

Machine Learning

Introduction. ML History

Aleksandr Petiushko

ML Research



Content

① Introduction

Content

- ➊ Introduction
- ➋ Course logistics and syllabus

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- ① Introduction
- ② Course logistics and syllabus
- ③ Historic reference

Intro

Time to introduce yourselves: what are your hobbies, motivation in ML, etc.: please go into “**Module 1 Students Introduction**” thread

Sofia Plagiarism Policy

- It covers parts “*sourced from AI*”
 - ▶ Please read the “**Sofia Plagiarism Policy**” thread
 - ▶ **First offense:** students need to rewrite assignment
 - ▶ **Second offense:** students fail the course
 - ▶ **Third offense:** students are to be withdrawn from their program

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 - ▶ It can produce very different information in comparison to the source used to ask question (e.g., book chapter)

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- Only the answers with some non-trivial arguments that:
 - ▶ either contradict the initial post,
 - ▶ or add some non-obvious missing things to the initial messagewill be considered as graded ones

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- Preliminary grading scale:

Grade	Percent accumulated
A	90-100 %
B	75-89 %
C	60-74 %

Late Submission Policy

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- It means that if you're **7 days late** than no need to submit: you'll get **0 score** anyway.

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Unless:

- A student has a serious medical condition, and this condition is validated by a hospital or licensed California physician (in English)
- The Student contacts in time Student Services (student.services@sofia.edu) and describes the situation and provides all the needed proofs
- The student notifies in time our chair (Donna Dulo) and Professor about the situation with the confirmation from Student Services

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 - ▶ **Math:** for research and design of ML algorithms
 - ▶ **Programming:** usage and tuning of ML algorithms
- Hopefully we could touch on both a little

- Course page: <https://github.com/fatheral/sofia-ml-2024>
- The professor's lectures will be uploaded there

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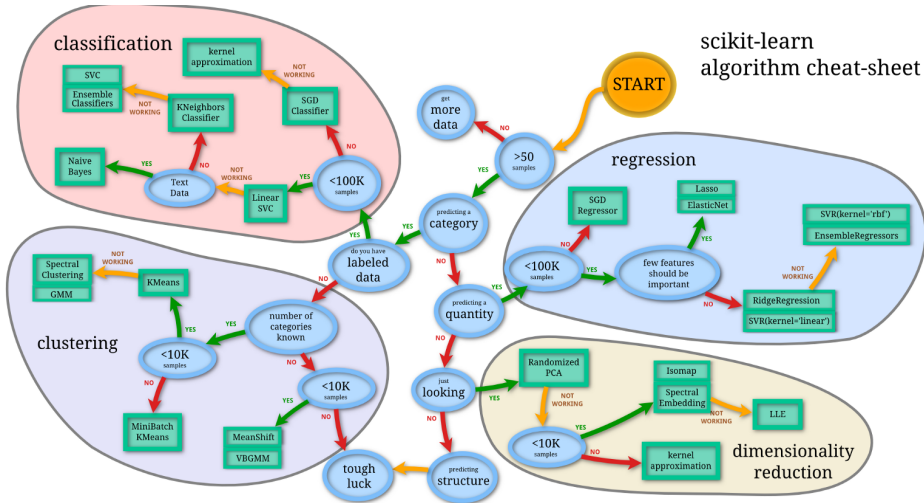
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Artificial Intelligence

- (Strong) The same as natural intelligence, but computer is instead of human
- (**Weak**) Algorithm which is able to be trained using the input data in order to do tasks afterward — instead of human

Scikit-Learn² Roadmap



²https://scikit-learn.org/stable/tutorial/machine_learning_map/

(Tentative) future content

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Practice part

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

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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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- **1901**: Karl Pearson invented the Principal Component Analysis (PCA) — a master method for data dimensionality reduction.
- **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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- **2022:** OpenAI, a (not so) non-profit research company, provided the breakthrough in LLMs: ChatGPT.

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- ➋ Please introduce yourself, complete the **Assignment 1** and discuss the question inside “**Module 1 DQ**”
- ➌ We are going to cover the most important things needed for ML, and will have small optional programming tasks
- ➍ ML History is intriguing!

Thank you!