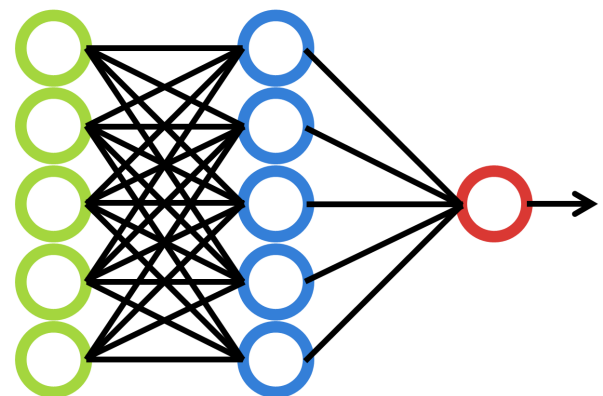




# FIRE: THE FIRST-YEAR INNOVATION & RESEARCH EXPERIENCE

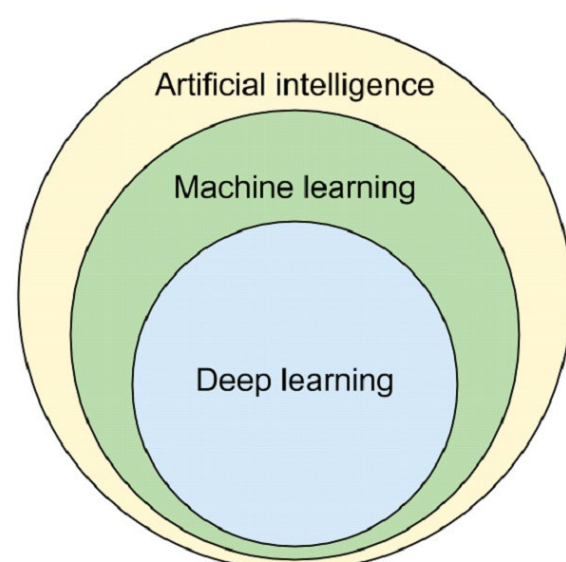


## What is Machine Learning?



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?



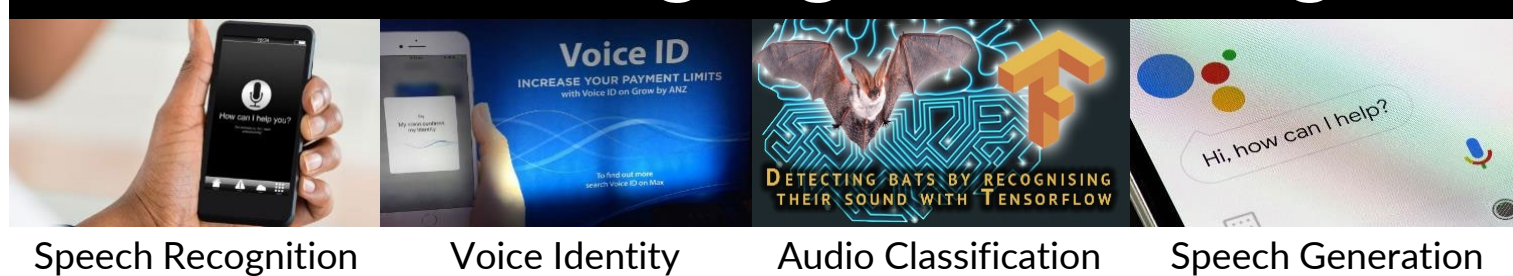
Machine Learning is a subfield of AI that involves the use of statistical & algorithmic techniques such as neural networks and deep learning.

## How can it be used?

### Computer Vision



### Natural Language Processing



### Data Analytics



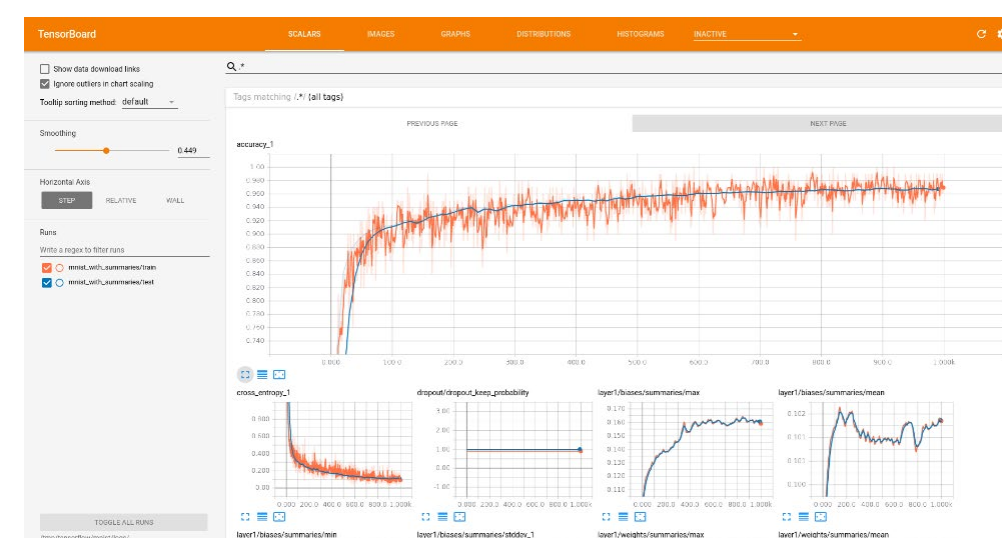
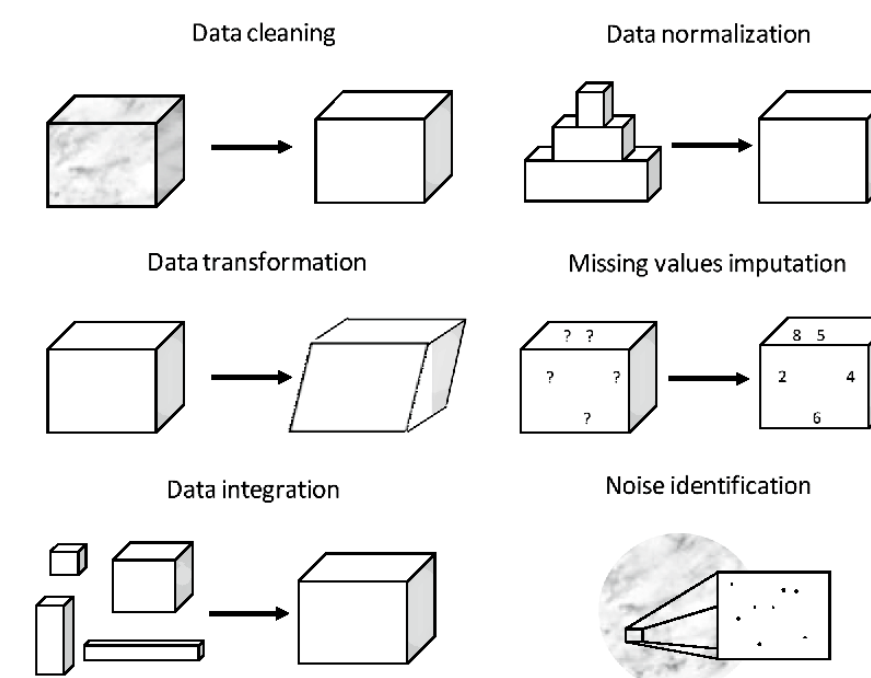
## How is it done?

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

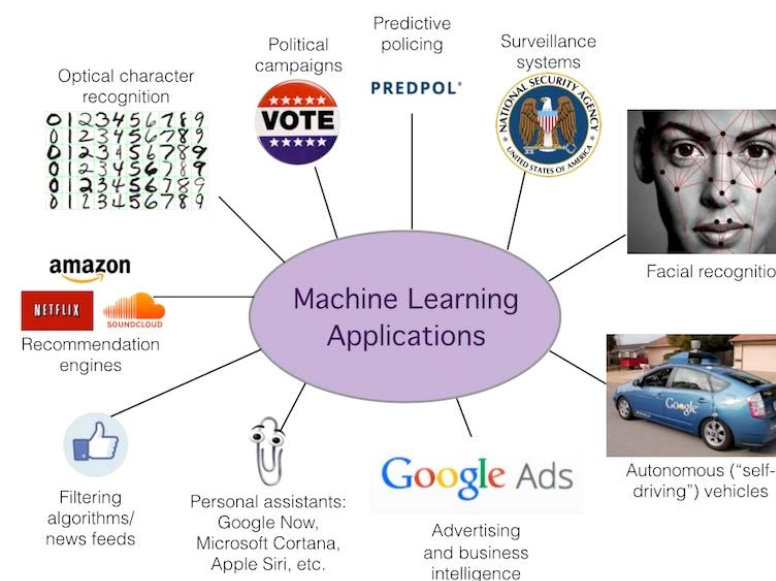


### Training & Validation

- 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



## 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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