

# Machine Learning

**Holberton**

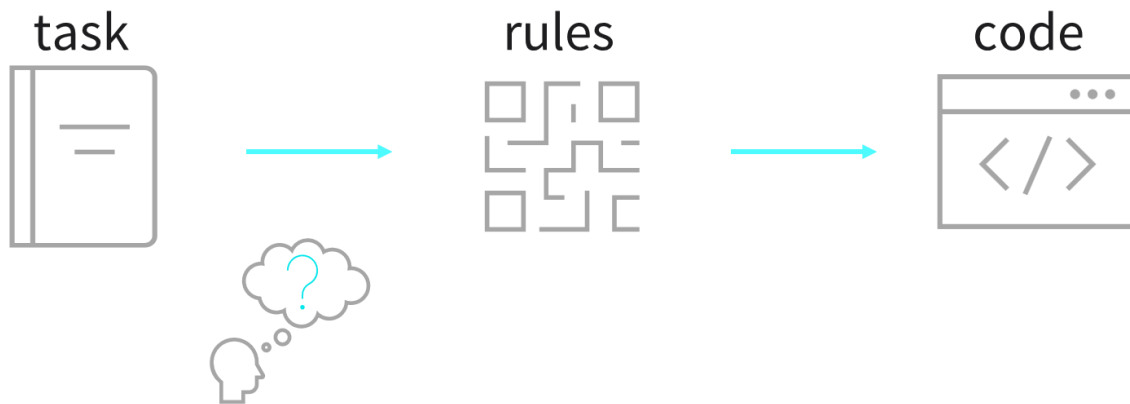




# Why Machine Learning

# Why Machine Learning

- For some problems we cannot simply write the rules



- What if computer systems could learn through trial and error?

# Why Machine Learning

Social media features



Sentiment analysis



Image recognition



Product recommendations



Medical analysis

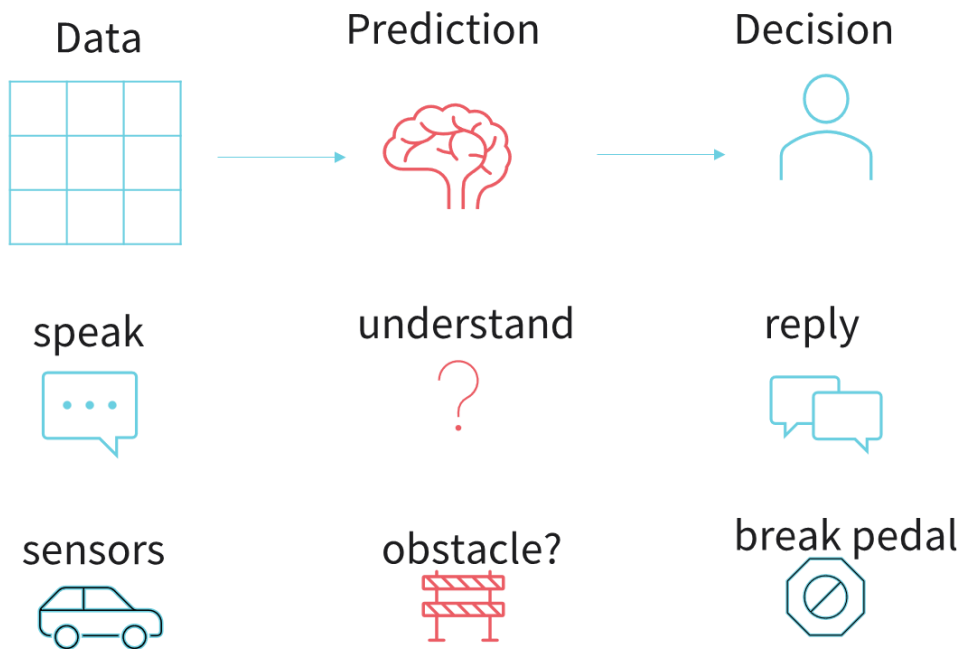


Stock market prediction



# Why Machine Learning

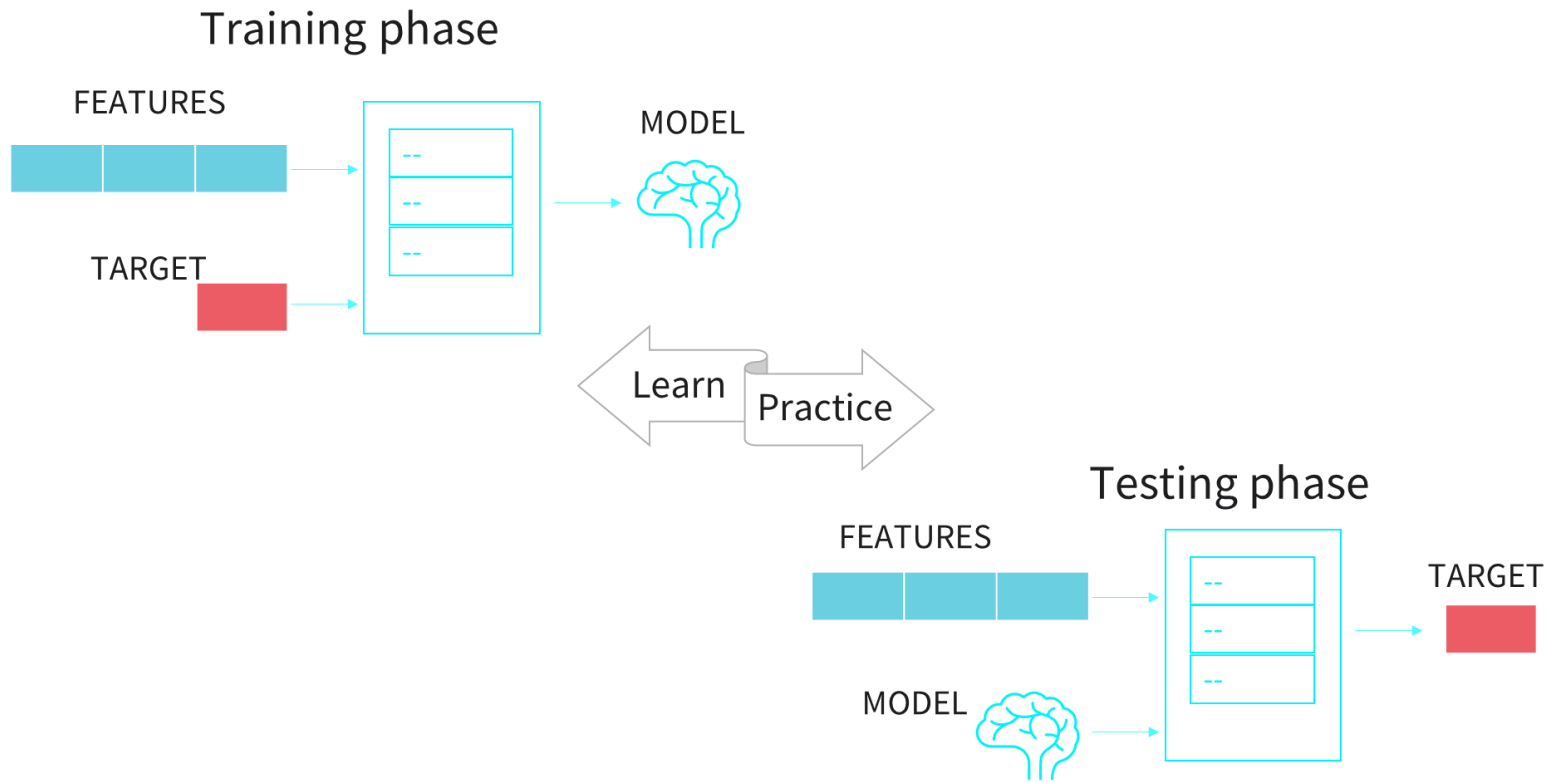
- Computer systems learn and improve from experience





# ML Framework and Categories

# Machine Learning Framework

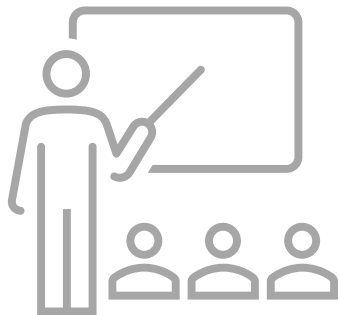


# Supervised learning

- Supervised learning

use labeled dataset to train

correct output is known



- Applications

image classification



speech recognition



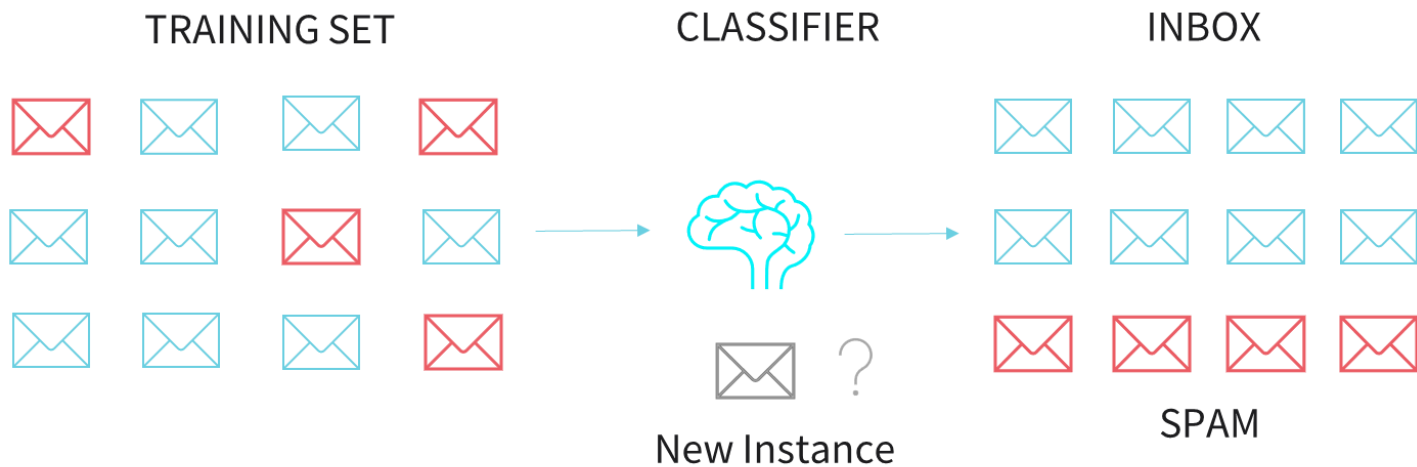
weather forecast





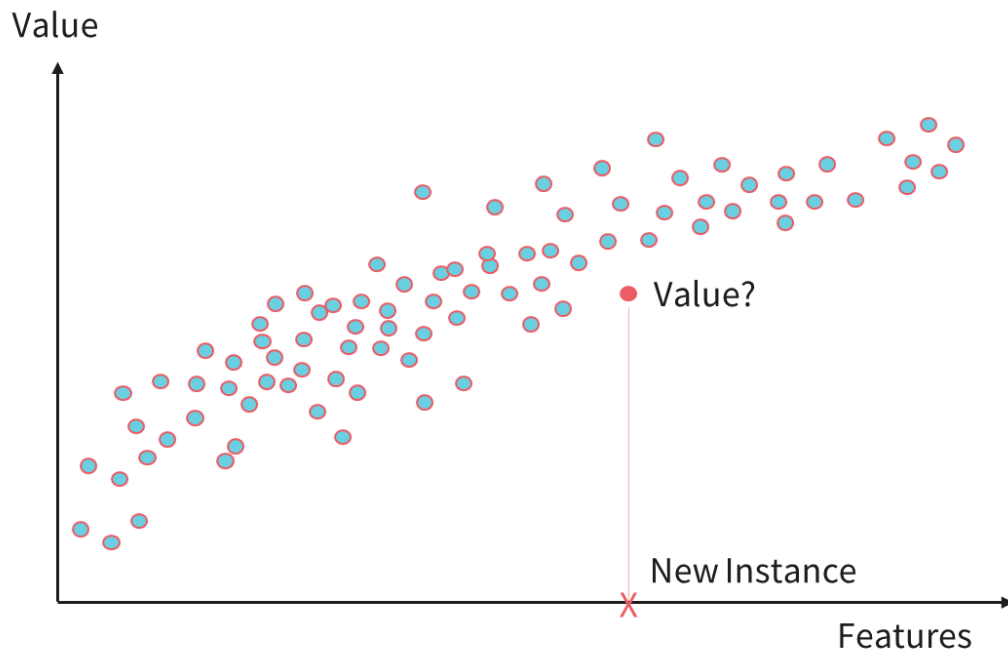
# Supervised Learning

- Classification example: filtering spam email



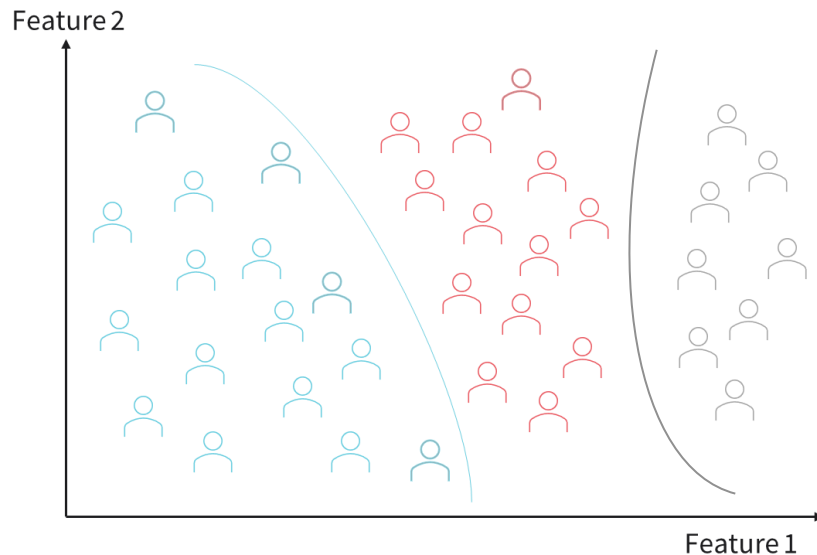
# | Supervised Learning

- Regression example: predicting house prices



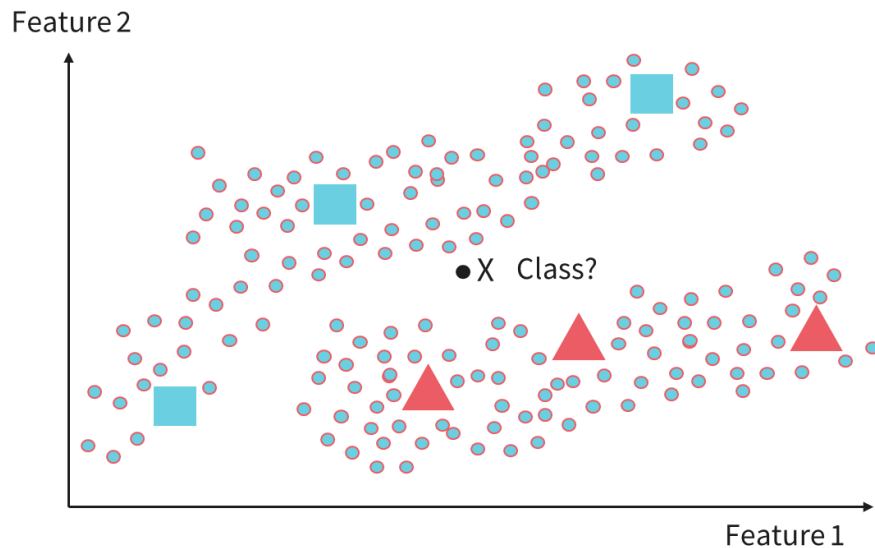
# Unsupervised learning

- Learn without a teacher
- Group set of related data
- Applications: data analytics, customer segmentation, recommender systems



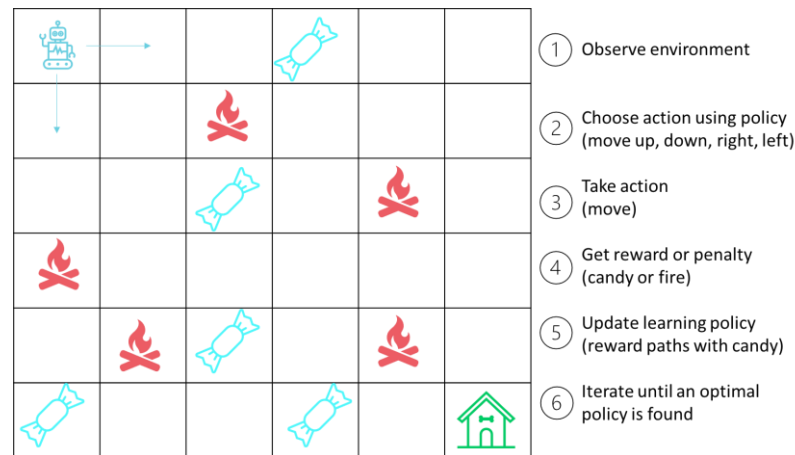
# Semisupervised learning

- Tradeoff between supervised and unsupervised learning
- Large set of unlabeled data for grouping
- Small set of labeled data for classification

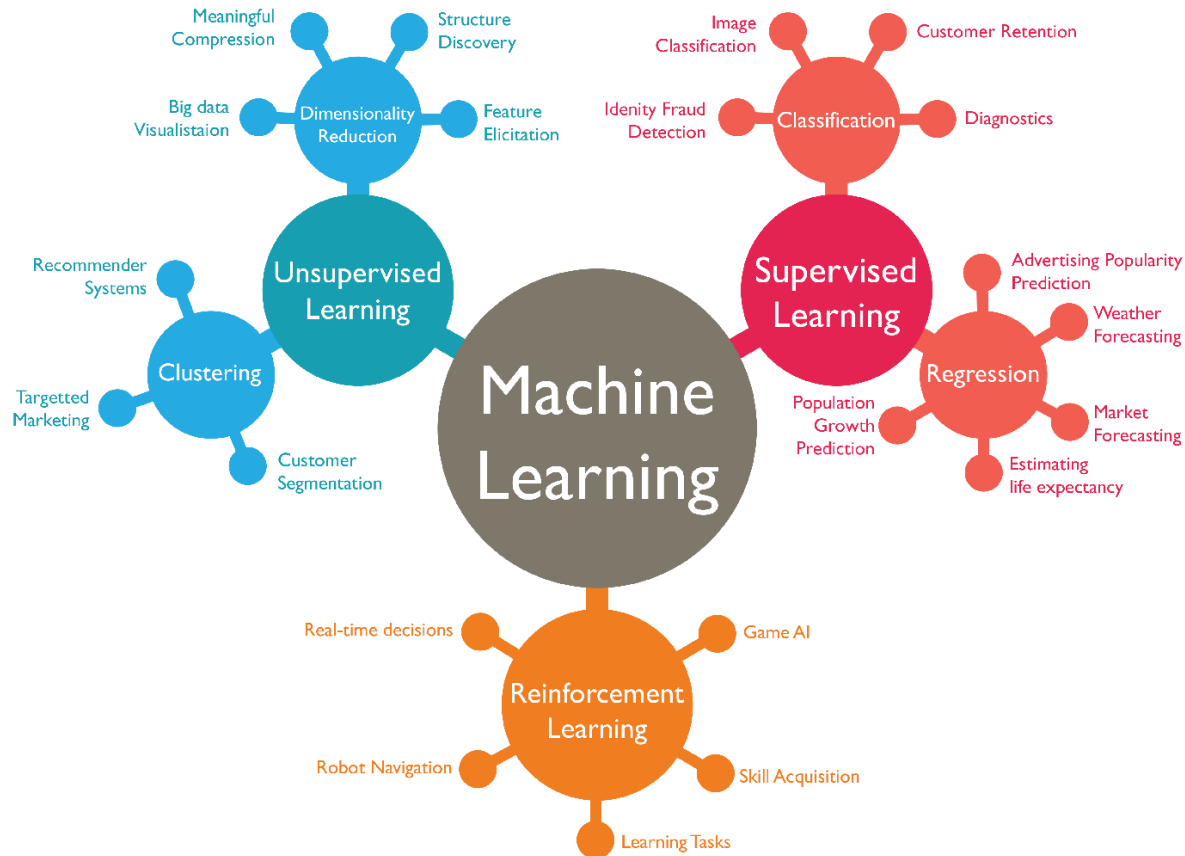


# Reinforcement learning

- Train through trial and error
- Reward desired behavior
- Punish undesired behavior



# ML Categories and Applications in One Picture

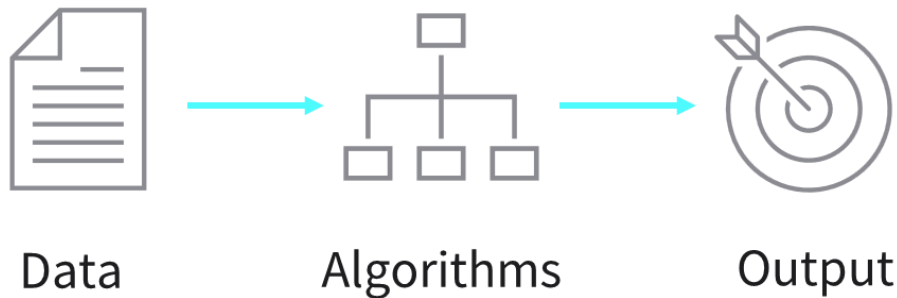




# Fundamental Concepts

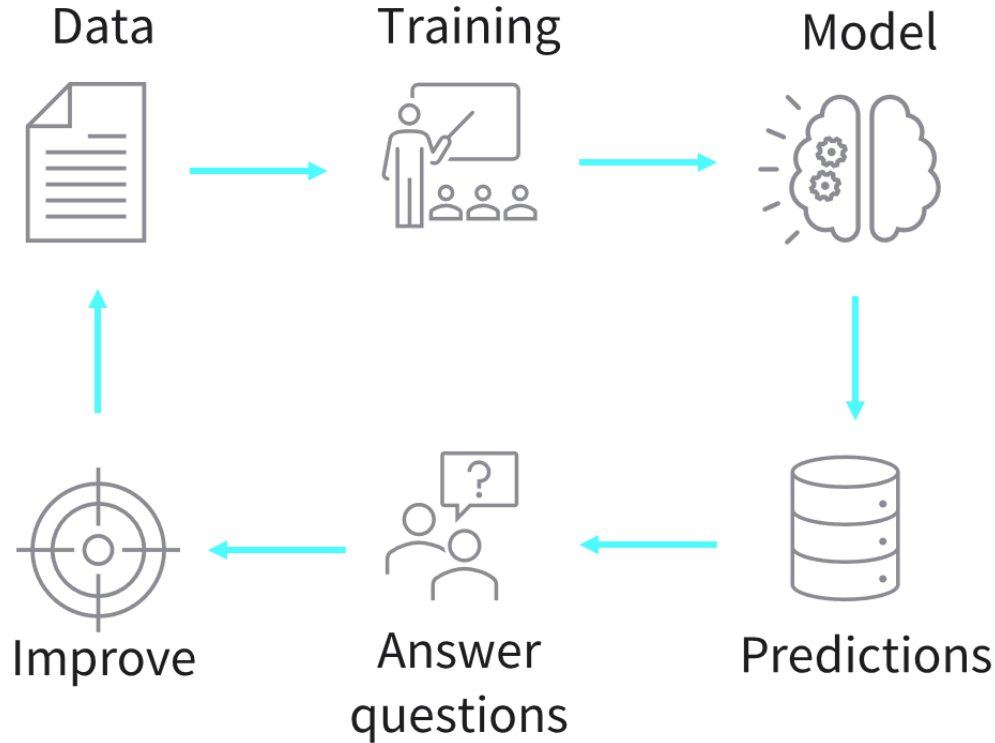
# | Fundamental concepts

- Machine learning uses **data** and **algorithms** to solve tasks

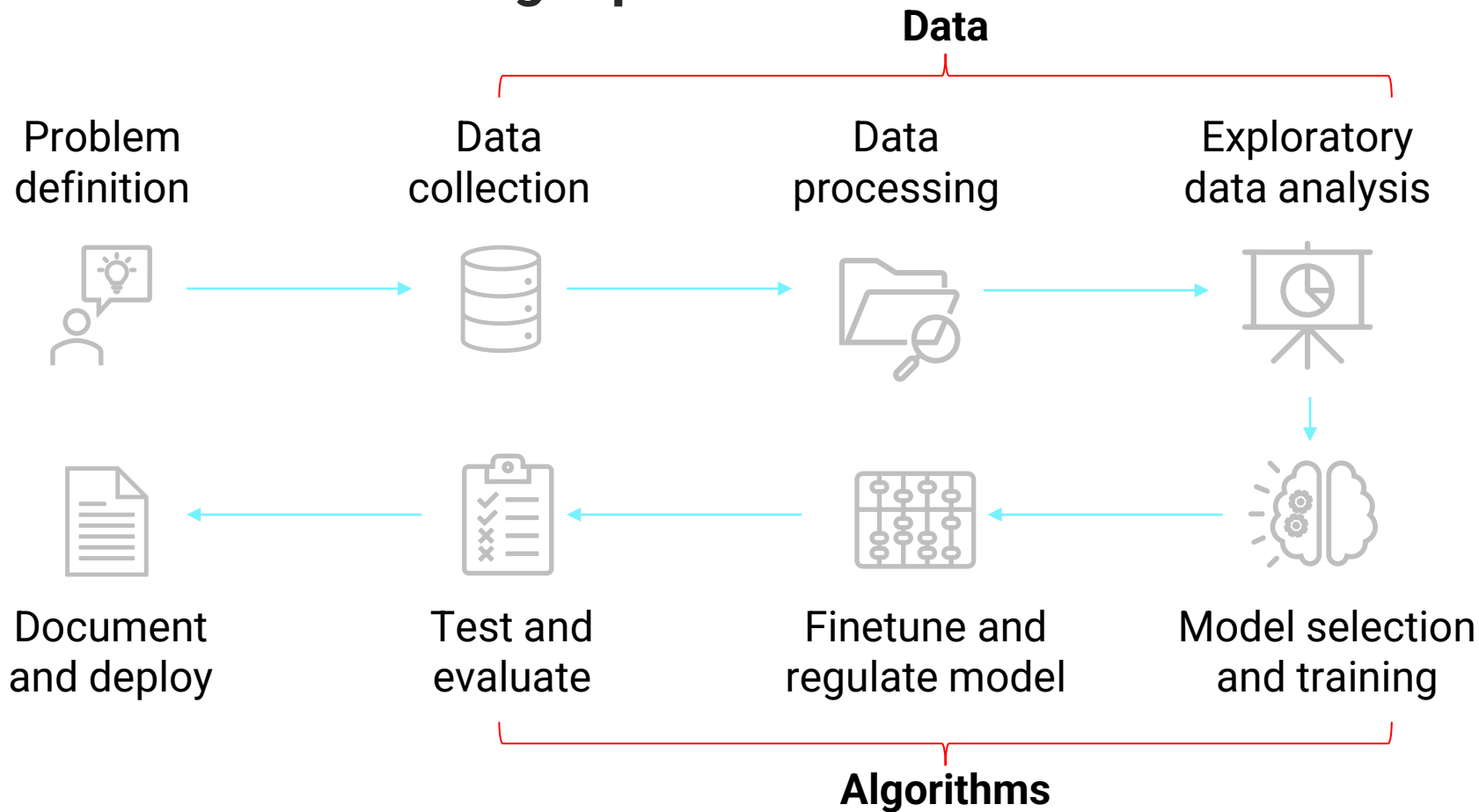




# Fundamental concepts: the machine learning model



# The Machine Learning Pipeline





**Any questions?**

