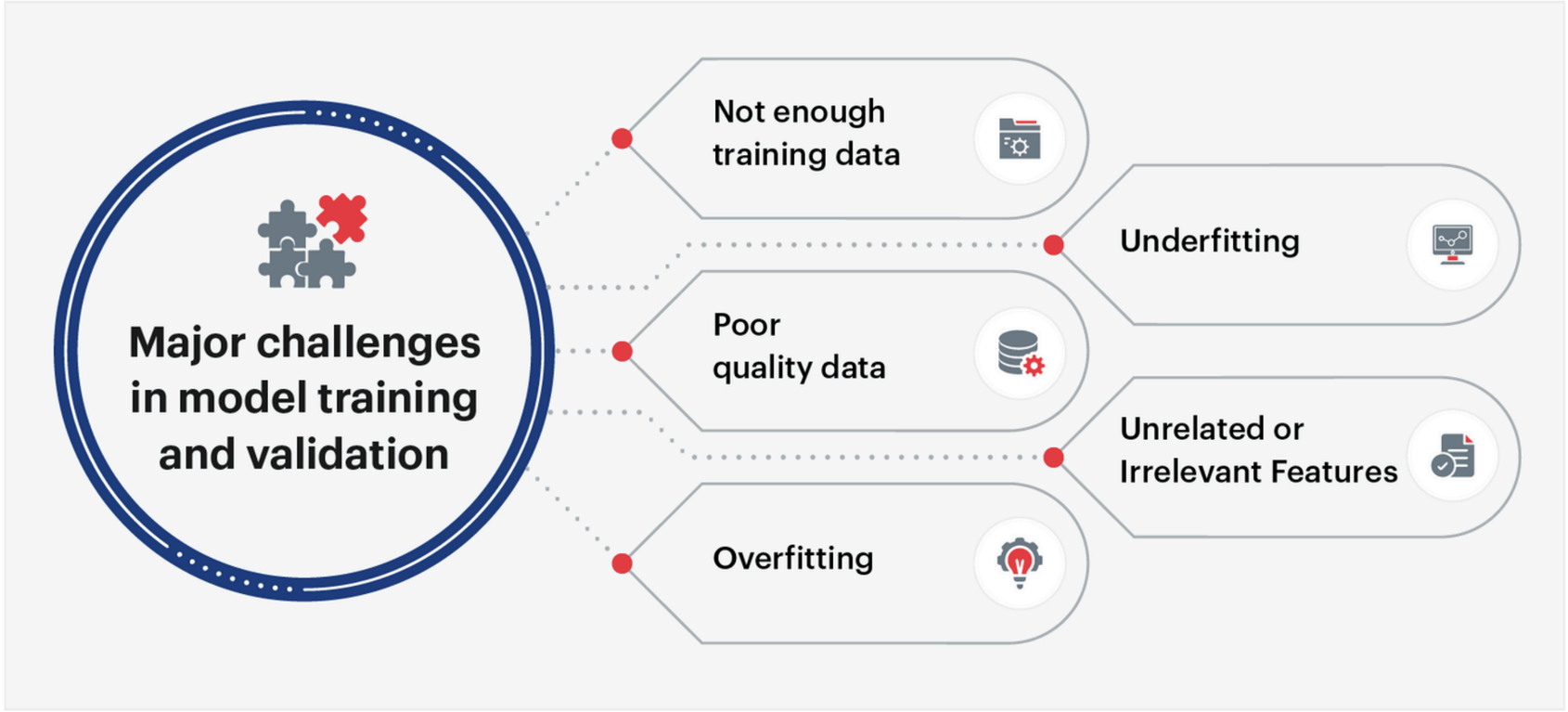


- **Machine Learning** is a subset of **Artificial Intelligence** (AI) that enables systems to learn from data, identify patterns, and make decisions with minimal human intervention.



Challenges in ML Deployment

MLC?



As per research, only 13% of ML models ever make it to production. This is a huge gap, considering the possibilities that AI model deployment can bring to the organization.

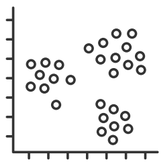
Types of Machine Learning

Machine Learning

Supervised Learning

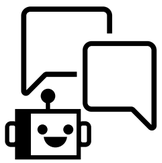
Task Driven
Classification/Regression

Unsupervised Learning



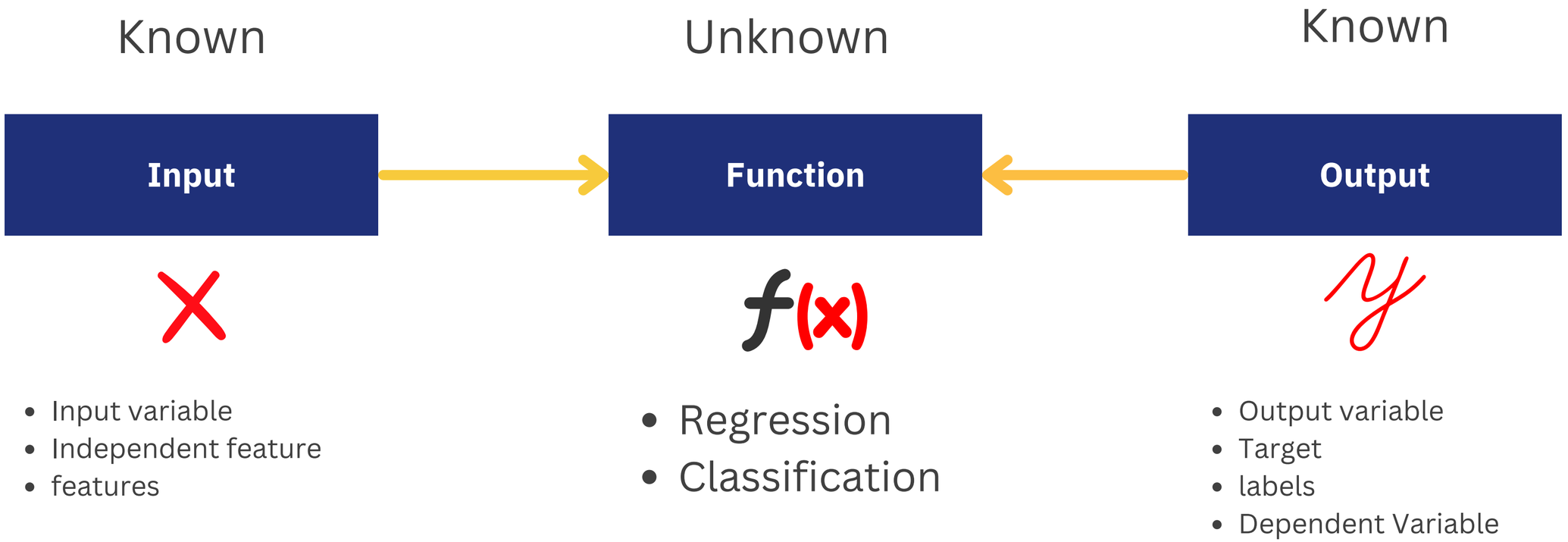
Data Driven
Clustering

Reinforcement Learning



Learning from mistake
Game/self driven car

Supervised Learning



Machine Learning is (supervised learning) models learn from data and make predictions.

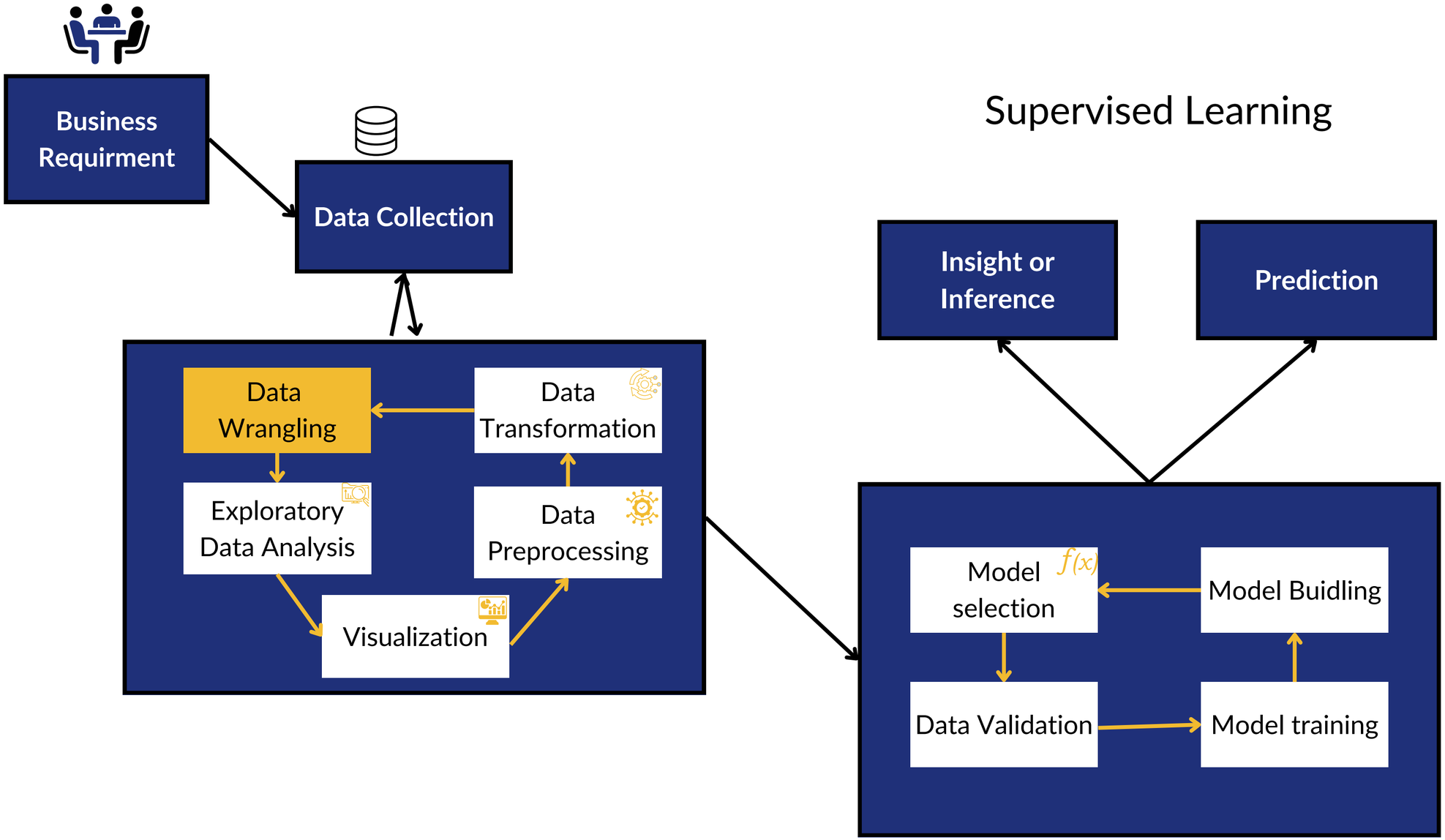
Supervised Learning/Classification

Classification	Answer
• Will this loan application be approved or denied? • Will a customer churn or stay with the company? • Is this spam gmail? • You have cancer or not? • Is this image a cat, dog, or another animal?	• approved or denied • Non-churn or Churn • Spam or Not • Yes or no • Dog , Cat, another

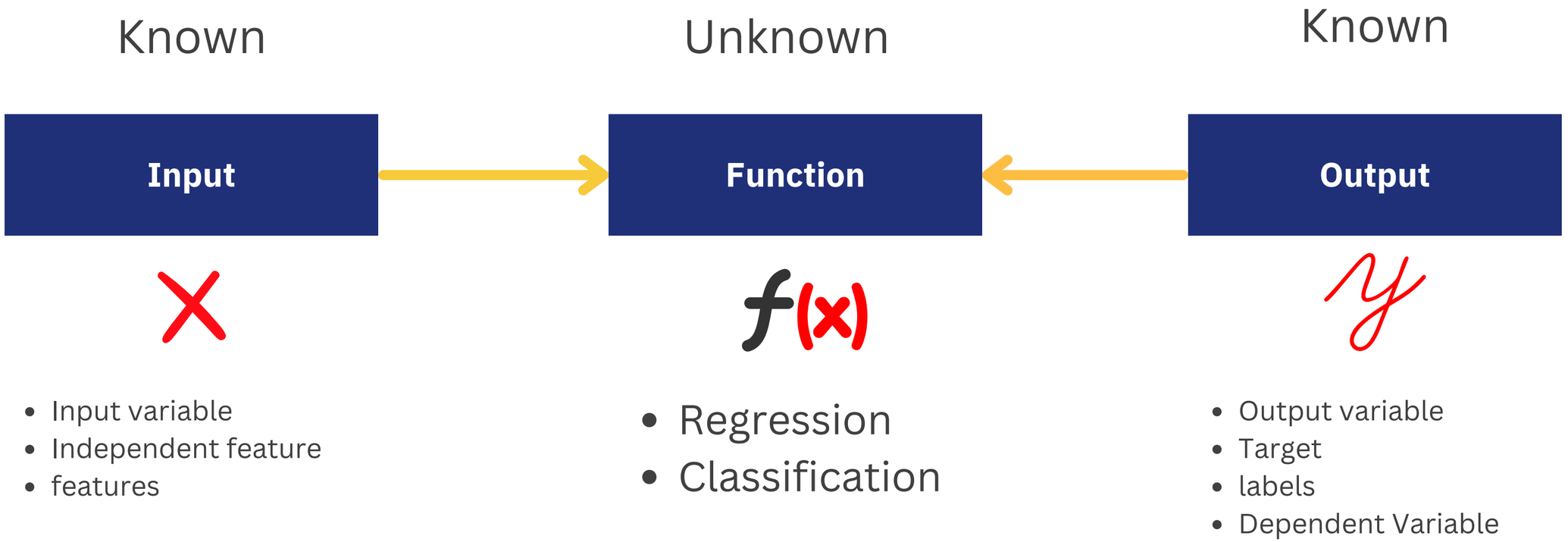
Supervised Learning/Regression

Regression	Answer
• Predict the amount of loan disbursed to a customer based on their profile. • Predict the interest rate offered to a customer based on their financial and credit history. • Predict a customer’s income based on their loan application and credit data. • You have cancer or not? • Is this image a cat, dog, or another animal?	• Loan amount • Predicting Interest Rate • Customer’s Income • Yes or no • Dog , Cat, another

Machine Learning Life Circle

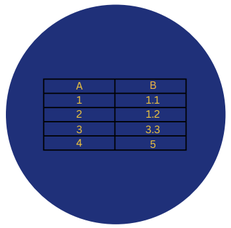


Supervised Learning



FEATURE ENGINEERING

Feature Engineering



Feature Engineering can very broadly, but in this course it include feature selection, transformation, and feature extraction.

Feature Transformation

The process where you take features that already exist in the dataset, and alter them so that they’re better suited to be used for training the model.

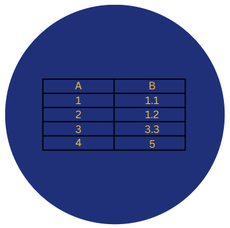
Feature extraction

Involves producing new features from existing ones, with the goal of having features that deliver more predictive power to your model.

Feature Selection

The process of picking variables from a dataset that will be used as predictor variables for your model

Feature Engineering



In this section, we will cover **Feature Engineering**, reviewing essential concepts from statistics as well as key aspects of Feature Engineering

TOPICS WE'LL COVER:

- **Types of Variable**
- **Feature Encoding**
- **Feature Scaling**
- **Cross Validation**

GOALS FOR THIS SECTION:

- Review the different data types in statistics
- Discuss feature transformation techniques
- Explore feature extraction methods
- Examine approaches to feature selection