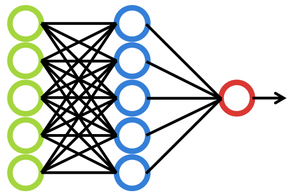
FIRE: THE FIRST-YEAR INNOVATION & RESEARCH EXPERIENCE

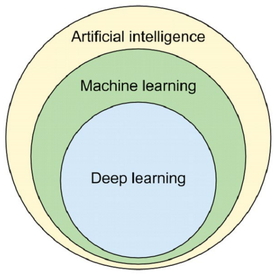
Capital One Machine Learning

What is Machine Learning?



Using statistical and algorithmic techniques to give computer systems the ability to "learn" from data, without being explicitly programmed.

How is it related to AI?



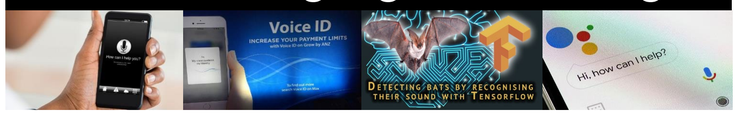
Machine Learning is a subfield of AI that involves the use of statistical & algorithmic techniques such as neural networks and deep learning.

How can it be used?

Computer Vision

Autonomous Driving | Video Surveillance | Facial Recognition | Medical Diagnosis

Natural Language Processing



Speech Recognition | Voice Identity | Audio Classification | Speech Generation

Data Analytics

Fraud & Malware | Digital Marketing | Recommendations | Modeling & Prediction

How is it done?

Large Datasets

Open-Source Packages

Python Programming

Cloud Platforms

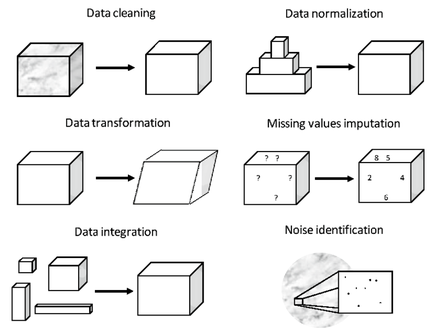
Neural Networks

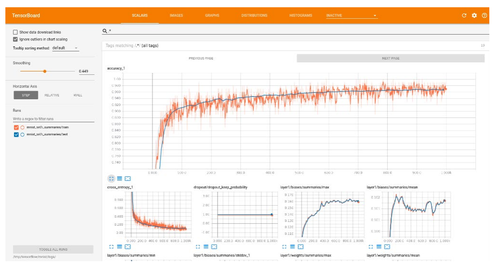
Deep Learning Models

What will you be doing?

Data Preprocessing

- Gathering raw data
- Restructuring the data
- Correcting data errors
- Transforming the data
- Augmenting the data
- Sampling the data



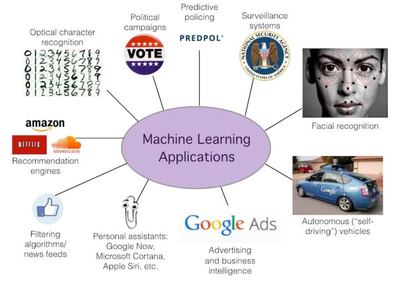


Training & Validation

- Evaluating existing models
- Composing the model
- Run training & validation
- Analyzing training results
- Evaluating with a test set

Optimization & Application

- Refining the design of your model
- Improving the performance of your model
- Applying your model to the real-world



Our Cutting-Edge Tools

NVIDIA CUDA | jupyter | NumPy | TensorFlow | GitHub | kaggle | PyTorch | scikit learn | colab | Keras

Why it matters?

- ✓ Recent growths in big data, computational tools, and state-of-the-art research.
- ✓ Machine learning applies to a wide variety of fields.
- ✓ Outcomes can lead to broad impact.
- ✓ Great career opportunities.

What will you learn?

- ✓ Analyze state-of-the-art techniques from recent scholarly papers and open-source repositories.
- ✓ Collaborate with a research team to analyze, design, implement, and apply a machine learning model for potential real-world usage.
- ✓ Perform data preprocessing, training, optimization, and evaluation of machine learning models using deep learning frameworks (such as Keras, Tensorflow, and PyTorch).

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FIRE Capital One Machine Learning is a research mentorship program, under the FIRE: First-Year Innovation & Research Experience initiative at the University of Maryland.