

# Classifications

## ML Models



Hayley Bresina  
Client Enablement Specialist



# Topics Covered

- An introduction to classifications in ML
- Common classification algorithms
- Strengths and weaknesses of classifications
- People analytics use cases

# Learning Outcomes

You will:

- Understand the concept of classifications & their application to your organization's problem domains
- Be introduced to common classification algorithms such as logistic regression, decision trees, random forest, & GBM
- Identify the strengths & weaknesses of classifications & learn how One AI leverages the strengths & mitigates the weaknesses
- Explore practical use cases in people analytics & discover how these models can provide valuable insights to your organization

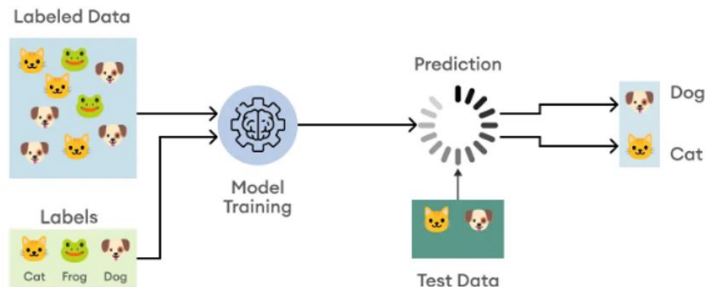


# Introduction to Classifications



# Introduction

- A **classification model** is a predictive model trained to categorize data into predefined categories based on learning from past observations
  - Goal: **accurately** assign class labels to **new, unseen** instances
  - Learns by analyzing the **relationships** between the features & class labels that it observes from each instance in the **historical data**
  - **Output:** model predicts which category each instance most likely belongs to



# Voluntary Attrition Example

- One AI binary Voluntary Attrition Recipe
  - Class labels: ‘**voluntarily terminate**’ & ‘**not voluntarily terminate**’
  - Binary: there are **two** possible outcomes that the model can predict
  - Model is trained on labeled historical data from your organization that is in OM
    - Individual employee is the “**instance**”
    - Historical data includes the **features** we think are important to the model’s training
    - Model learns features that lend to each behavior (salary, age, manager)
    - Output - model **classifies** current employees (unseen data not included in the learning data) as most likely to **voluntarily terminate** or **not**

# Other types of classifications

- Multi-class classifications
  - Similar to a binary classification, but there are more than 2 possible categorical outcomes
  - Example: performance rating prediction with possible outcomes of high, medium, or low
- Multi-label classifications
  - Each instance may have more than one class label assigned to the data & each instance can be predicted into multiple outcomes
  - Example: a movie can have multiple genres (romance **and** comedy)



# Classification Algorithms





# Classification Algorithms

- ML models use **algorithms** to learn from data, identify patterns, make predictions, or perform tasks without explicit programming
  - An **algorithm** is the mathematical techniques or set of rules that the model follows to do so
- Common classification algorithms
  - Logistic regression
  - Decision tree
  - Random forest
  - Gradient boosting machines (GBM)



# Strengths & Weaknesses



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## Strengths

- Interpretability
- Efficiency & Scalability
- Versatility

## Weaknesses

- Overfitting
- Bias due to imbalance datasets
- Black boxes leading to poor interpretability



# People Analytics Use Cases



# People Analytics Use Cases

- Extract valuable insights from employee & talent acquisition data
- Go beyond the predictions & leverage the information learned about the drivers of these behaviors & relationships between the data
  - Assist in making informed decisions regarding talent management, workforce planning, employee development, & retention strategies
- Common classification models:
  - Attrition & New Hire Failure / Success
  - Promotions, High Performer
  - Custom models allow you to predict on any defined metric in One Model



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**Thanks for watching!**

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