Decision Trees

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Outline

- Quick Recap
- Interactive Game
- Decision Trees Terminology
- Hands-On in Python

Objectives

- ✔ Understand the core concepts of decision trees
- ✔ Learn how to build and evaluate decision tree models

Recap: Regression vs Classification

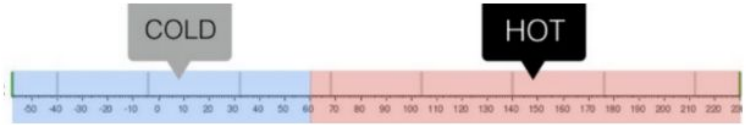
Regression

What will be the temperature tomorrow?

Fahrenheit

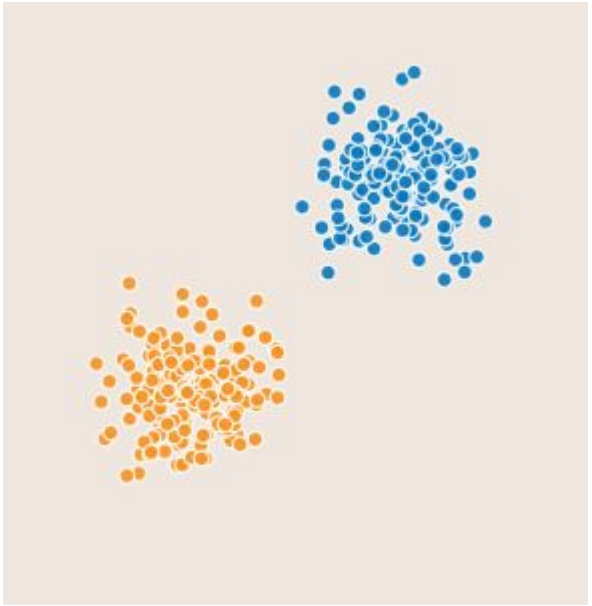
Classification

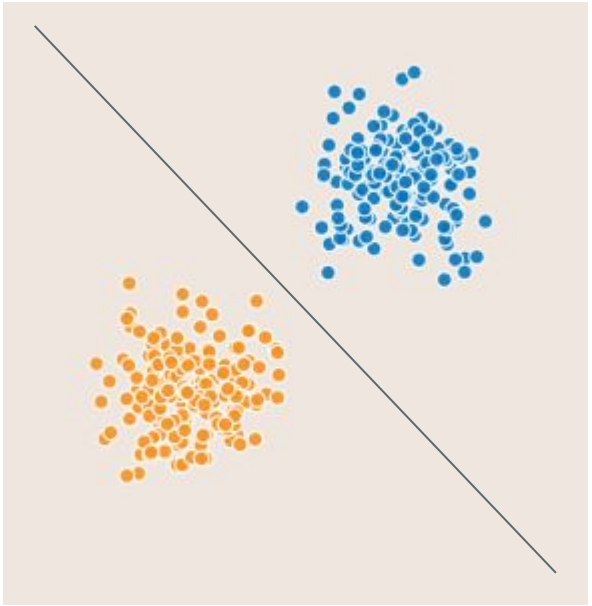
Will it be hot or cold tomorrow?



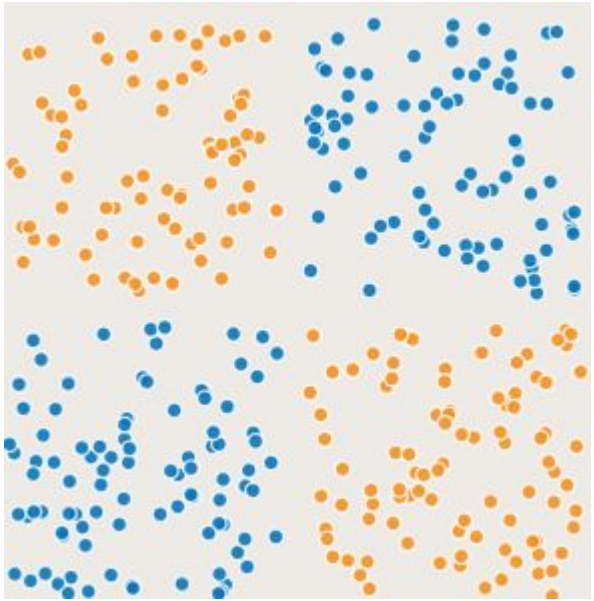
Fahrenheit

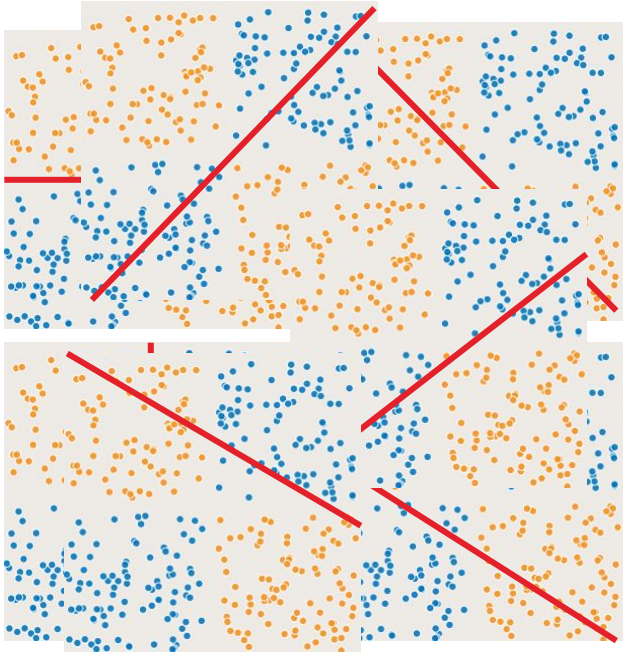
Recap: Linear Model



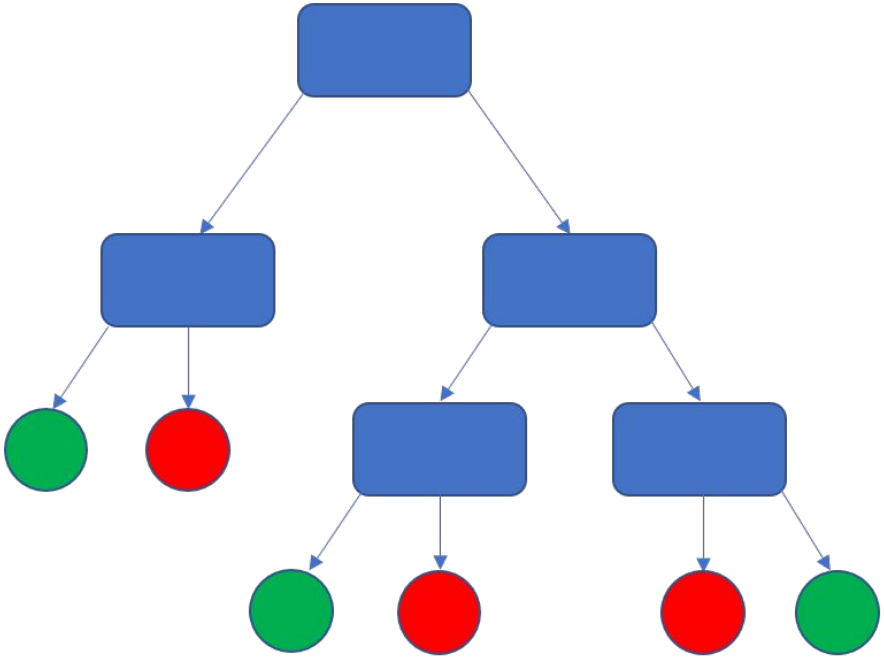


Recap: Linear Model





Tree



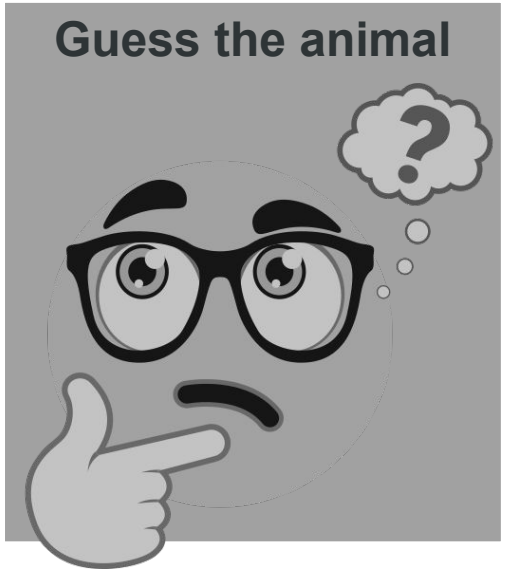
Why Trees?

Very powerful modeling method (non-linear)

Works for classification and regression

“Interpretable”

Animal Guessing Game



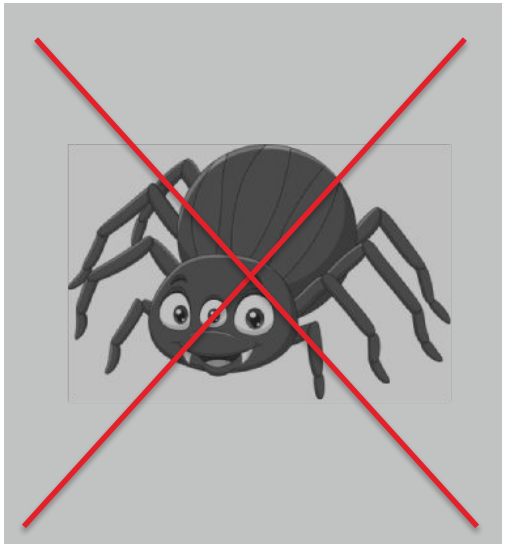
- Pair up randomly
- One person thinks of an animal
- The other guesses by asking up to five yes/no questions

Animal Guessing Game

Lets guess from three animals: **Penguin, Spider and Dog**

Does the animal have more than 2 legs? **Yes**

Animal Guessing Game



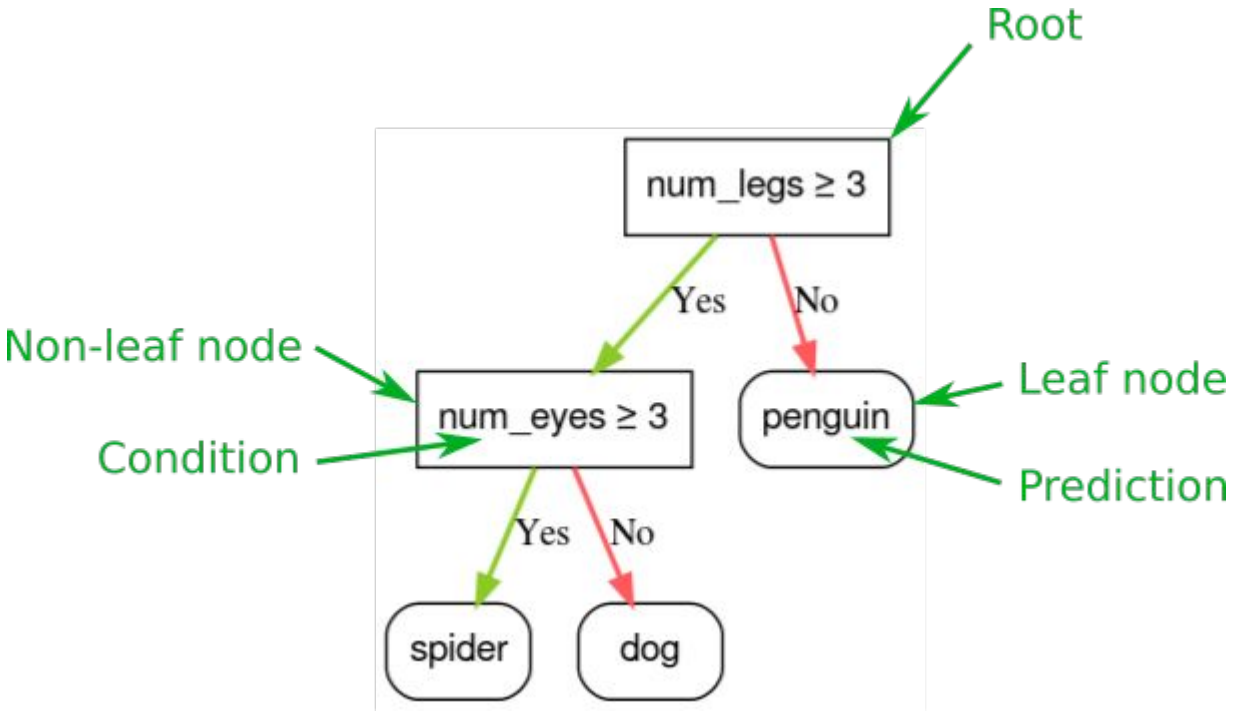
Does the animal have more than 2 eyes ? **No**

Animal Guessing Game

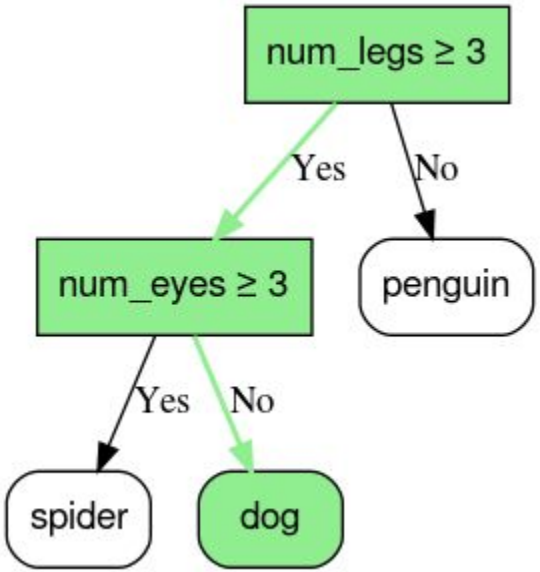
Does the animal have more than 2 legs? **Yes**

Does the animal have more than 2 eyes? **No**

Decision Tree Terminology



Decision Tree Prediction



Check your understanding

The inference of a decision tree runs by routing an example...

A. From one leaf to another.

B. From the root to the leaf.

C. From the leaf to the root.

Check your understanding

The inference of a decision tree runs by routing an example...

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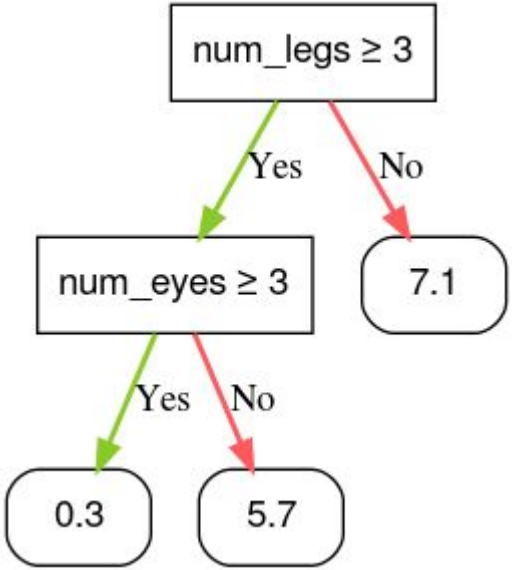
Regression

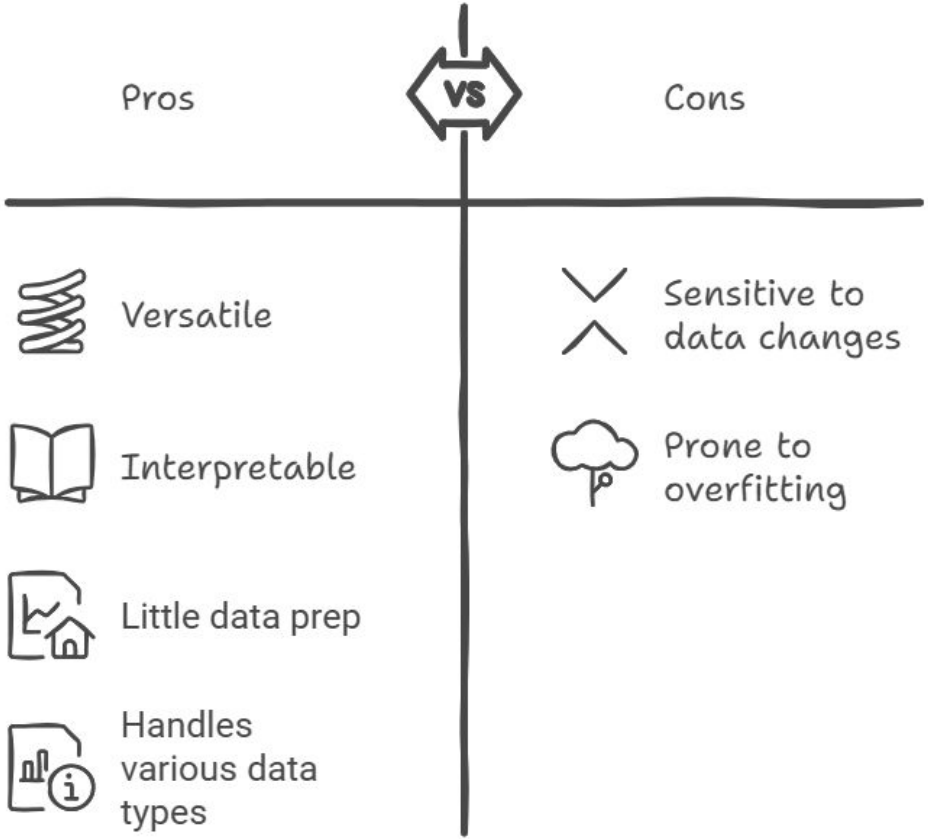
Predict a numerical cuteness score of an animal



Hands-On in Python

https://colab.research.google.com/drive/1ybNugy8GIcdyQoJ5eayv2FD0H9gV72Gf?usp=sharing

Summary


Pros
VS
Cons
Versatile
Interpretable
Little data prep
Handles various data types
Sensitive to data changes
Prone to overfitting

References

- Decision trees | Google for Developers
- Decision Trees Visually Explained
- uclaacmai/ML_Practical
- Sklearn docs

Thank you!

Any Questions ?