Introductory lecture

Machine Learning II

Aidos Sarsembayev, IITU, Almaty, 2019

This semester…

We will (or at least try to) learn:

1. How to write the supervised learning models from scratch

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4. Unsupervised learning models (conventional and also SOM)

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We'll take the simplest models from regression and classification

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XGBoost is an implementation of gradient boosted **decision trees** designed for **speed** and **performance**.

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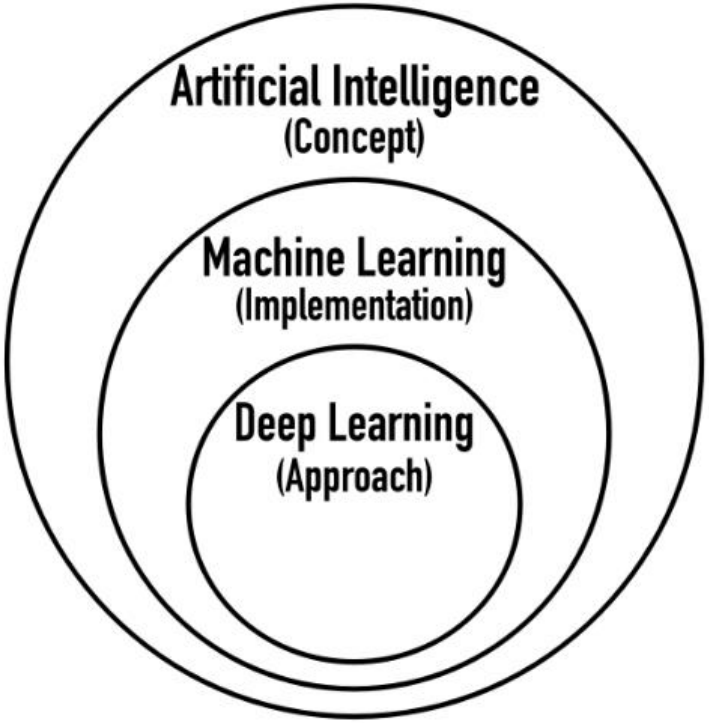
3. Deep Learning



https://www.aldersonloop.com/ai-vs-ml/

3. Deep Learning

Artificial Intelligence

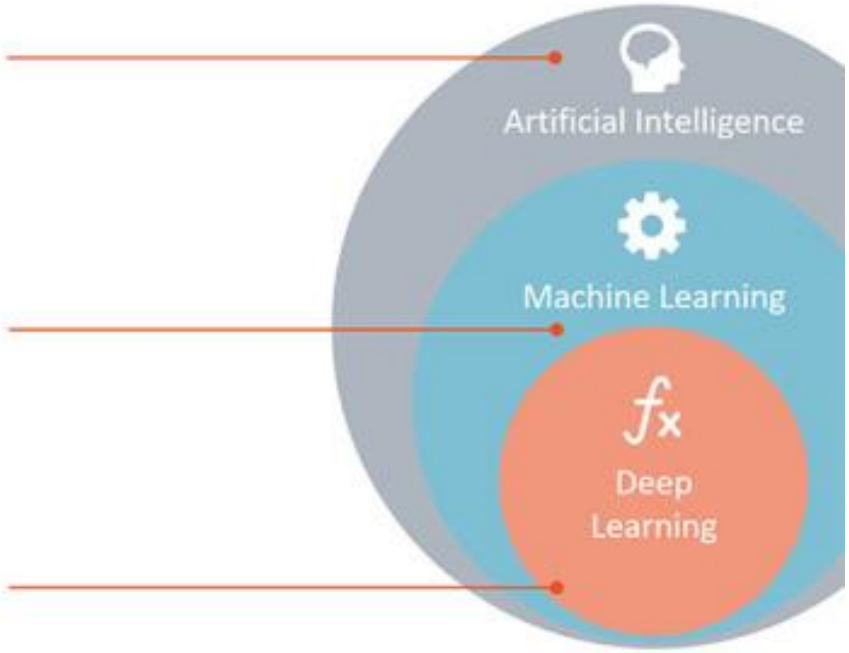
Any technique which enables computers to mimic human behavior.

Machine Learning

Subset of AI techniques which use statistical methods to enable machines to improve with experiences.

Deep Learning

Subset of ML which make the computation of multi-layer neural networks feasible.



https://rapidminer.com/blog/artificial-intelligence-machine-learning-deep-learning/

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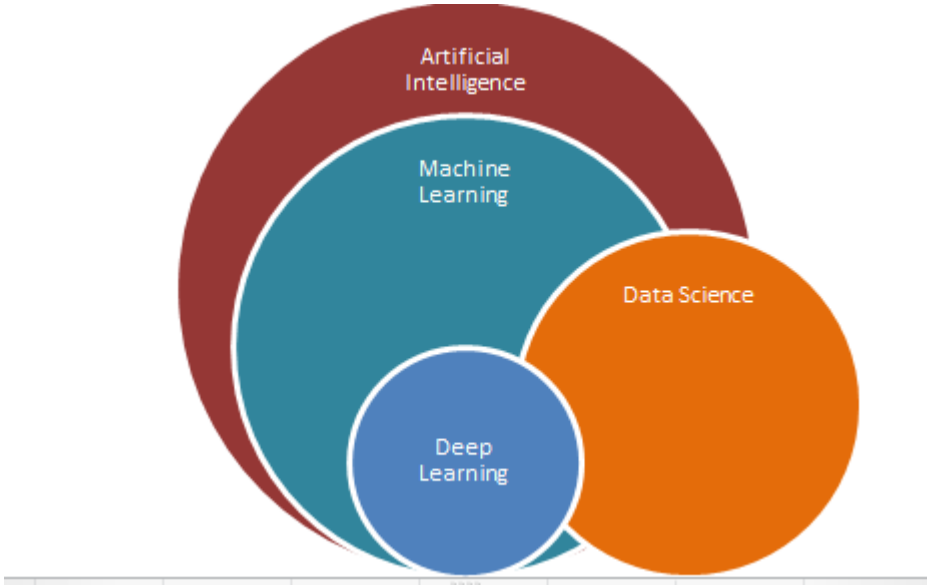

https://ai6forums.nurture.ai/t/discuss-artificial-intelligence-machine-learning-deep-learning-data-science/781

3. Deep Learning models

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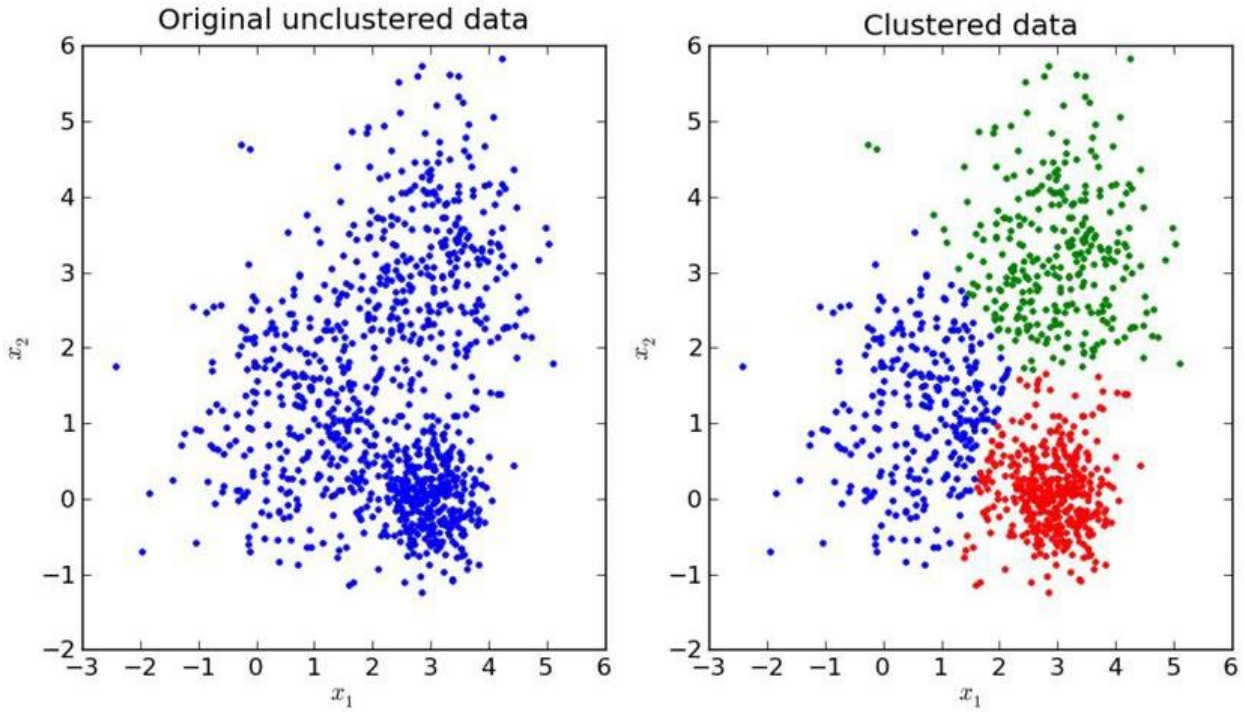
- Convolutional Neural Networks for image classification
- GANs (Generative Adversarial Networks)
- Object detection models
- Sequential models (Reccurrent NNs, Long-Short Term Memory)
- Artificial NNs (for structured and tabular data)

4. Unsupervised learning models (conventional and also SOM)



https://medium.com/the-21st-century/machine-learning-a-strategy-to-learn-and-understand-chapter-3-9daaad4afc55

4. Unsupervised learning models (conventional and also SOM)

- The K-Means clustering algorithm

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- Self-Organizing Maps (DL model)

Final Assessment

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- The topics from Deep Learning field proposed by yourselves.
- Topic proposal presentation and the first draft prototypes will be graded as a part of a midterm
- Be as more creative as possible when choosing the project topic, but realistic

Thanks!