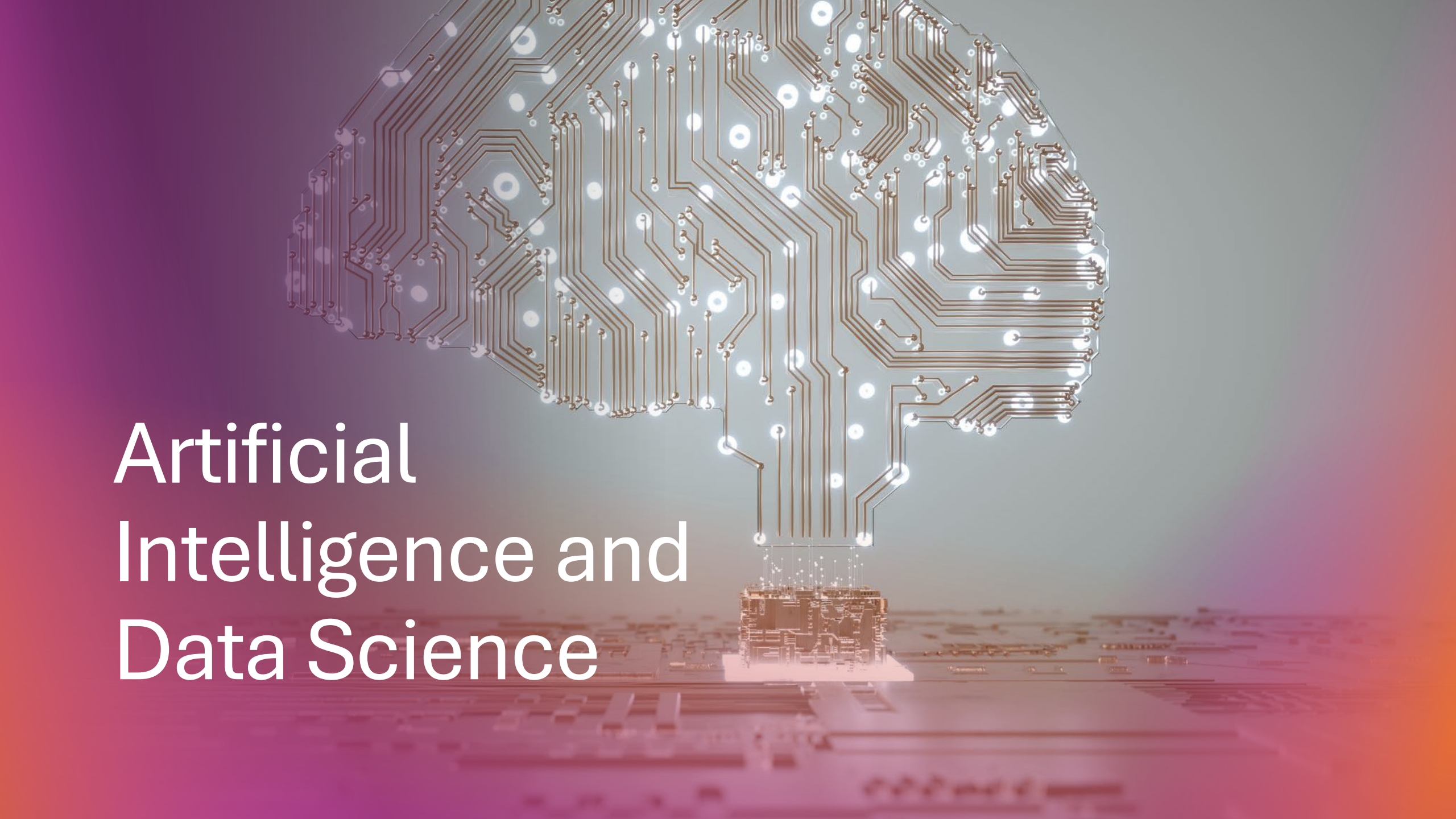

Artificial
Intelligence and
Data Science

Climate Data Rescue Event

Tuesday April 8th at 4:15 PM (Haverford)

Thursday April 10th @ 3 PM & 4:15 PM

Luke Stark

Assistant Professor in the Faculty of Information & Media Studies (FIMS) at Western University in London, Ontario

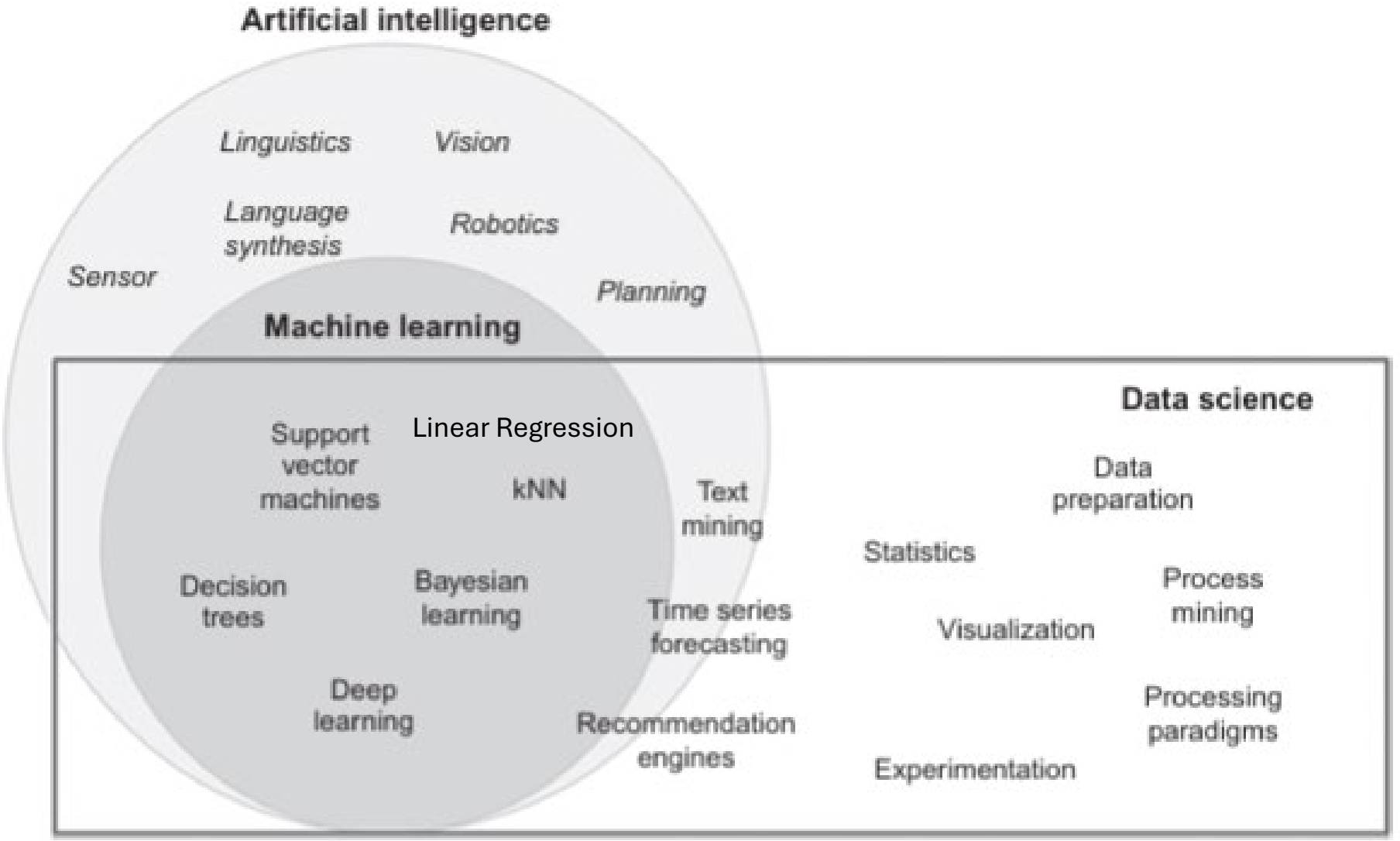


FIGURE 1.1

Artificial intelligence, machine learning, and data science.

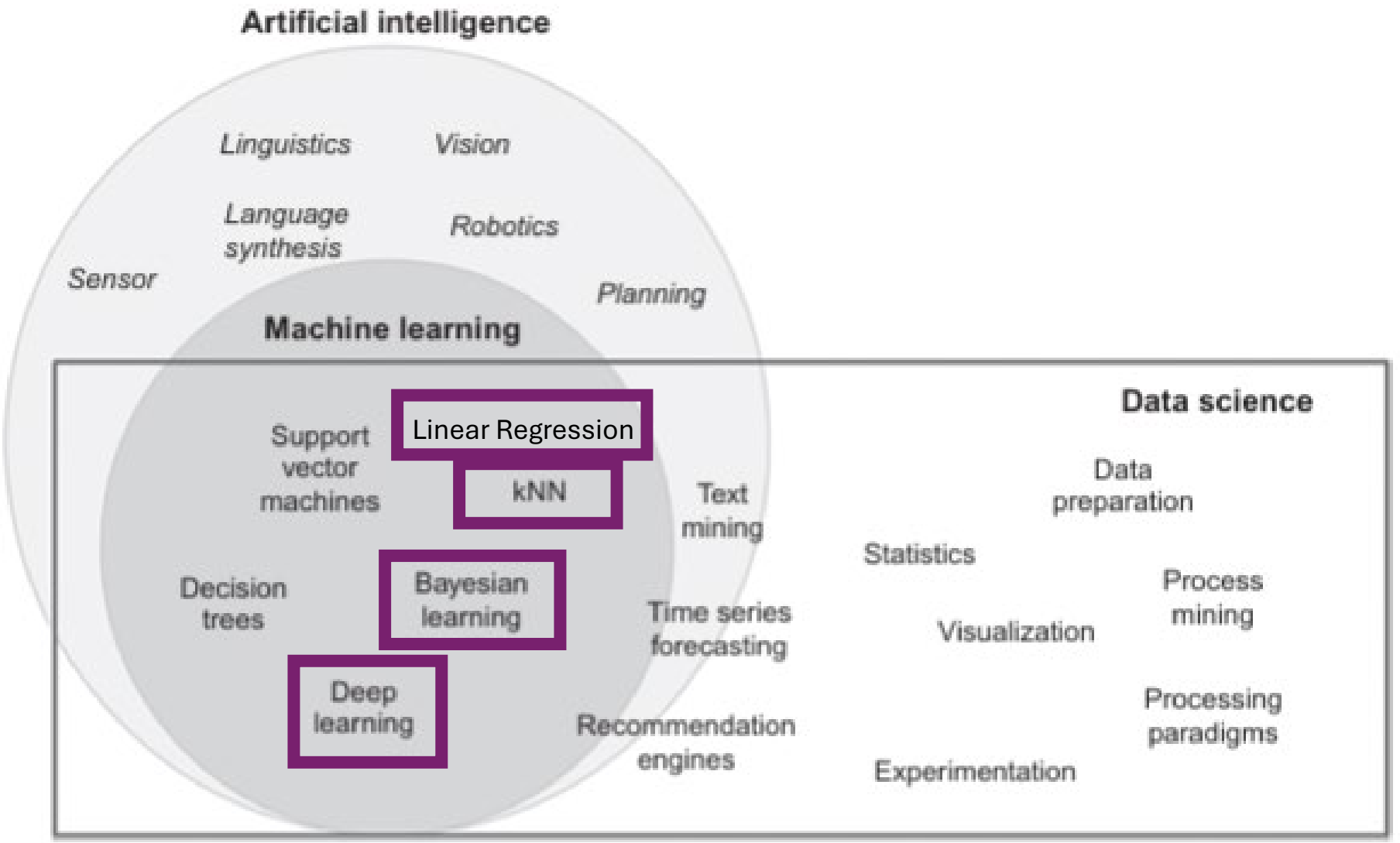
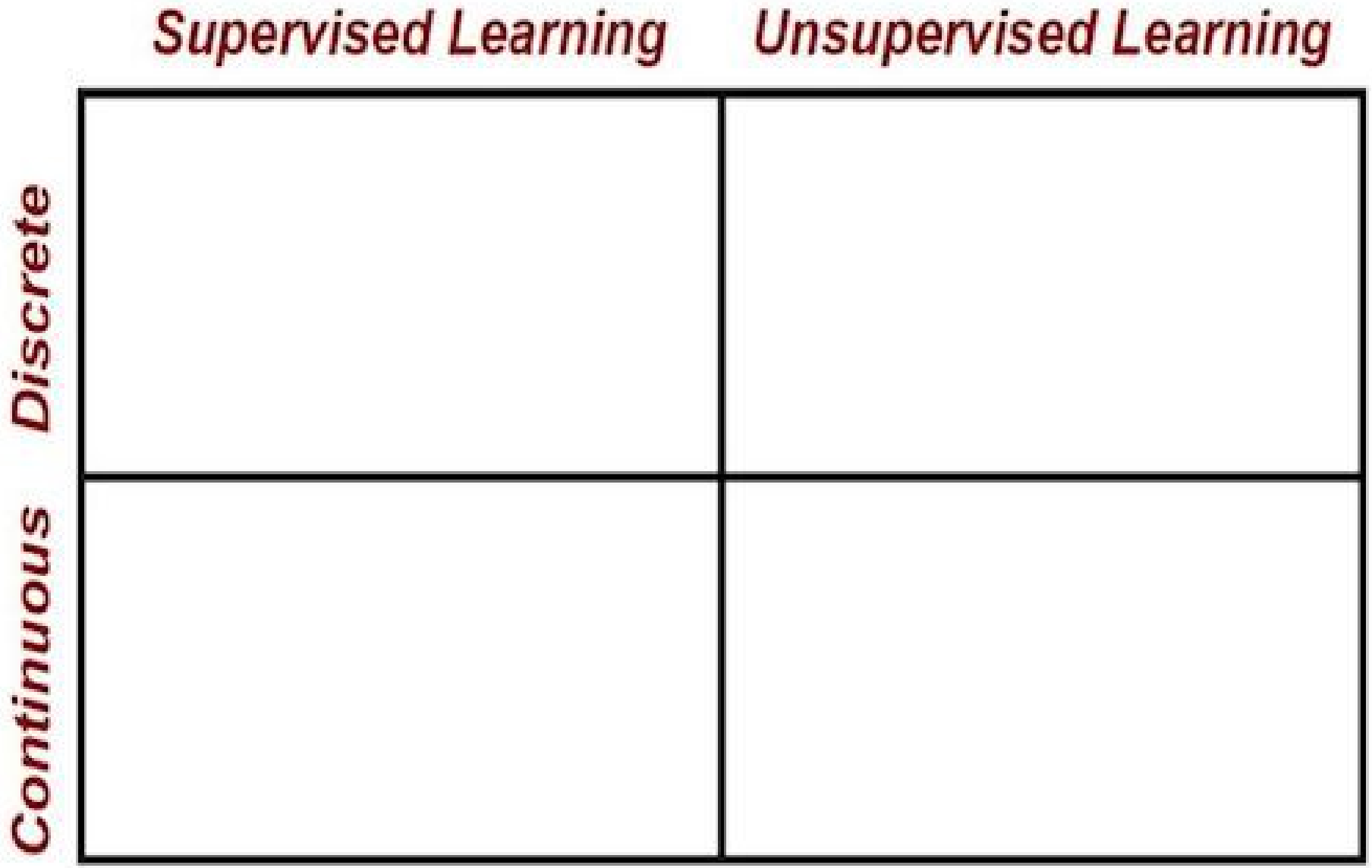
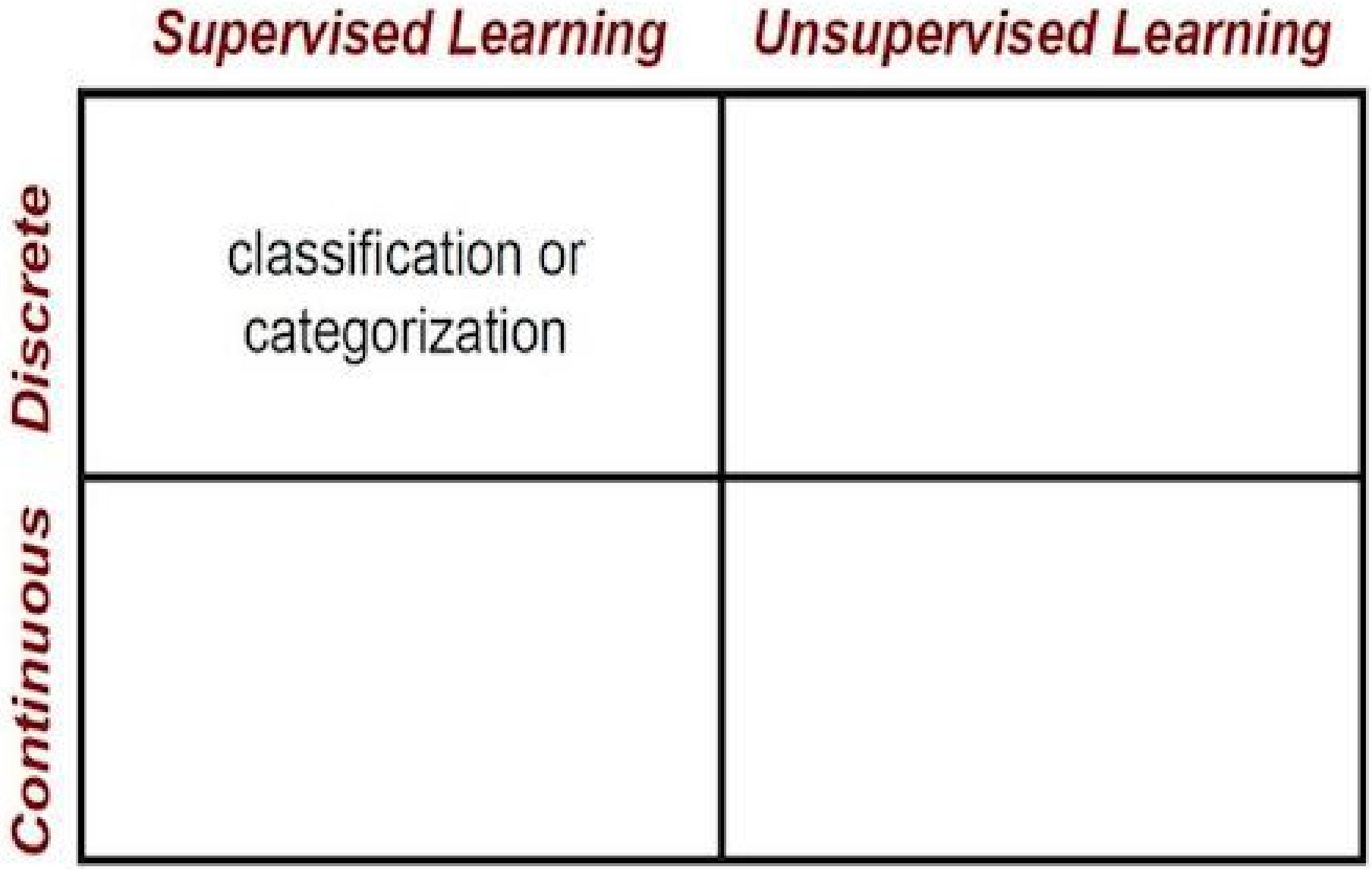
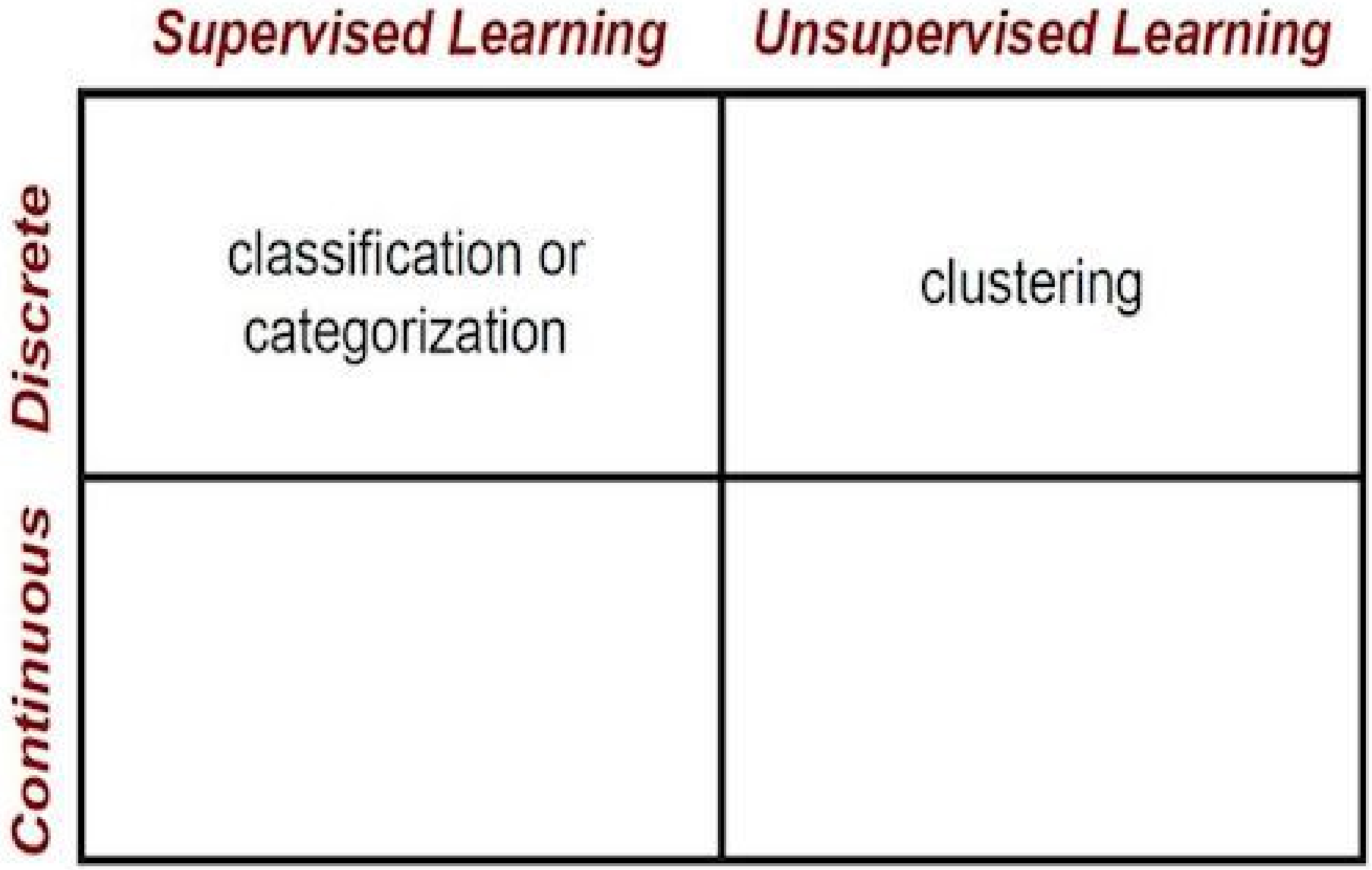


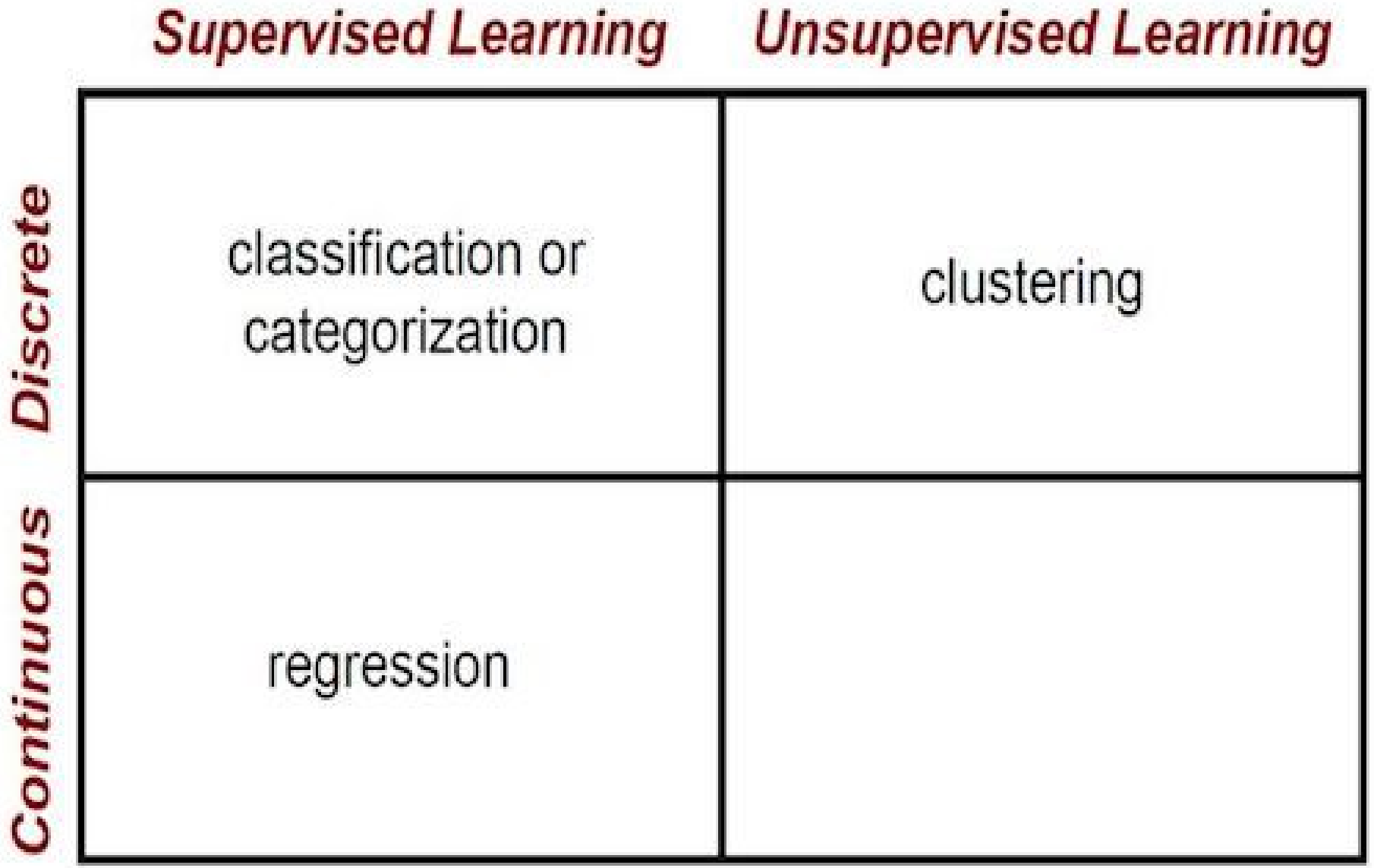
FIGURE 1.1

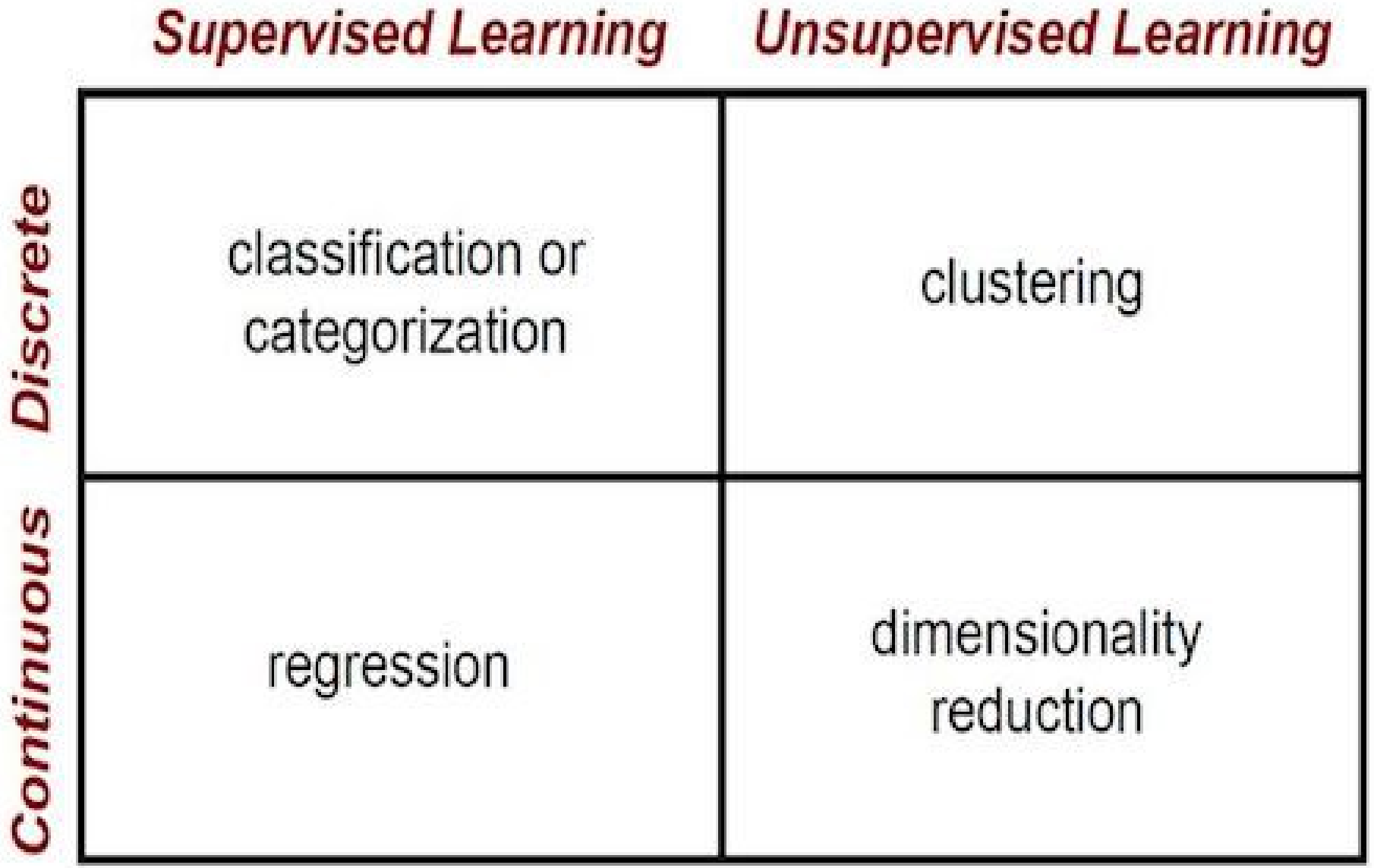
Artificial intelligence, machine learning, and data science.

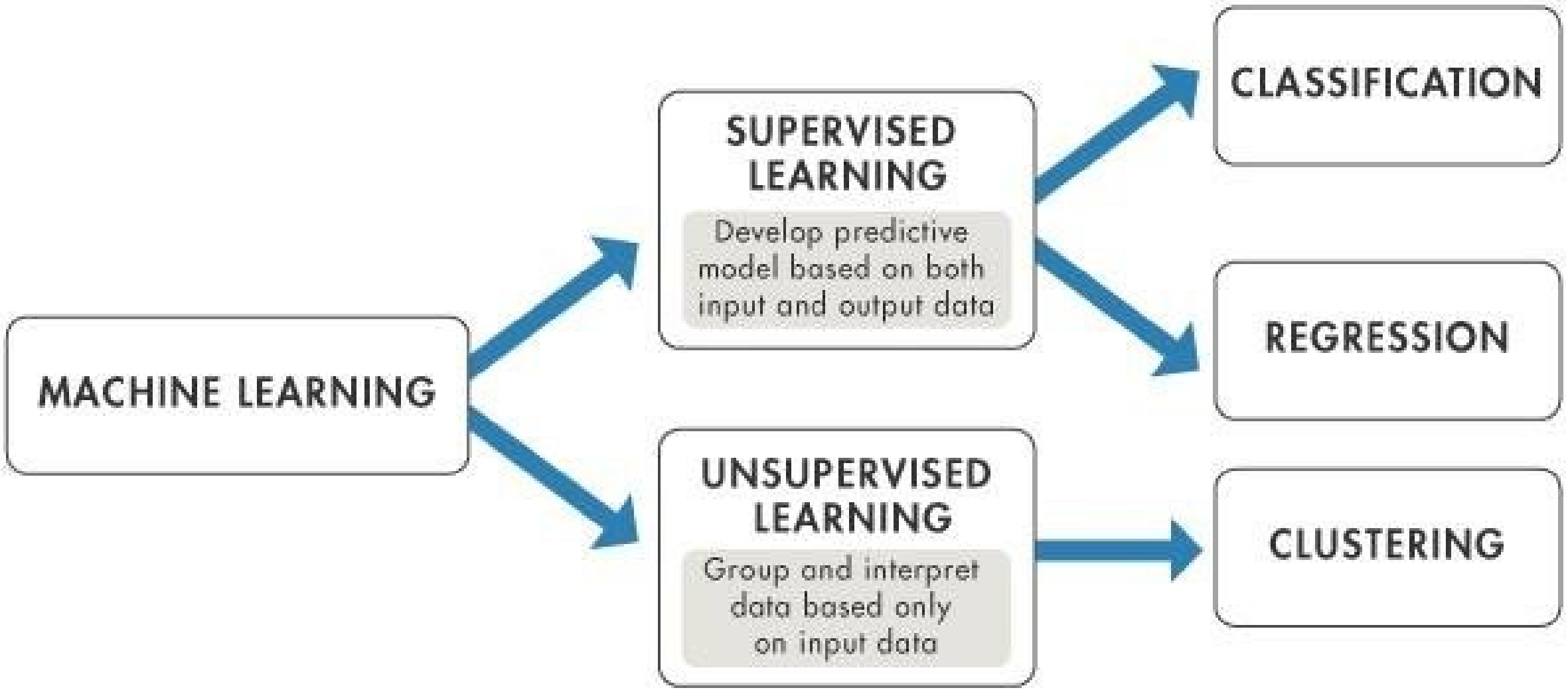

Supervised Learning
Unsupervised Learning
Discrete
Continuous


Supervised Learning
Unsupervised Learning
Discrete
Continuous
classification or
categorization


Supervised Learning
Unsupervised Learning
Discrete
Continuous
classification or categorization
clustering

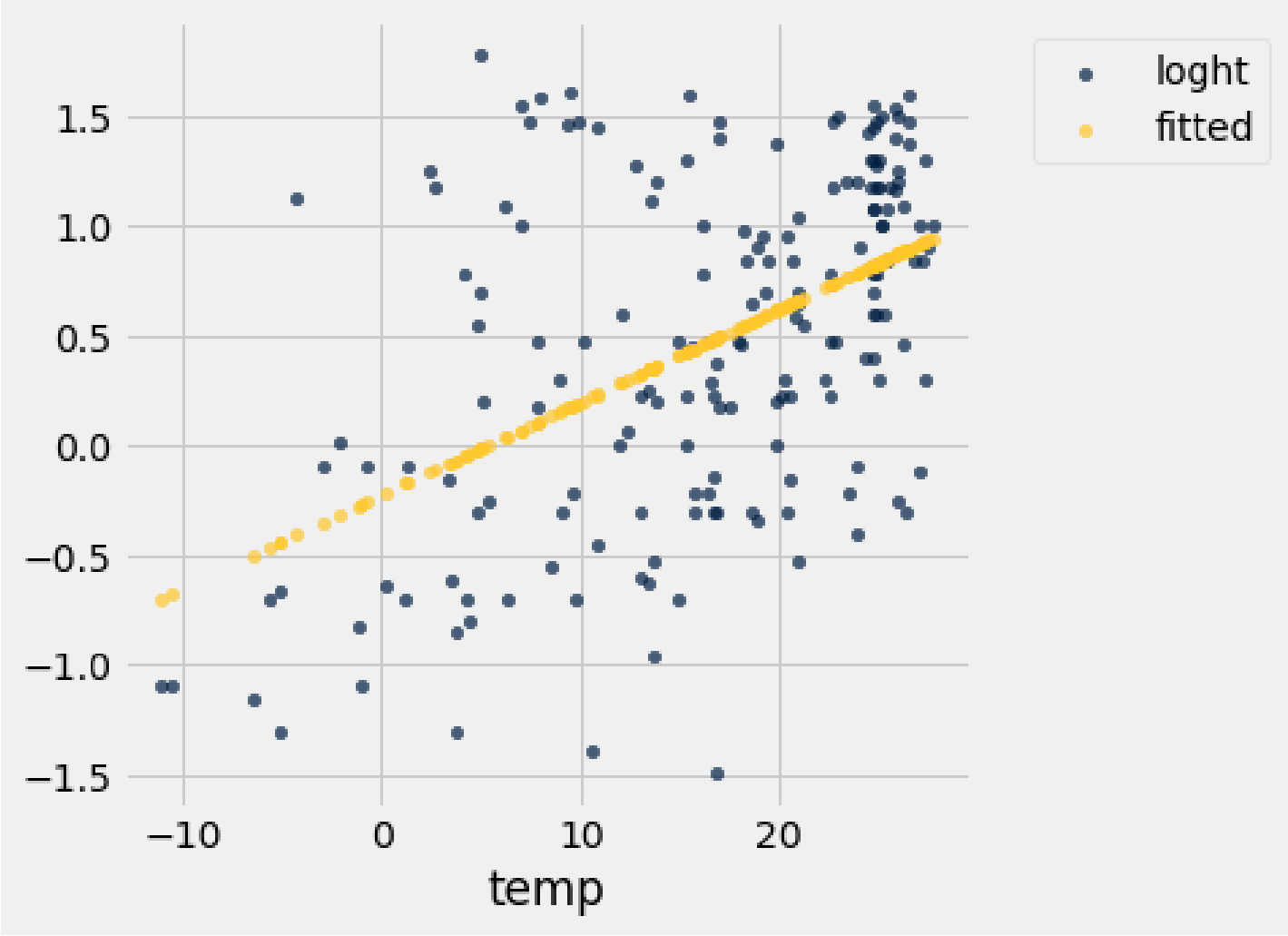

Supervised Learning
Unsupervised Learning
Discrete
Continuous
classification or categorization
clustering
regression


Supervised Learning
Unsupervised Learning
Discrete
Continuous
classification or categorization
clustering
regression
dimensionality reduction


MACHINE LEARNING
SUPERVISED LEARNING
Develop predictive model based on both input and output data
UNSUPERVISED LEARNING
Group and interpret data based only on input data
CLASSIFICATION
REGRESSION
CLUSTERING

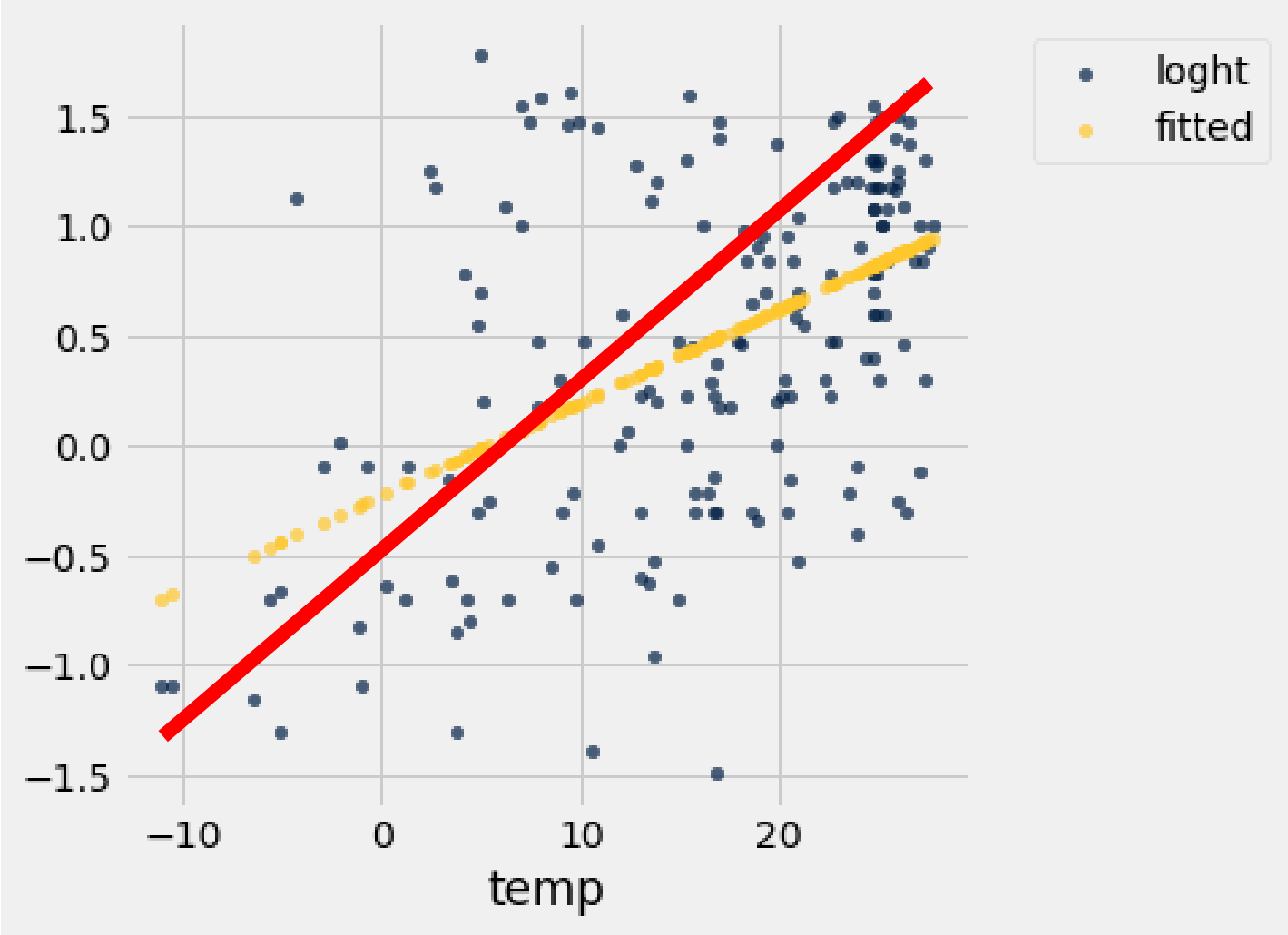
Linear Regressions

Response Variable – Dependent (y)

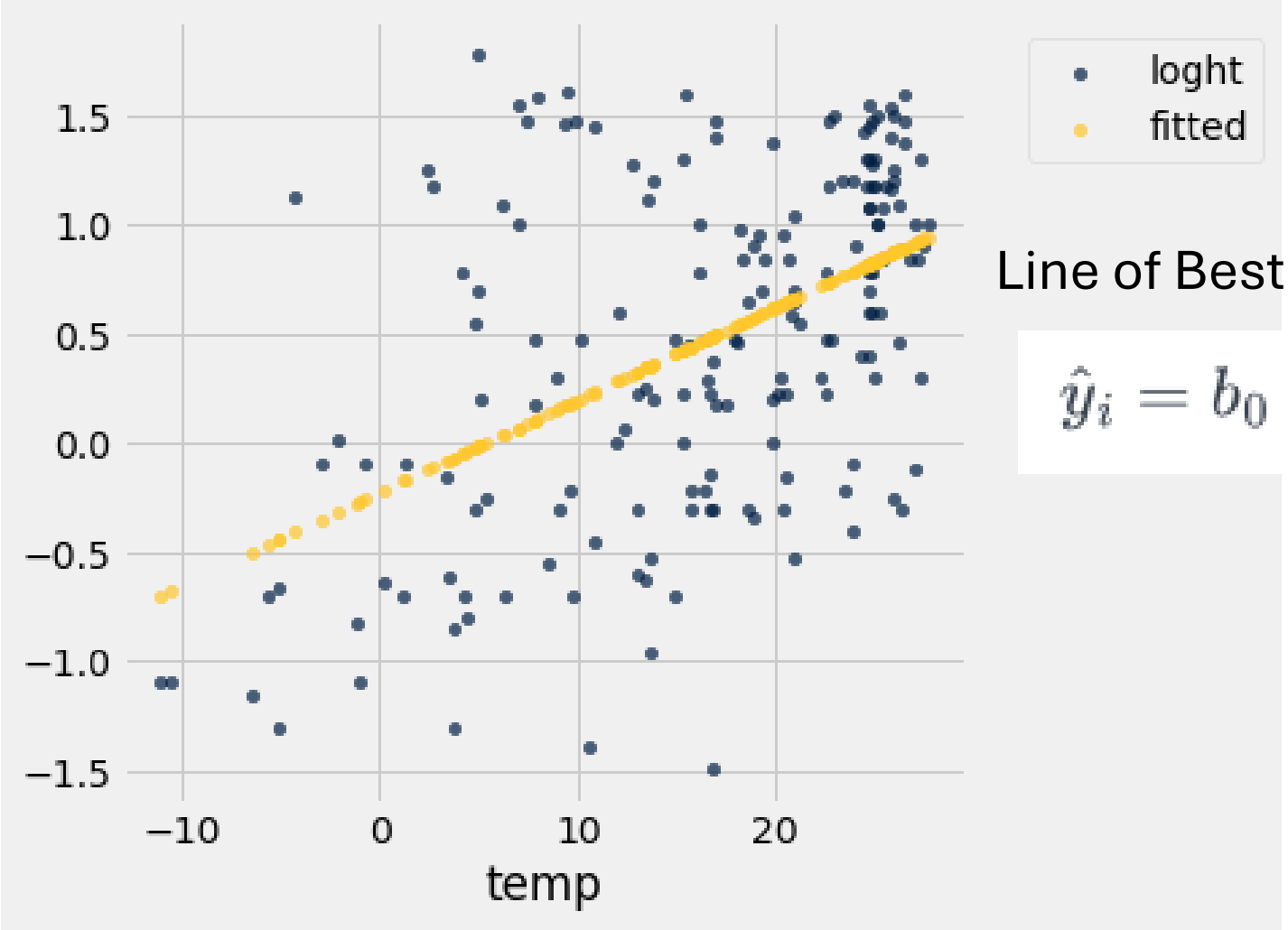


Predictor Variable – Independent (x)

Linear Regressions



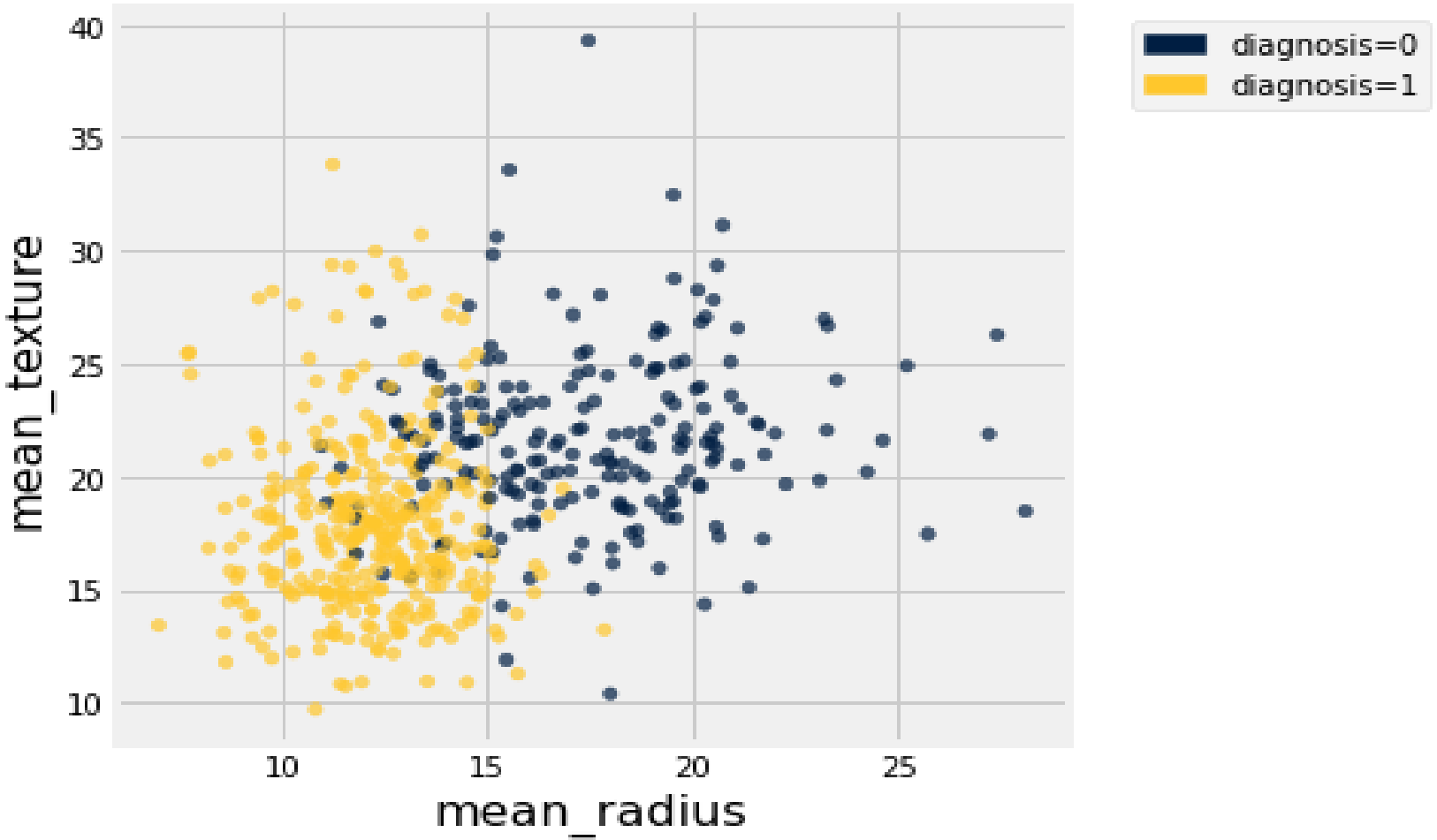
Linear Regressions



Line of Best Fit

$$\hat{y}_i = b_0 + b_1 x_i$$

kNN = k- Nearest Neighbor

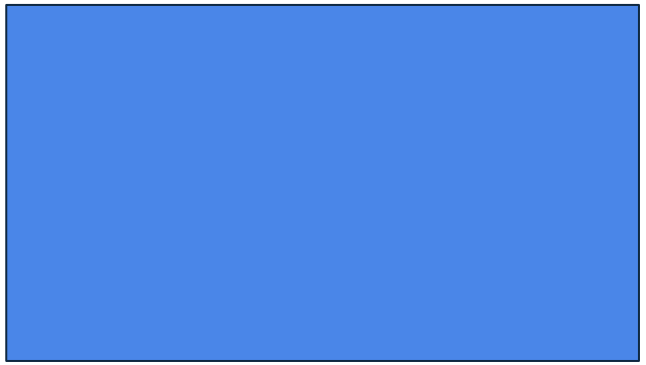


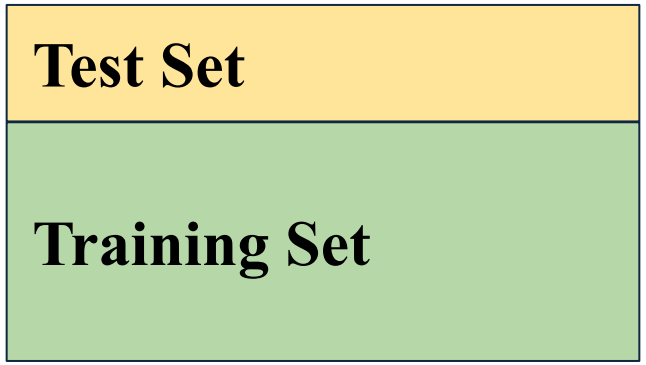
How do we train a classifier?

Population
Attributes of an example

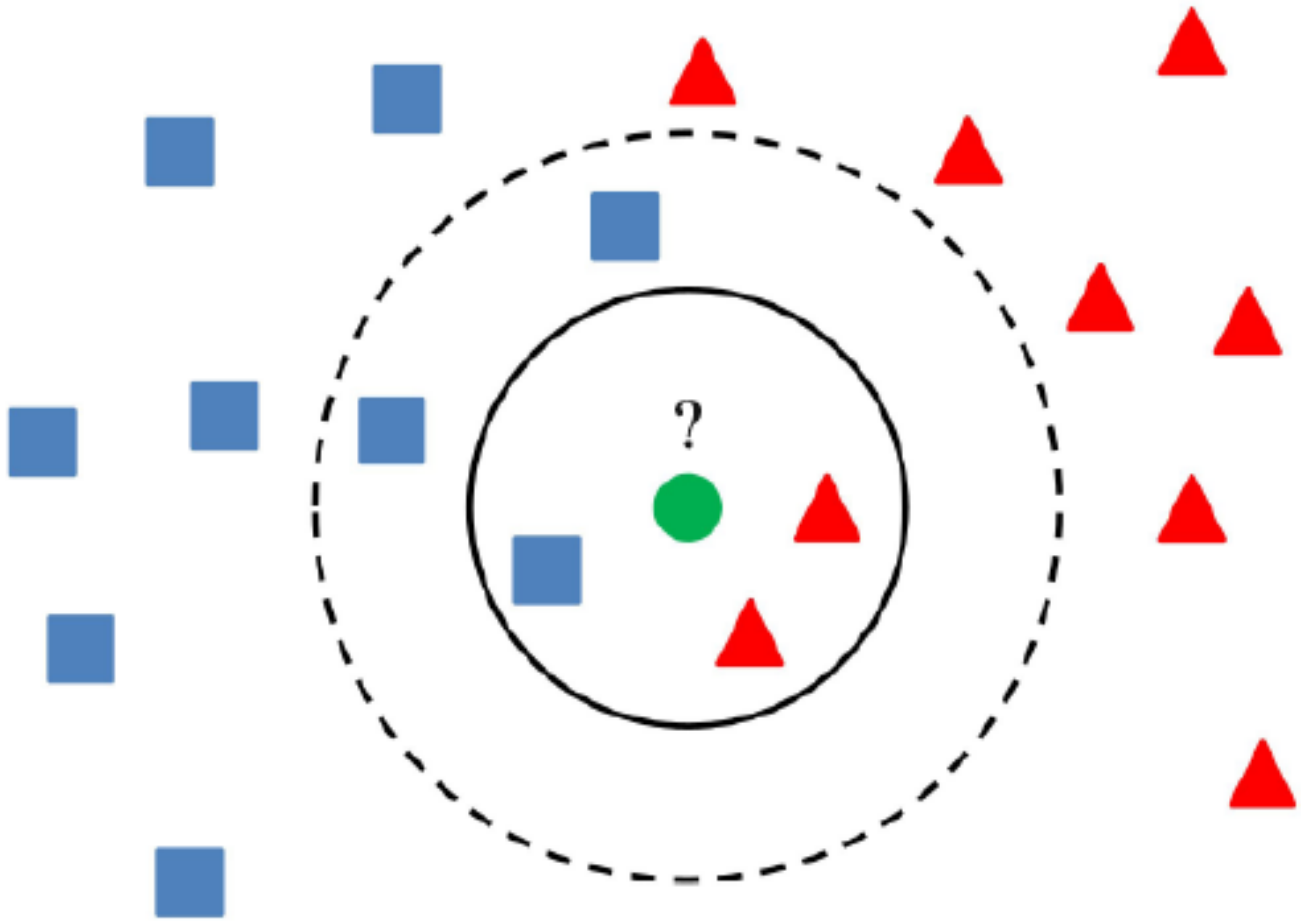
Split into training and test set

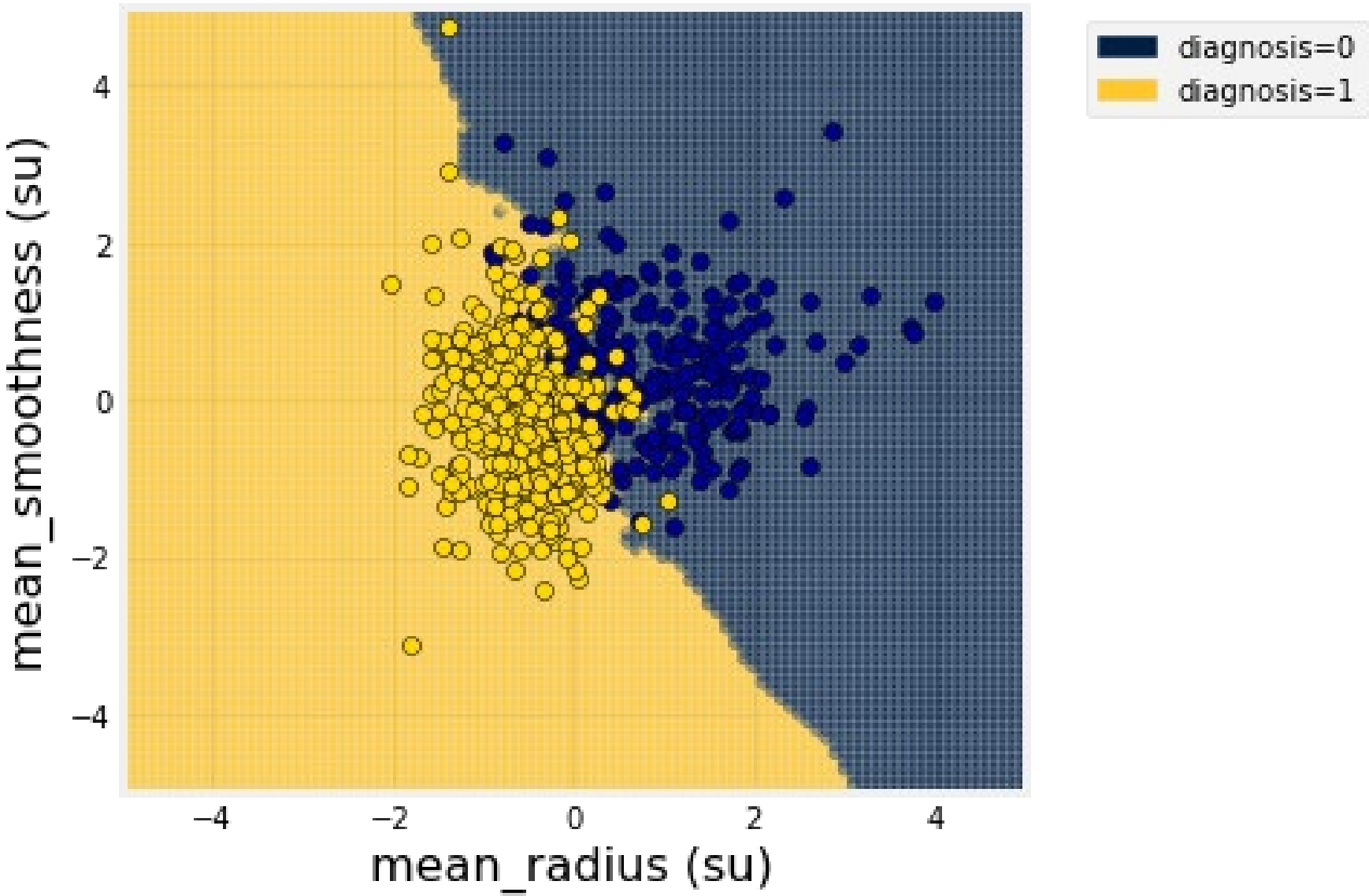
Train classifier & test accuracy (Predicted label of example)

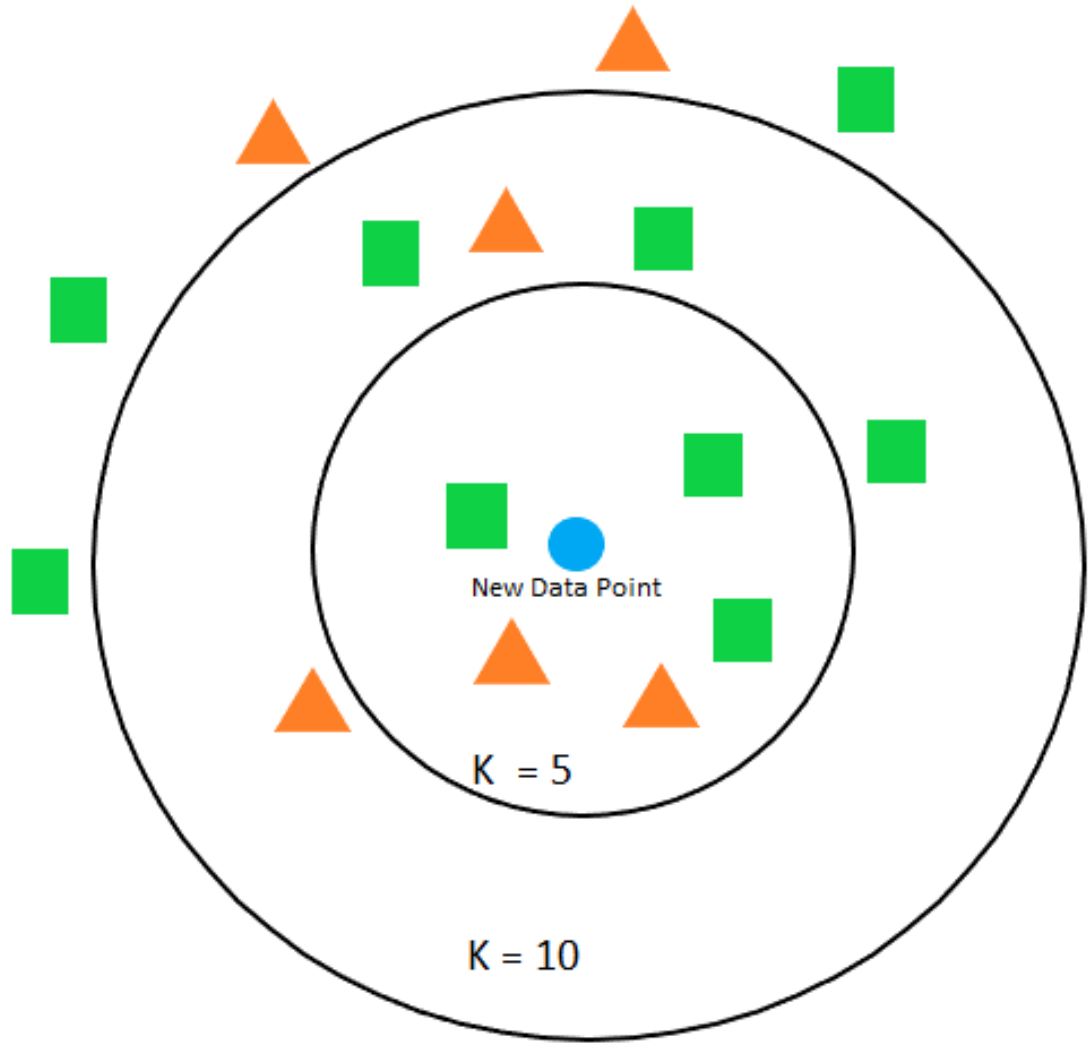




Distance measured by: $Distance = \sqrt{(x_0 - x_1)^2 + (y_0 - y_1)^2}$

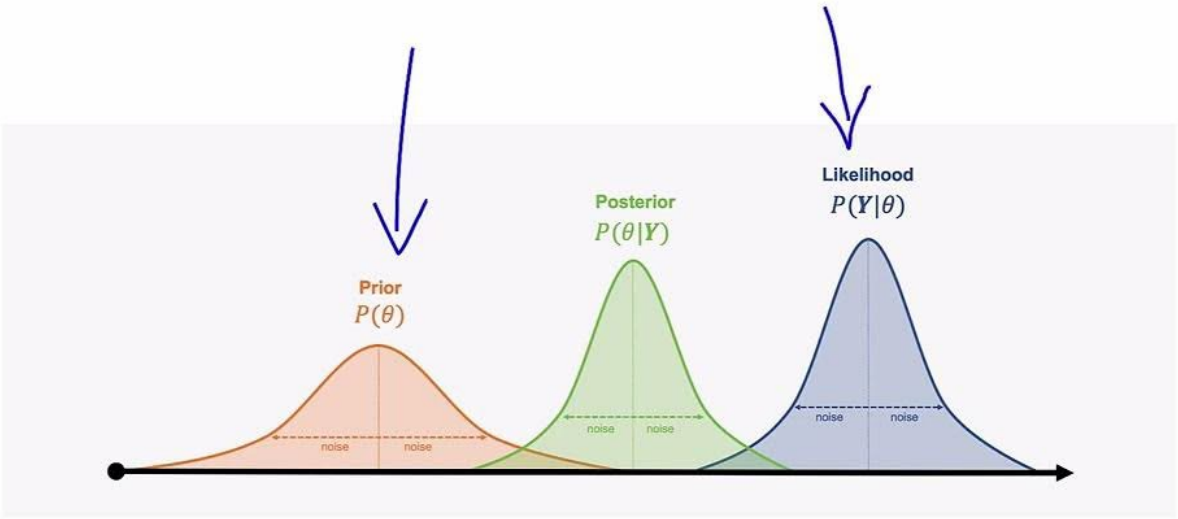



diagnosis=0
diagnosis=1
mean_smoothness (su)
mean_radius (su)
4
2
0
−2
−4
−4
−2
0
2
4


New Data Point
K = 5
K = 10

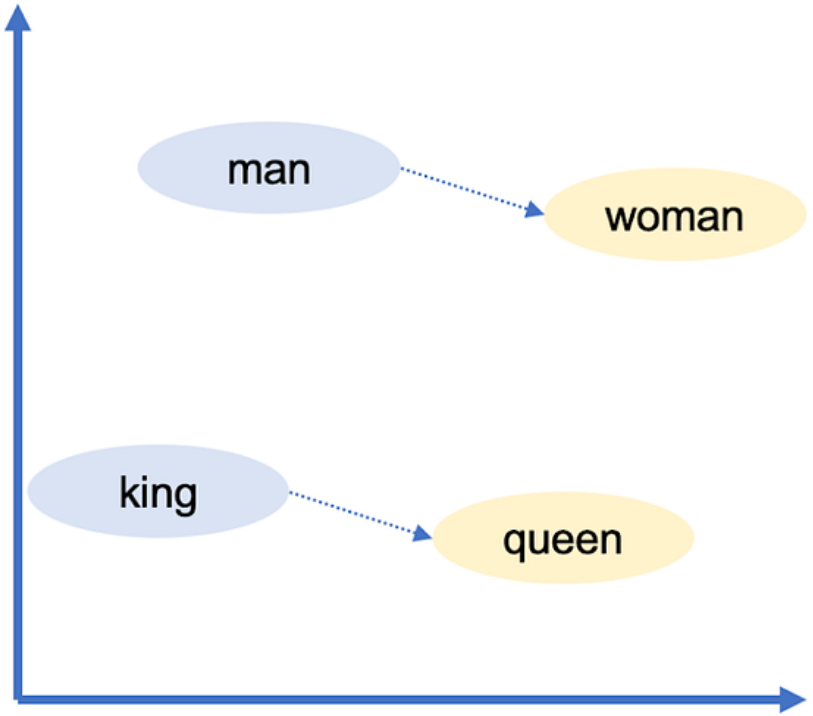
Bayesian Learning

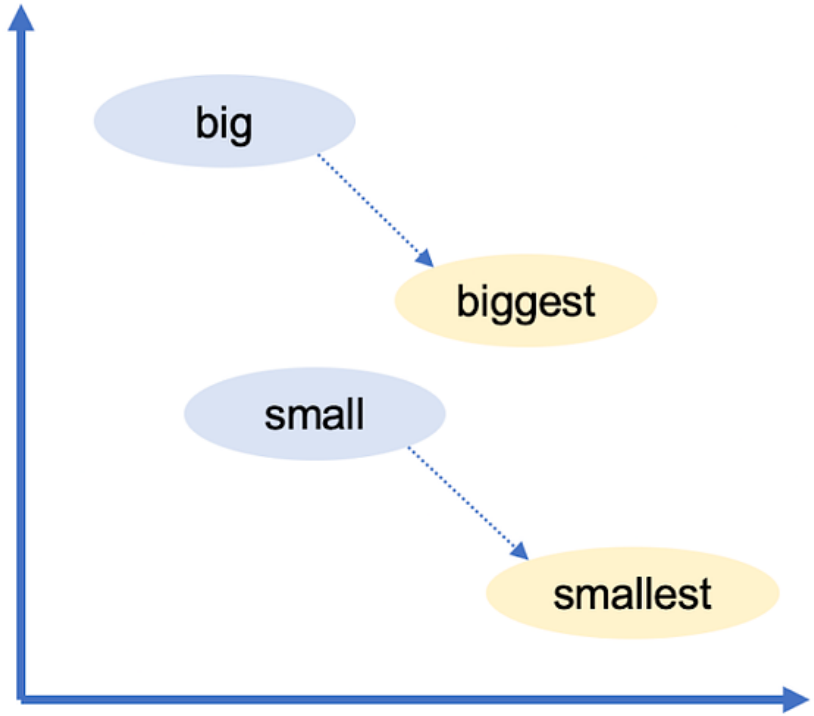
Bayes Example Figure of Prior, Likelihood, Posterior



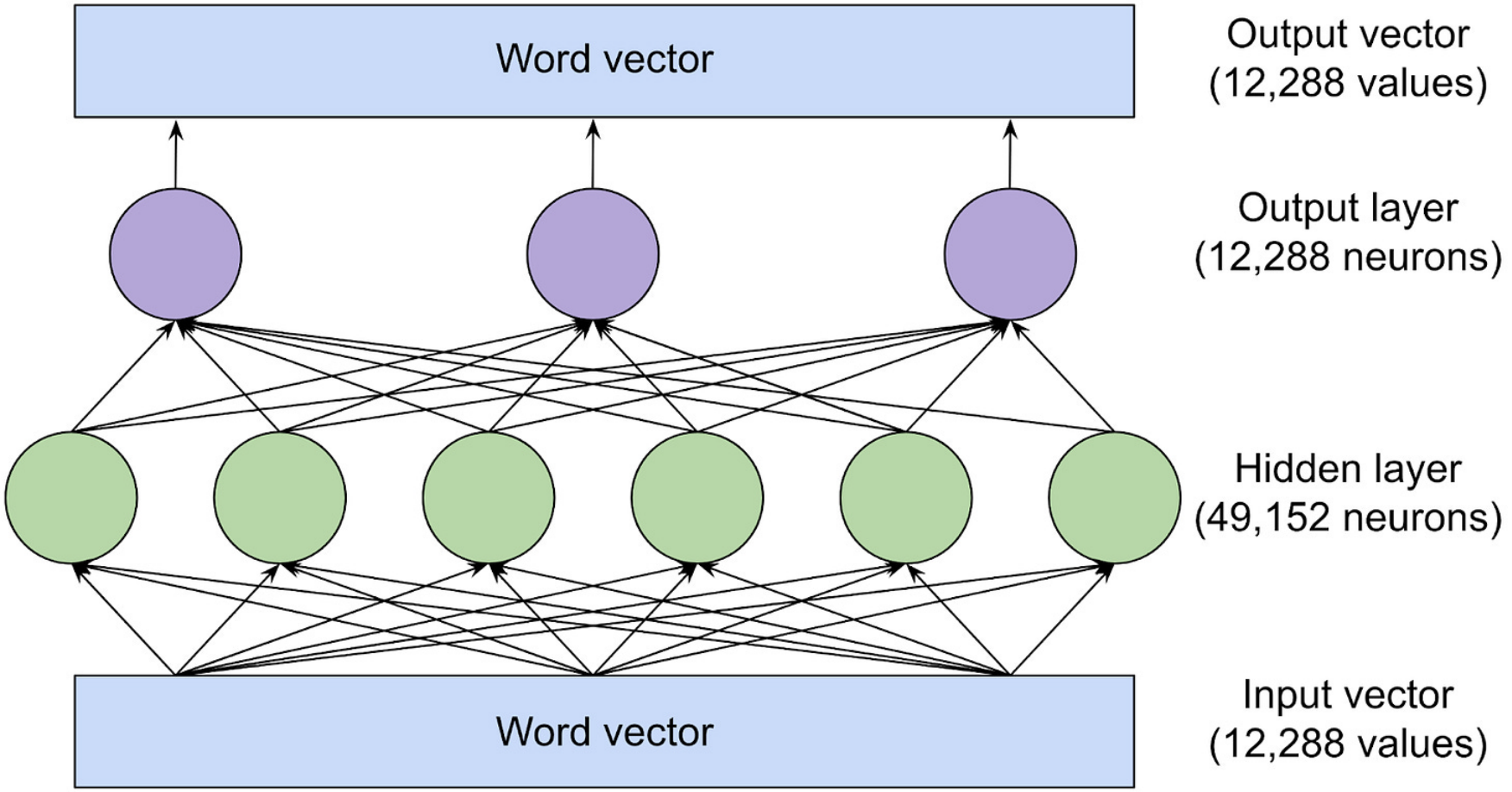
Source: https://hudsonthames.org/wp-content/uploads/2020/10/bayesian.png

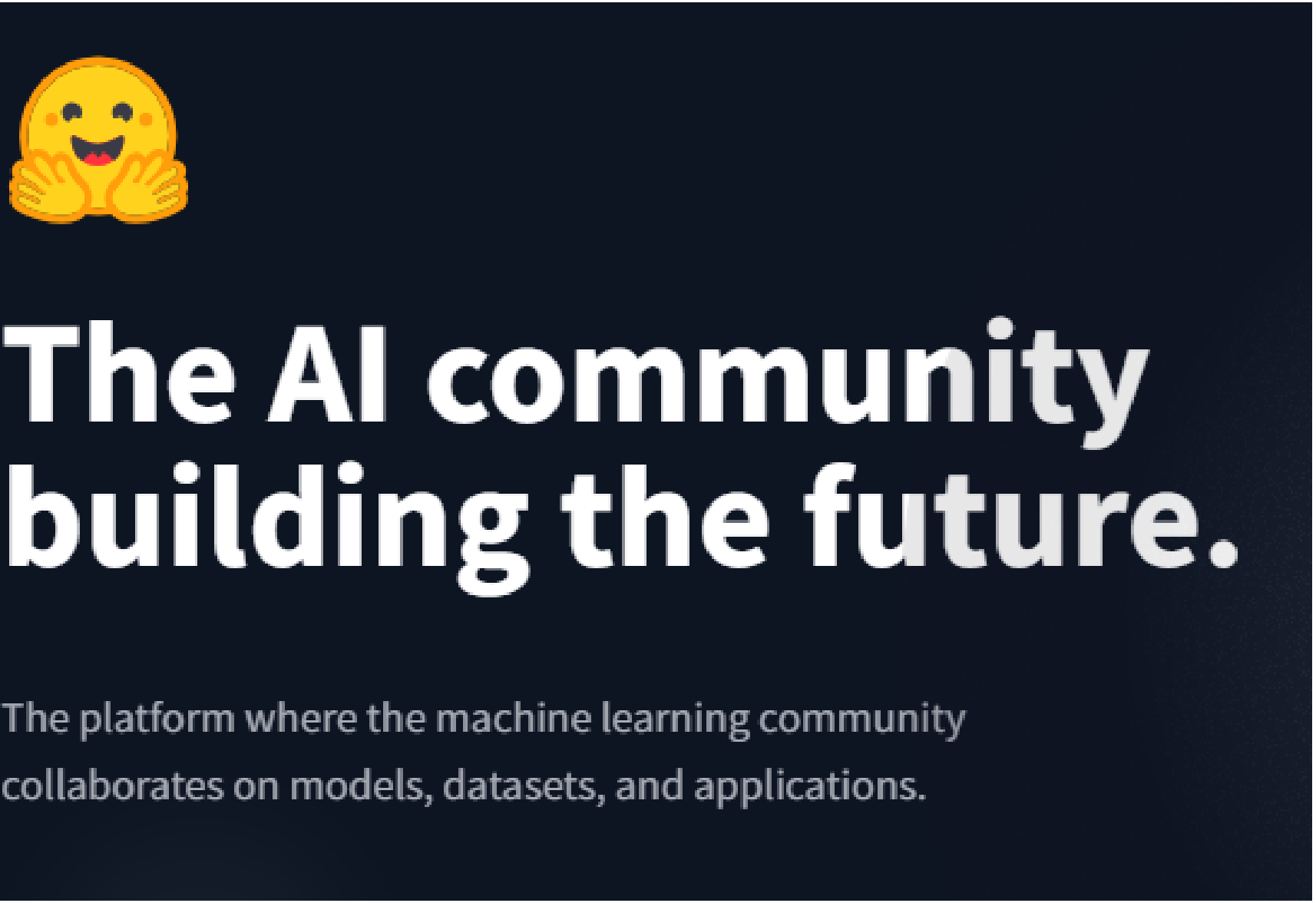
Deeping Learning – Large Language Models

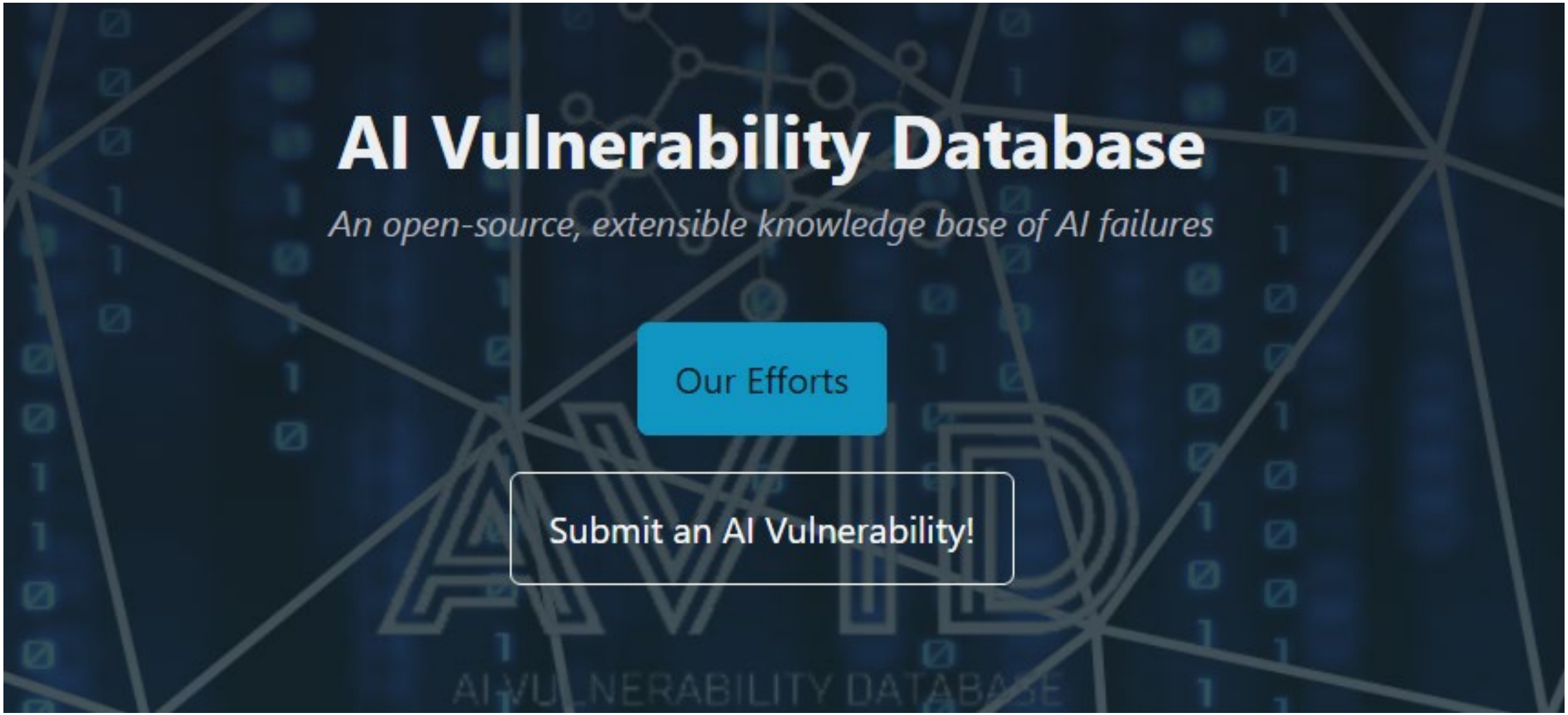




Deeping Learning – Large Language Models




The AI community
building the future.
The platform where the machine learning community
collaborates on models, datasets, and applications.


AI Vulnerability Database
An open-source, extensible knowledge base of AI failures
Our Efforts
Submit an AI Vulnerability!


Spaces
indie-label
App
IndieLabel
LABELING
AUDITING
Your Audit Reports
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ERROR TYPE
EVIDENCE
SUMMARY/SUGGESTIONS
Overview of all topics
ALL TOPICS