Machine Learning Use-case Laboratory

BMEVITMMA18-EN

Fun Fact: math and social dynamics

queen – king ≈ woman - man

Gender information ☺

But

Man – programmer ≈ woman - homemaker

Social bias ☹

However

engineer – female ≈ nurse - male

gender subspace ☺

→ ***Debiasing word embeddings!***

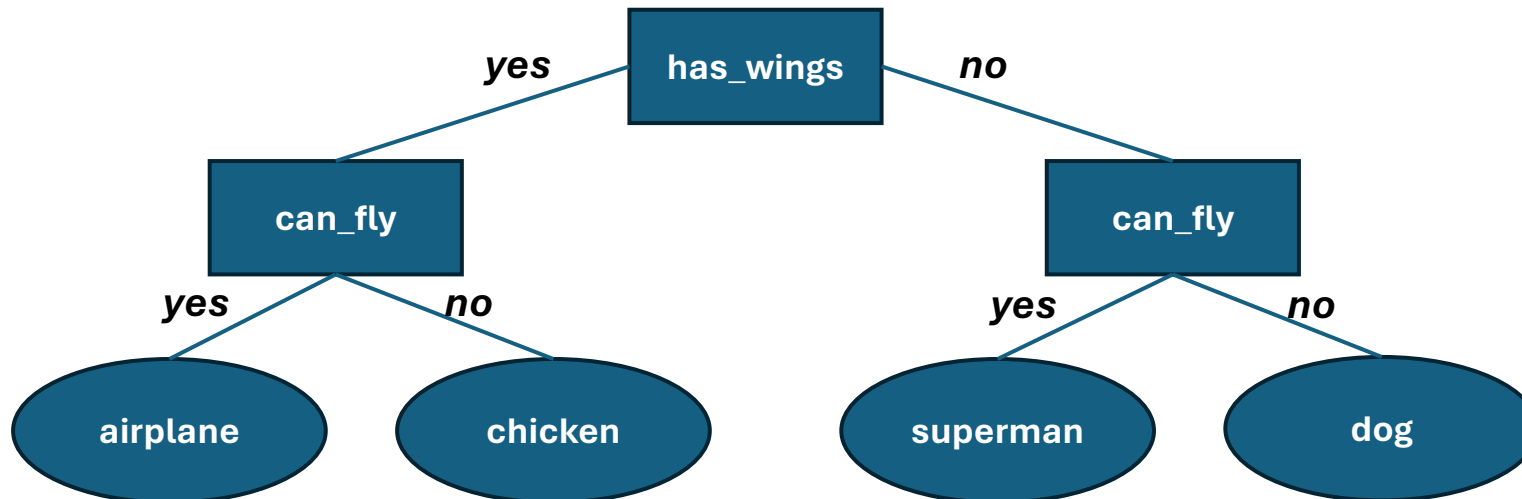*ethnic and racial stereotypes* ?

Linear Regression

$$y = a\,x_1 + b\,x_2 + \,...+ c\,x_n$$

- What is n ?

Random Forest Regressor

- Ensemble method

- Estimates the target using number of trees (estimators).

- The estimators are independent.

- The final answer is aggregated for all the estimators (mean).

Gradient Boosting Regressor

- Ensemble method

- Estimates the target using number of trees (estimators).

- The estimation is sequential (the errors are corrected sequentially).

| 1st estimator | ⤑ | i th estimator | ⤑ | n th estimator |

Initial prediction

Each estimator is trained on the residual errors (the difference between the actual values and the predictions made by the prior trees).

Final prediction is the sum of the initial prediction, and the corrections made by each subsequent estimator.