Introduction to Machine Learning

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Agenda

What is machine learning
Machine learning algorithms
Machine learning languages

What is machine learning

What is machine learning

Machine learning is a branch of science that deals with programming the systems in such a way that they automatically learn and improve with experience.

Here, learning means recognizing and understanding the input data and making wise decisions based on the supplied data.

What is machine learning

It is very difficult to cater to all the decisions based on all possible inputs. To tackle this problem, algorithms are developed.

These algorithms build knowledge from specific data and past experience with the principles of statistics, probability theory, logic, combinatorial optimization, search, reinforcement learning, and control theory.

Machine learning algorithms

Machine learning algorithms

What machine learning algorithm should I use?
It depends.

It depends on the size, quality, and nature of data.
It depends on what you want do to with the answer.
It depends on how the math of the algorithm was translated into instructions for the computer you are using.
It depends on how much time you have.

Flavors of machine learning

There are several ways to implement machine learning techniques, however the most commonly used ones are **supervised** and **unsupervised learning**.

Supervised Learning

Supervised learning deals with learning a function from available training data.

A supervised learning algorithm analyzes the training data and produces an inferred function, which can use for mapping new examples.

Unsupervised Learning

Unsupervised learning makes sense of unlabeled data without having any predefined dataset for its training.

Unsupervised learning is an extremely powerful tool for analyzing available data and look for patterns and trends.

It is most commonly used for clustering similar input into logical groups.

Machine learning languages

R in machine learning

R is a workhorse for statistical analysis and by extension machine learning.
It is the platform to use to understand and explore your data using statistical methods and graphs.

It has an enormous number of machine learning algorithms, and advanced implementations too written by the developers of the algorithm

Python in machine learning

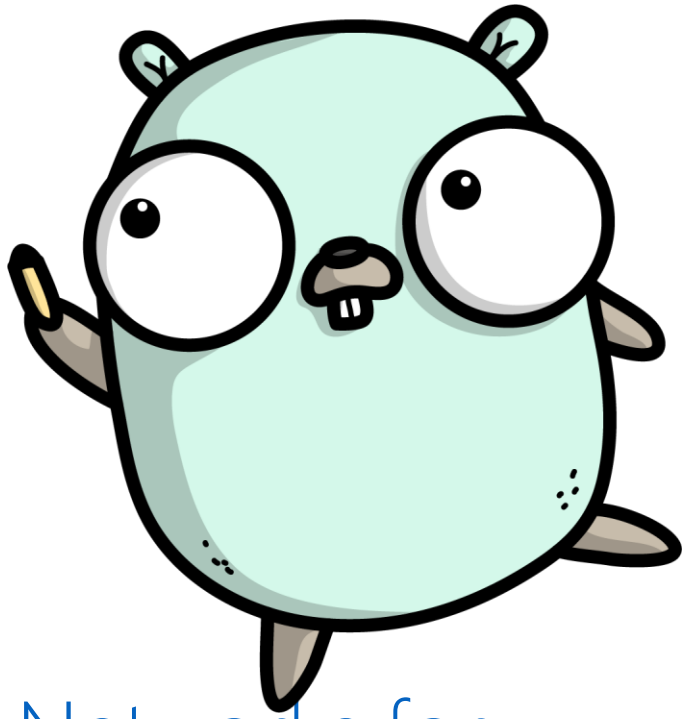
Python if a popular scientific language and a rising star for machine learning.

I'd be surprised if it can take the data analysis mantle from R, but matrix handling in NumPy may challenge MATLAB and communication tools like IPython are very attractive and a step into the future of reproducibility.

Demo

Quantile Regression: Car price prediction

Resources



TutorialsPoint

Microsoft Docs

Lecture Collection | Convolutional Neural Networks for Visual Recognition(Spring 2017)

Python Numpy Tutorial

Image Credits: @ashleymcnamara

Thank you

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