Machine Learning 101

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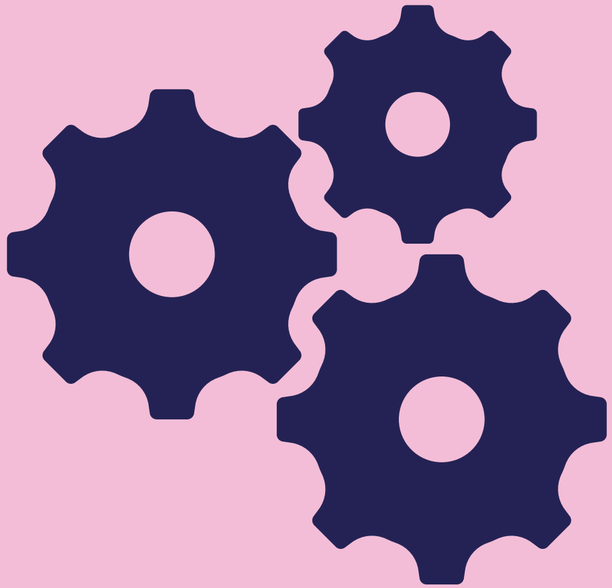
Can machines actually learn?



Presentation plan

1. Glossary
2. What is machine learning?
3. Models
4. How can machines learn?
5. Where is machine learning used?

Glossary

Machine learning is a type of artificial intelligence that enables computers to learn and improve from experience without being explicitly programmed.

Supervised learning is a type of machine learning where the algorithm is trained on a labeled dataset to predict target values for new input data.

Reinforcement learning is a type of machine learning where the algorithm learns by trial-and-error through receiving feedback in the form of rewards or punishments.

An **algorithm** is a set of instructions or procedures used to solve a specific problem or perform a particular task.

Outliers are data points in a dataset that are significantly different from the rest and can affect the accuracy of the analysis.

A **model** is a mathematical representation of a system or process that can be used to make predictions or generate insights based on input data.

What is machine learning?

Variables:
-quantitative
-categorical

INTENSIVITY

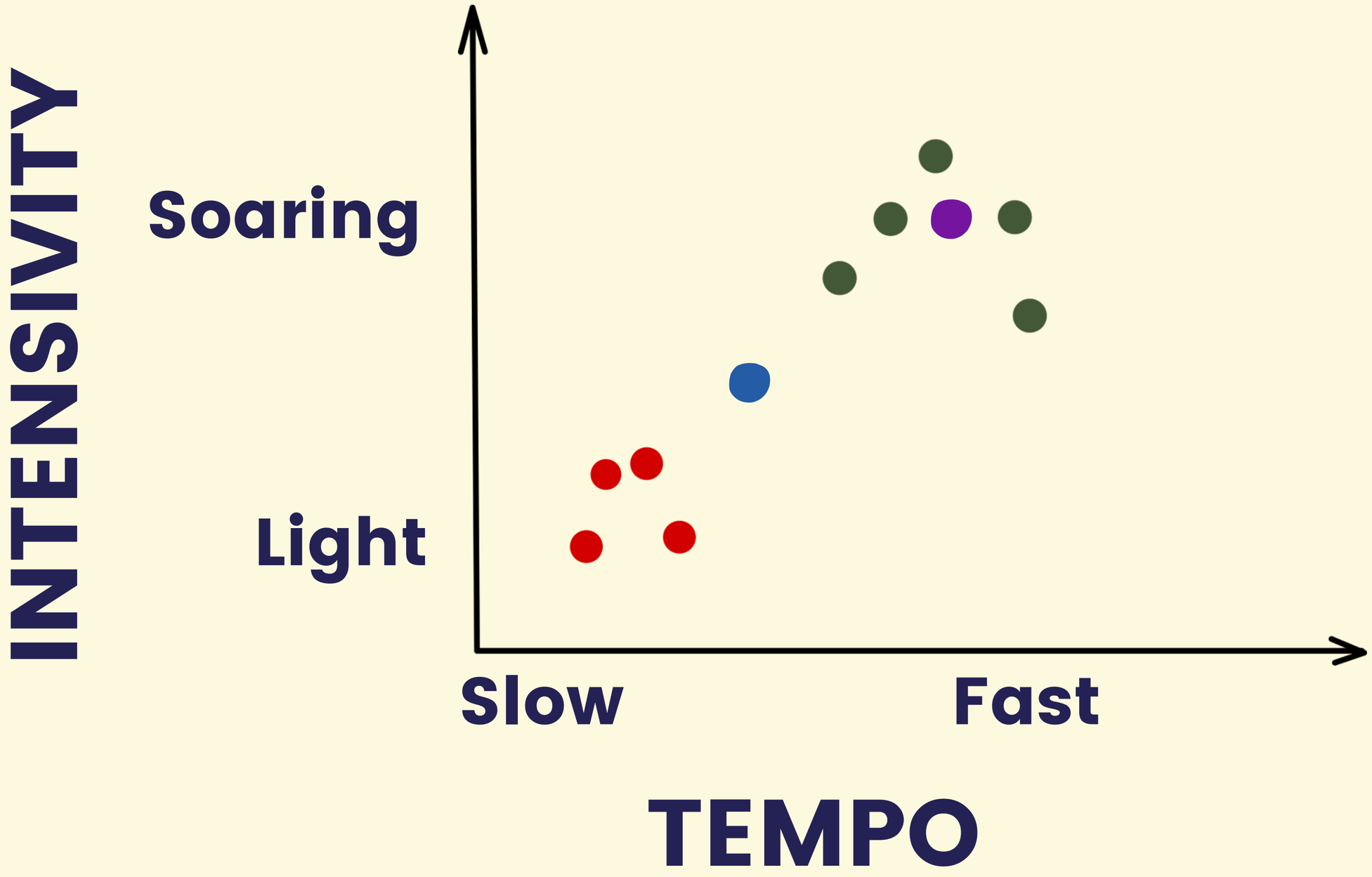
Soaring

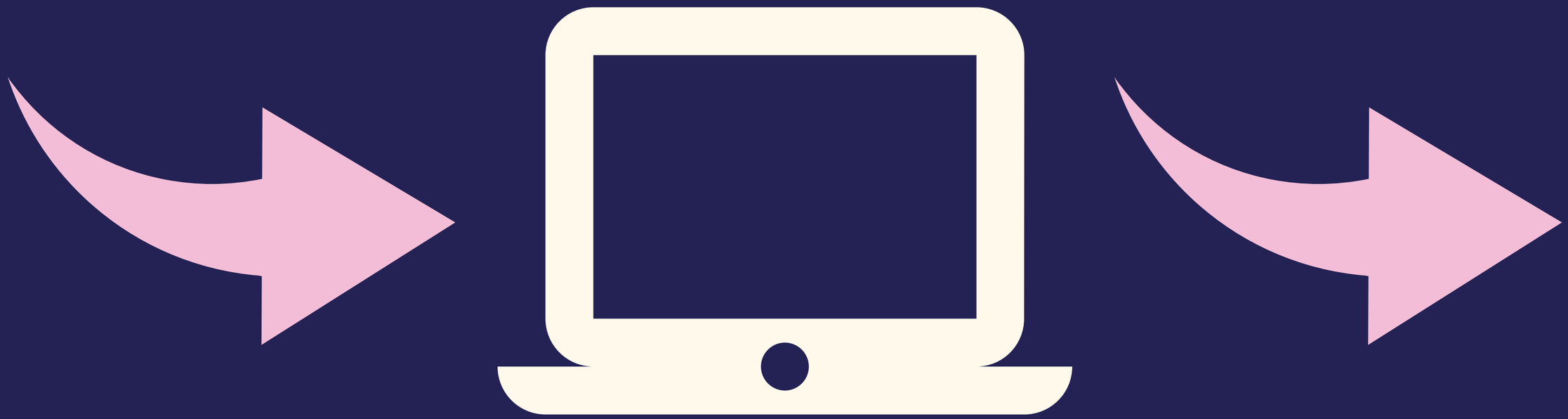
Light

Slow

Fast

TEMPO


INTENSIVITY
Soaring
Light
Slow
Fast
TEMPO

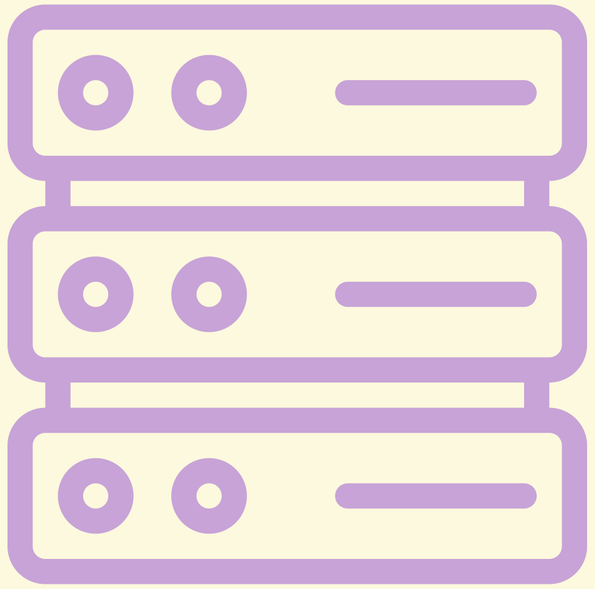


All models are wrong

but some are useful
-George Box

But how can machines learn?

SUPERVISED LEARNING
UNSUPERVISED LEARNING
REINFORCEMENT LEARNING



Supervised learning

-labeled data

Supervised learning

-labeled data

1 Euro - 7 grams

1 Pound - 4 grams

1 Zloty - 5grams

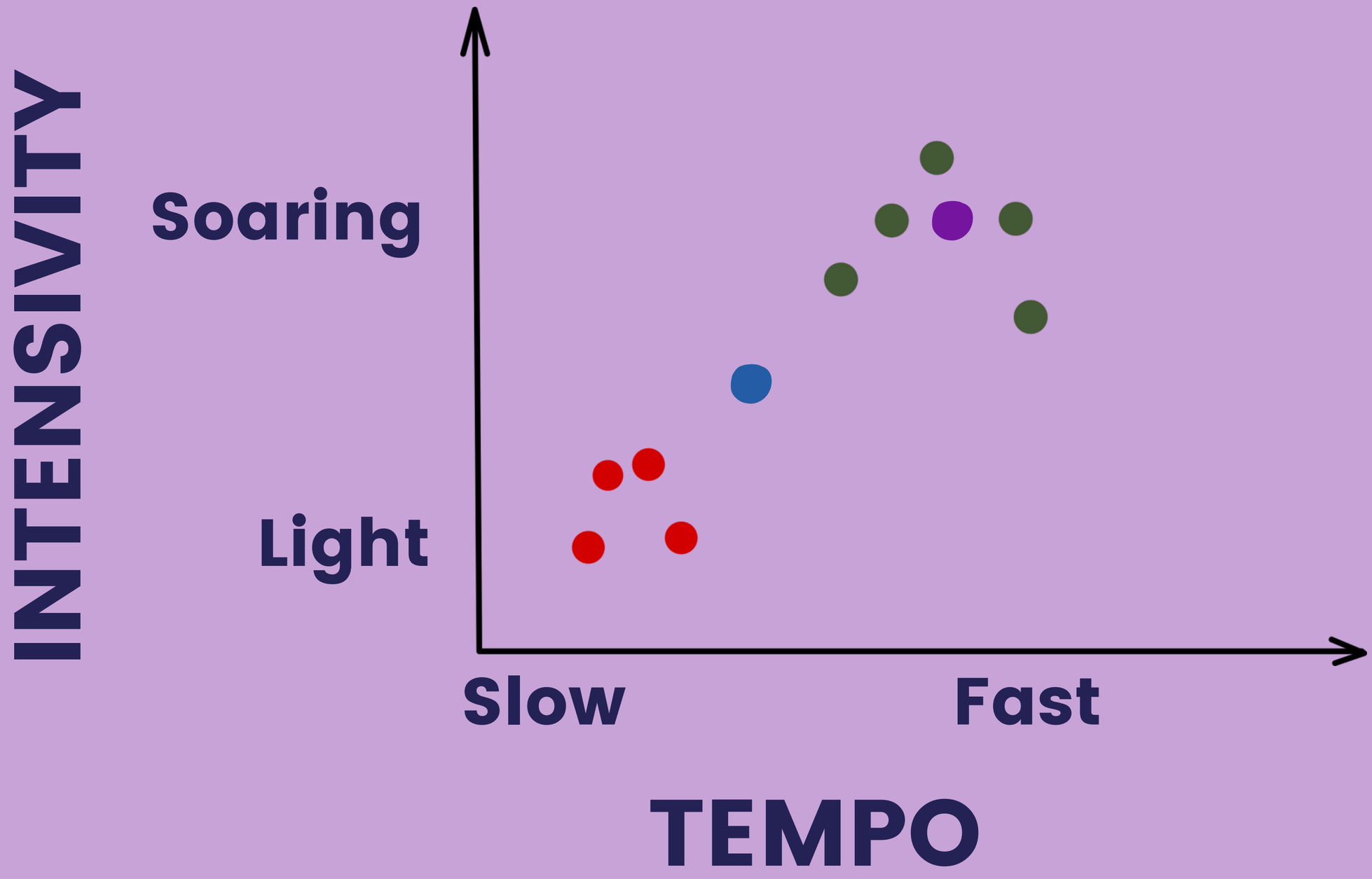
Weights <=> Feature

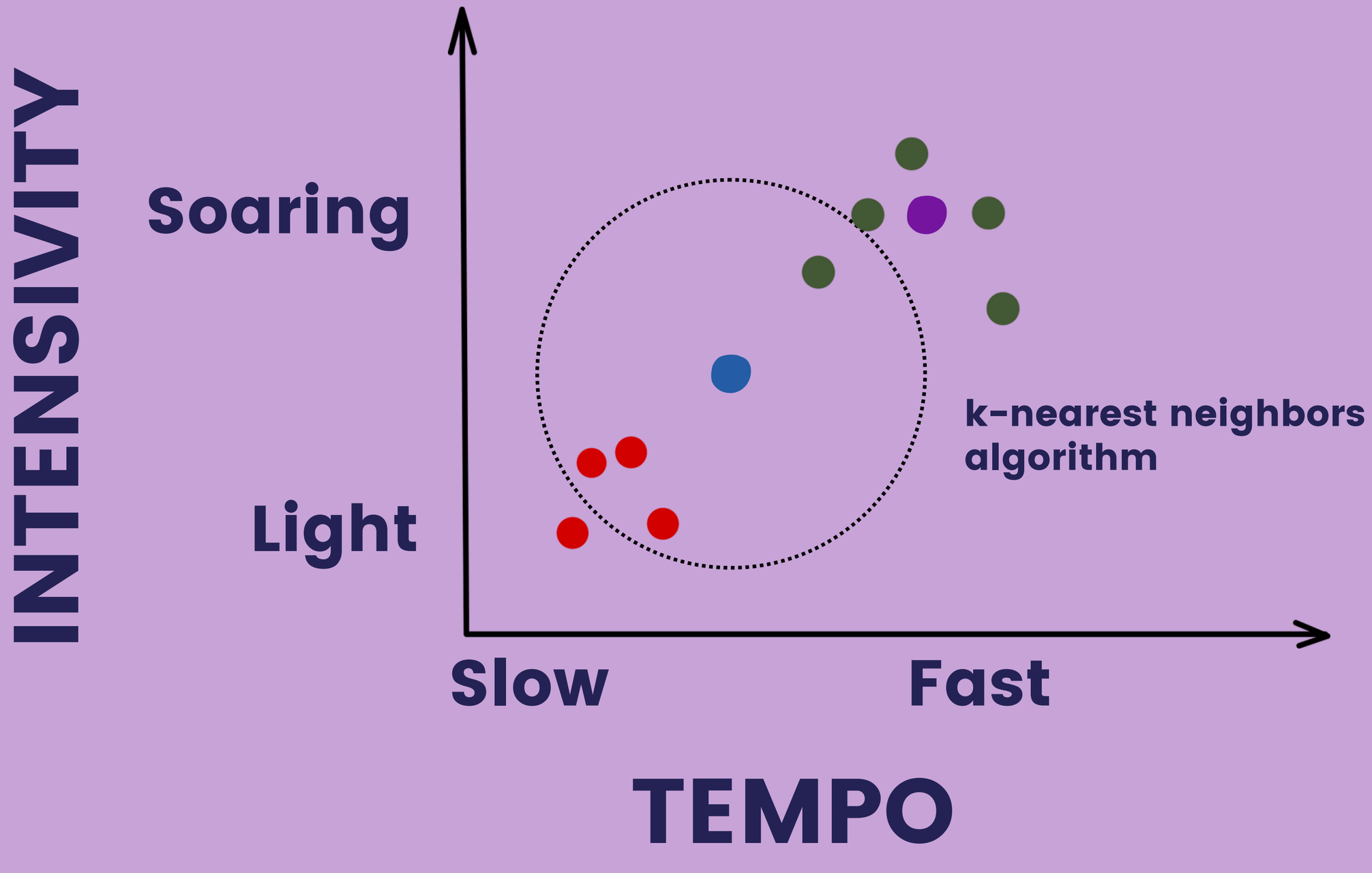
Currency<=>Label

Supervised learning

-labeled data

Unsupervised learning


INTENSIVITY
Soaring
Light
Slow
Fast
TEMPO

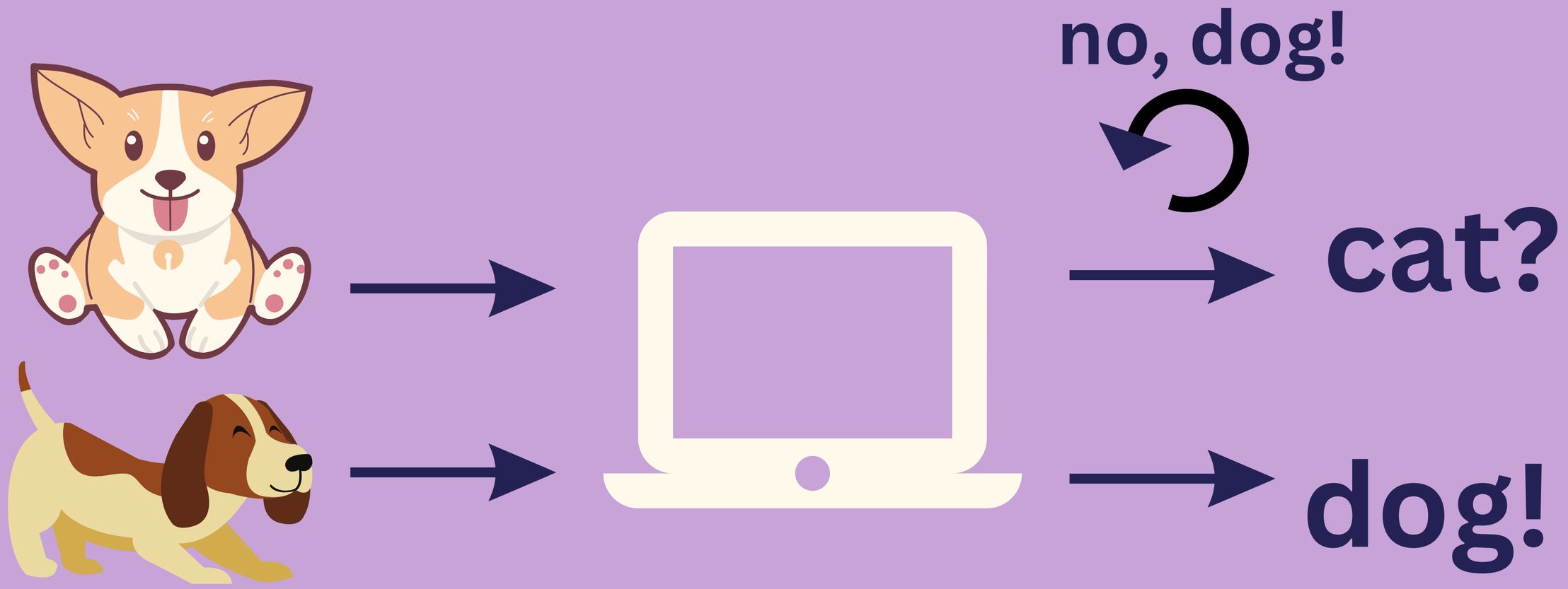

INTENSIVITY
Soaring
Light
k-nearest neighbors
algorithm
Slow
Fast
TEMPO

Unsupervised learning

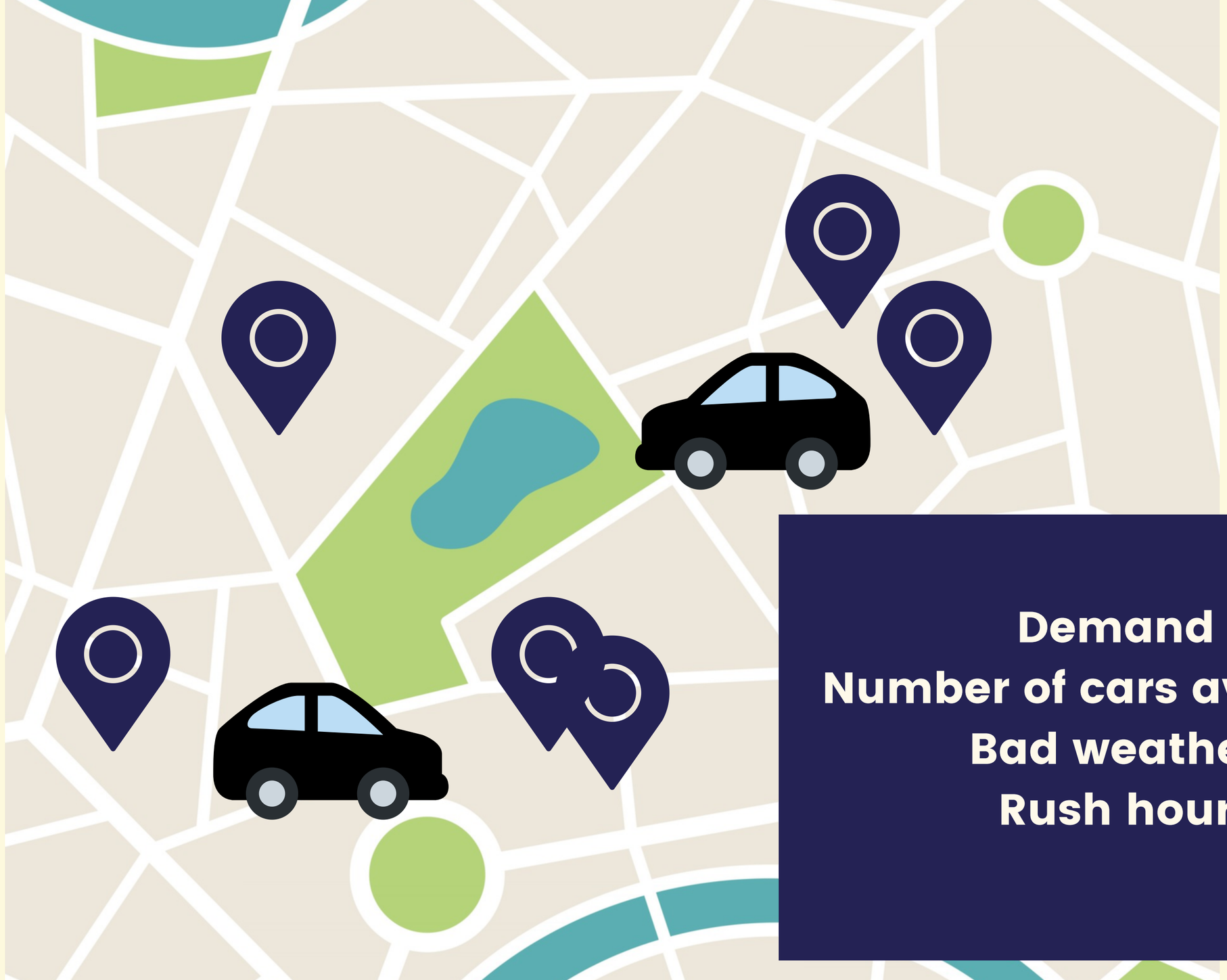
-detecting fraud

Reinforcement learning

-giving feedback



Where is machine learning used?



Demand
Number of cars available
Bad weather
Rush hour

Thank you

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