Machine Learning

Course syllabus. ML Paradigms. ML History

Aleksandr Petiushko

ML Research

Content

1. Course syllabus

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2. ML Paradigms

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What is Artificial Intelligence?

Natural Intelligence (human)

- Able to perceive the information, analyze it, make decisions based on this analysis

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Artificial Intelligence

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- (**Weak**) Algorithm which is able to be trained using the input data in order to do tasks afterward — instead of human

Scikit-Learn[1] Roadmap
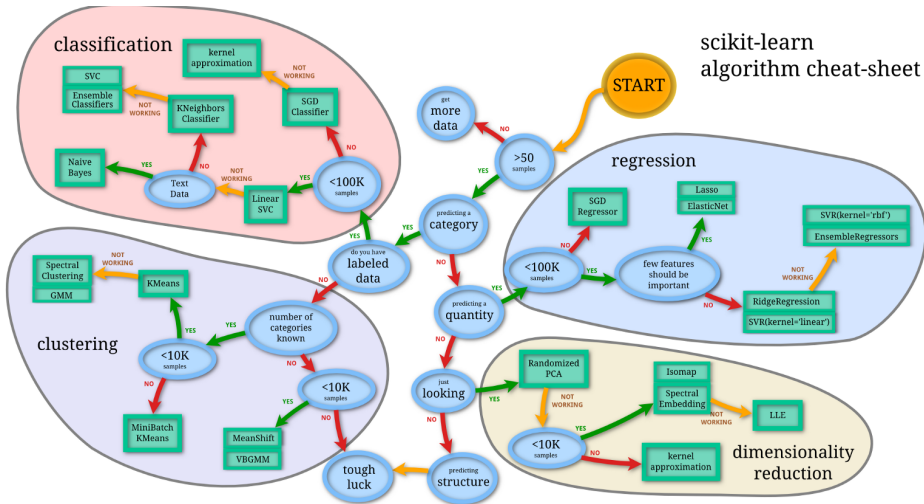
scikit-learn
algorithm cheat-sheet

(Tentative) future content

Theoretic part

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  - Precision / Recall, TPR / FPR, ROC, AUC, Cross-Validation, ...

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Practice part

- Data processing and analysis by Python
  - Scikit-Learn, Numpy, . . .

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General definition

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In 1997 Tom M. Mitchell introduced more formal definition of a machine learning algorithm.

Formal definition

A **computer program** is said **to learn** from examples E for some set of problems T and a quality metric P if its performance on problems from T, as measured by P, is improved by using examples E.

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- **1906**: Andrey Andreyevich Markov develops the apparatus of Markov chains, which in **1913** he uses to study the text "Eugene Onegin". Markov chains are used to generate and recognize signals.

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- **1997**: The Deep Blue computer beat world chess champion Garry Kasparov.

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- **2022**: OpenAI, a (not so) non-profit research company, provided the breakthrough in LLMs: ChatGPT.

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- Reinforcement
  - — Action generation based on interaction with the environment

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4. Read <u>History and evolution of machine learning: A timeline</u> and the
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Thank you!