Machine Learning in Ruby

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Rise of Machine Learning

Google AI Tool Identifies a Tumor's Mutations From an Image

Pit.ai puts a financial twist on reinforcement learning to outperform hedge funds

Identifying artificial intelligence “blind spots”

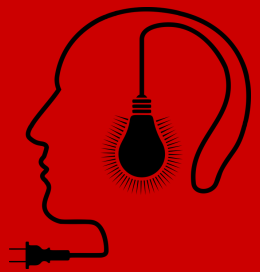
Finding a good read among billions of choices

As natural language processing techniques improve, suggestions are getting speedier and more relevant.

What is it?

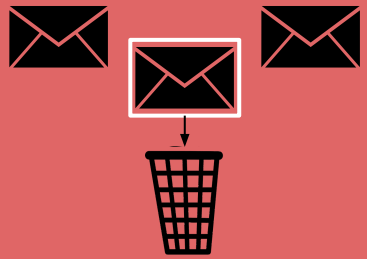
ARTIFICIAL INTELLIGENCE

Any technique that enables computers to mimic human behavior



MACHINE LEARNING

Ability to learn without explicitly being programmed



DEEP LEARNING

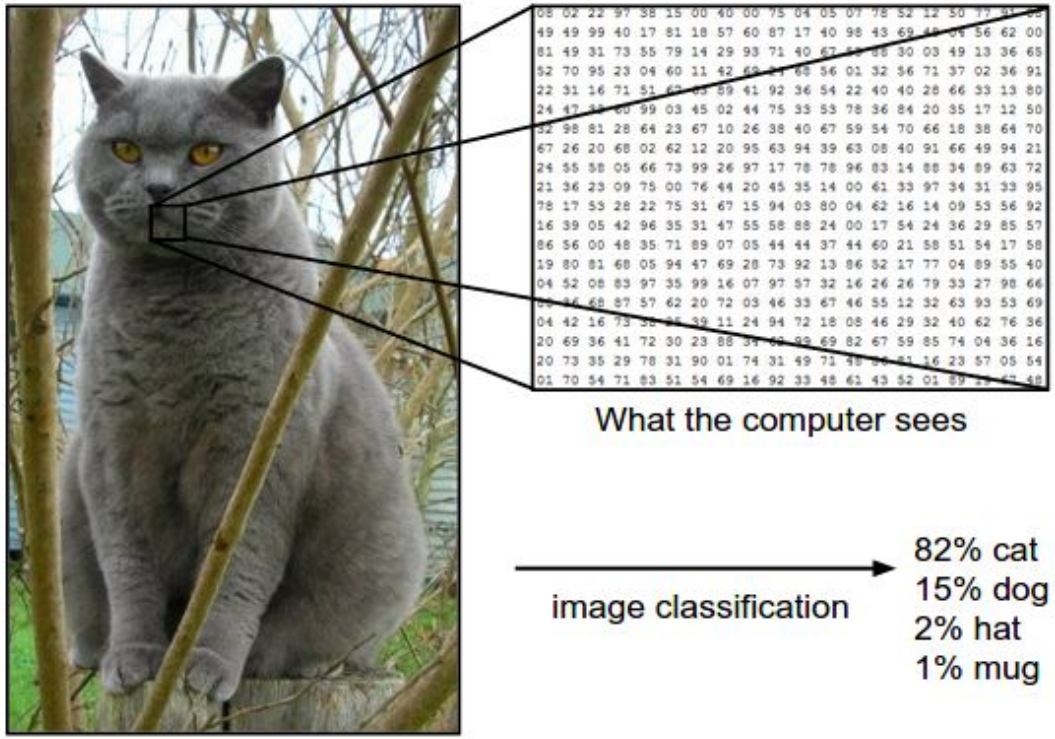
Extract patterns from data using neural networks

3 1 3 5 6 7

1 4 5 9 2 3

Why do we need it?

To allow the machines to learn automatically without the human intervention and adjust actions accordingly.



Supervised Vs Unsupervised algorithms

Supervised Vs Unsupervised learning

Supervised	Unsupervised
Input data is labelled	Input data is unlabelled
Goal is to approximate the mapping function from input variables (x) to output variable (y)	Goal is to learn underlying structure or distribution in the data to learn about it
Examples : Linear regression algorithm for regression problems; decision trees for classification problems	Examples : K-means for clustering problems; Apriori for rule-based learning problems

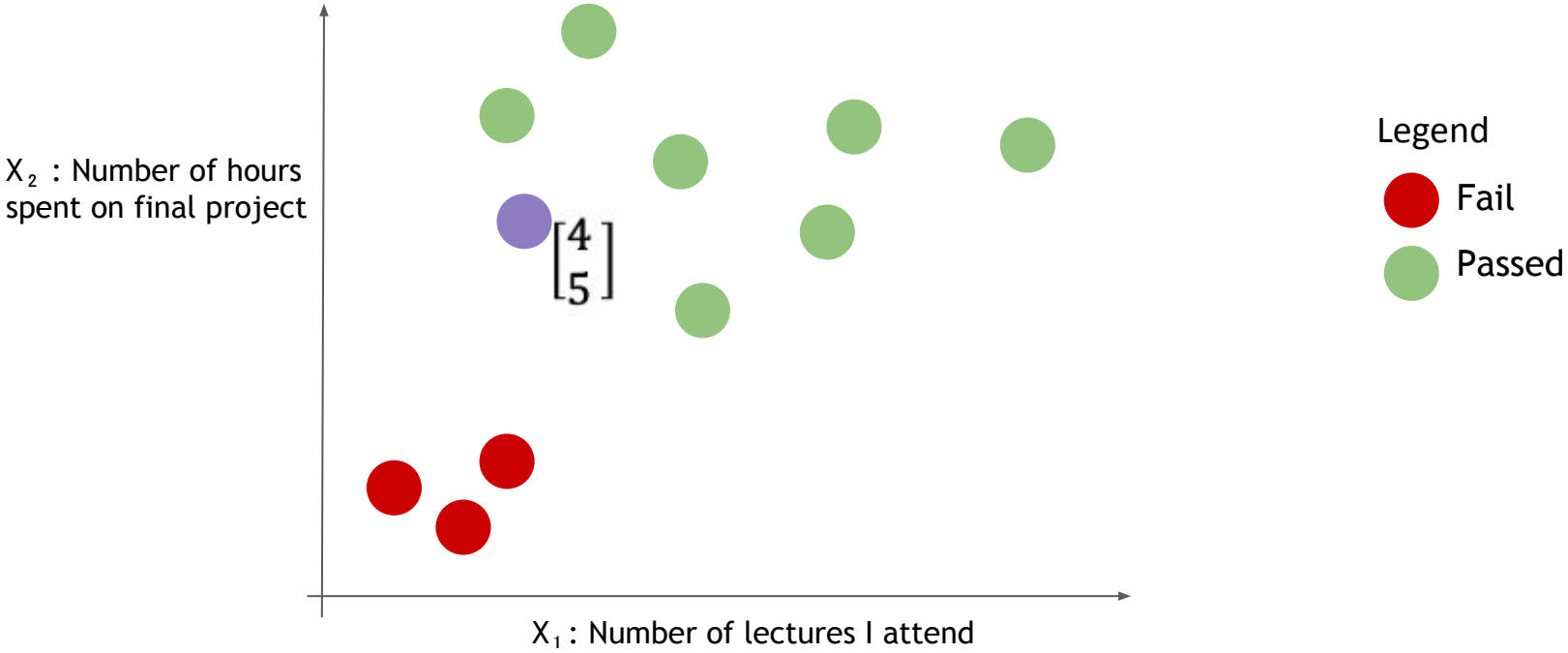
Example: Linear Regression

Will I be able to pass Applied Machine Learning Course?

Let’s start with simple two feature model

X1 : Number of hours I spent on final project
X2 : Number of lectures I attended

Will I be able to do justice to this topic?



Demo

Resources

- ML resources in Ruby :
  - Ruby Fann: Library for neural networks in ruby
  - Rumale: Library for machine learning algorithms in ruby
  - List: Extensive list of libraries and tutorials / blog posts for delving deeper into ruby
- Theoretical
  - Stanford University CS230 - Deep Learning

Thank you!

Thanks to *Joel Hawksley*, my guide at RubyConf for motivating me and giving me pearls of wisdom!

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