



**kuala lumpur**

**school of ai**

**Machine Learning 101**

# AI , Machine Learning & Deep Learning

## AI

- A computer system able to perform tasks that normally require human intelligence
- Machine learning and Deep Learning included under umbrella of AI

## Machine Learning

- “field of study that gives computers the ability to learn without being explicitly programmed.” Machine-learning programs, in a sense, adjust themselves in response to the data they’re exposed to.

## Deep Learning

- Deep learning is a subset of machine learning. Usually, when people use the term deep learning, they are referring to deep artificial neural networks
- Deep is a technical term. It refers to the number of layers in a neural network.
- Deep artificial neural networks are a set of algorithms that have set new records in accuracy for many important problems, such as image recognition, sound recognition, recommender systems, etc.

# ARTIFICIAL INTELLIGENCE

Programs with the ability to learn and reason like humans

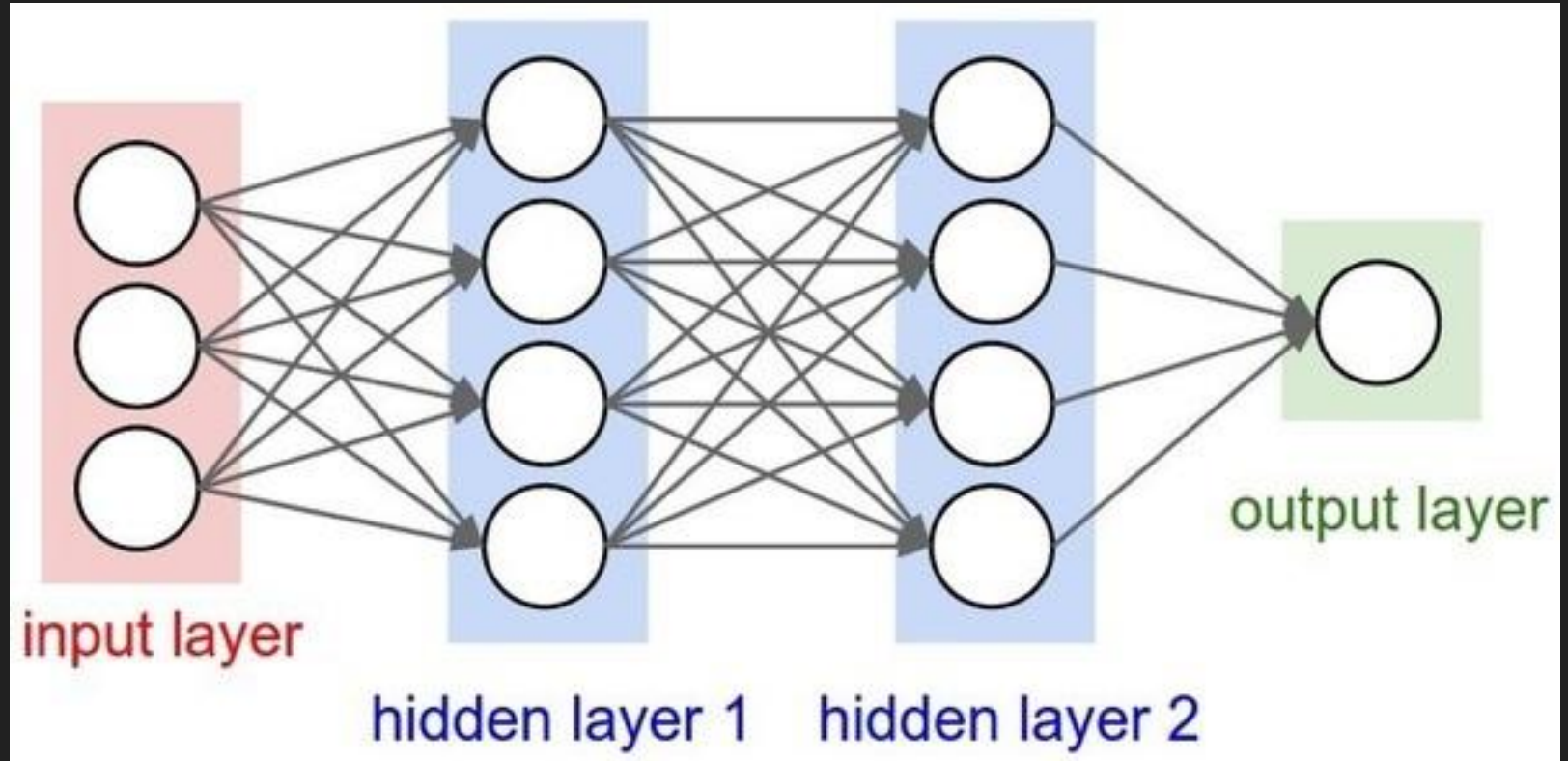
## MACHINE LEARNING

Algorithms with the ability to learn without being explicitly programmed

## DEEP LEARNING

Subset of machine learning in which artificial neural networks adapt and learn from vast amounts of data

# Neural Network



# Major Categories of Machine Learning

Supervised - Prediction based on labelled data

- Classification ( sentiment analysis)
- Regression ( stock prediction )

Unsupervised Machine Learning - Find similarities in unlabeled data

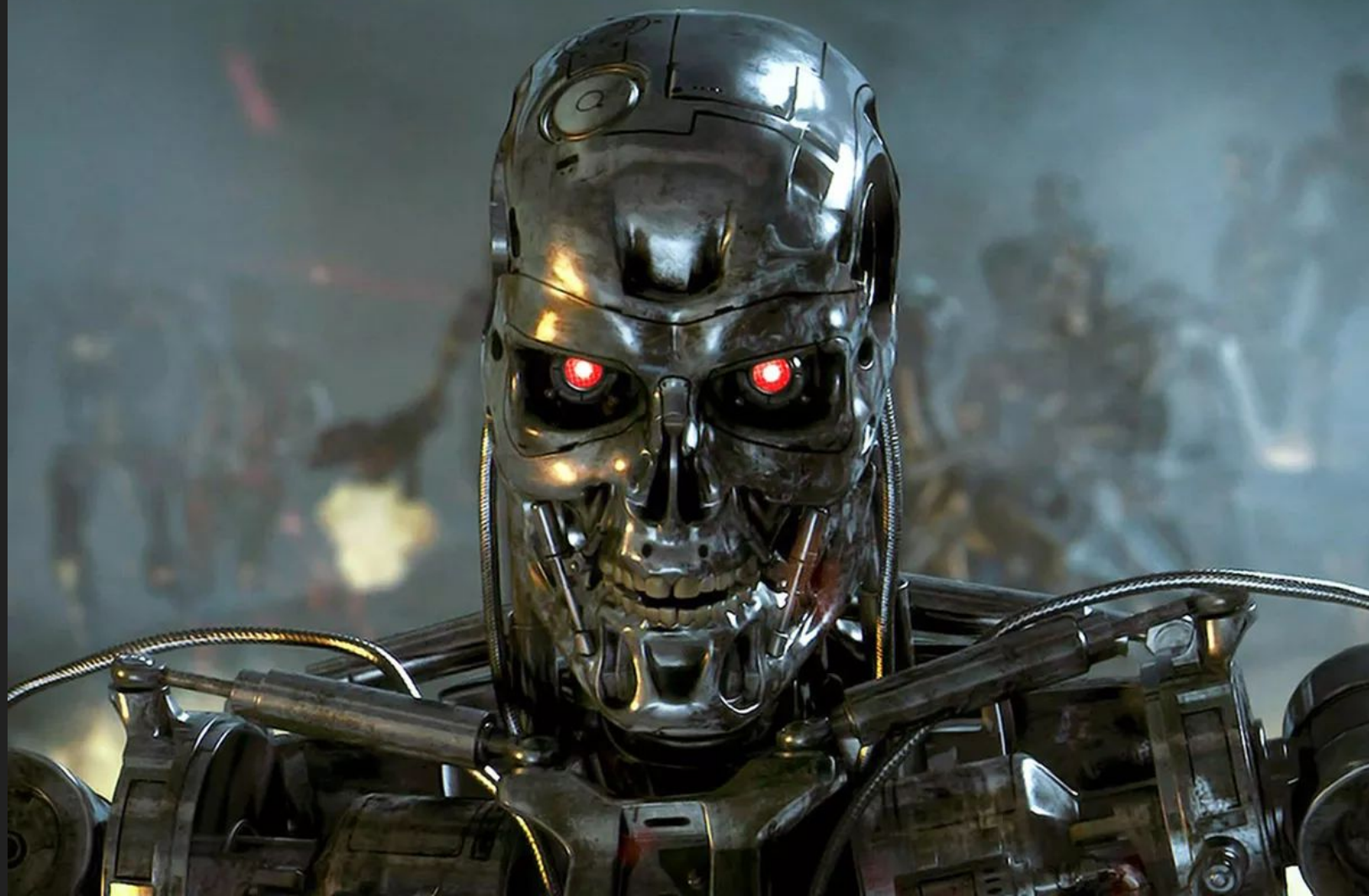
- Grouping of similar data (clustering)
- Outlier Detection

Reinforcement Learning

- Behavior changes based on rewards provided

# Where are we now?

In terms of AI ??





# Reinforcement Learning



**DeepMind's new AI just beat top human pro-gamers at Starcraft II for the first time**

# GANs



# GANs

<https://www.youtube.com/watch?v=PCBTZh41Ris>



# How do you build a Machine Learning Model

1. Collect data
2. Clean data
3. Label data
4. Choose Suitable algorithm
5. Train model
6. Test
7. Repeat ( until obtain satisfying accuracy )

# Example of a Machine Learning Algorithm

Naive Bayes Algorithm - Basically an algorithm used for statistics

$$p(C_k | \mathbf{x}) = \frac{p(C_k) p(\mathbf{x} | C_k)}{p(\mathbf{x})}$$

```
from textblob import TextBlob
```

```
testimonialpos = TextBlob("This movie was great would watch it again")  
testimonialpos.sentiment
```

```
Sentiment(polarity=0.8, subjectivity=0.75)
```

```
testimonialneg = TextBlob("This movie was terrible would not watch again")  
testimonialneg.sentiment
```

```
Sentiment(polarity=-1.0, subjectivity=1.0)
```

```
testimonialmly= TextBlob("Saya pergi ke rumah nenek semalam")  
testimonialmly.sentiment
```

```
Sentiment(polarity=0.0, subjectivity=0.0)
```

```
testimonialweird = TextBlob("aslknCowencdjskjbvwejjb")  
testimonialweird.sentiment
```

```
Sentiment(polarity=0.0, subjectivity=0.0)
```

# Machine Learning Tools

- Python / R



- Anaconda

- Jupyter notebook



- Scikit Learn





# Deep Learning Tools

- Google TensorFlow
- PyTorch
- Keras
- Caffe

# Resources

Cognitive Class - Free

<https://cognitiveclass.ai/>

Kaggle ( Dataset & Examples Source )

[www.kaggle.com](http://www.kaggle.com)

Rapid Experimentation

- Start Googling
- Test codes