

# Applied Data Science and Machine Learning Course

**Course Instructor**

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# Introduction to Machine Learning

# Machine Learning

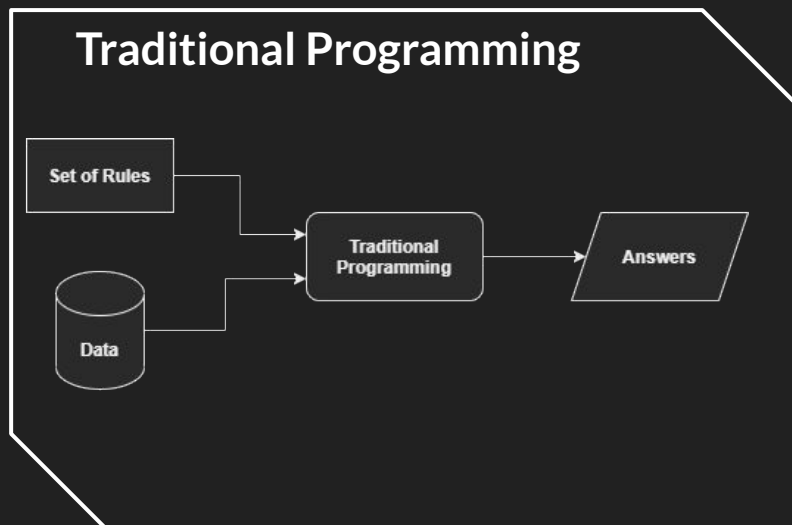
**According to Arthur Samuel, one of the pioneers of AI**

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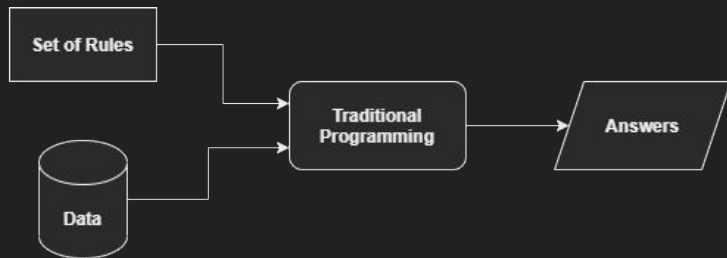


# Machine Learning

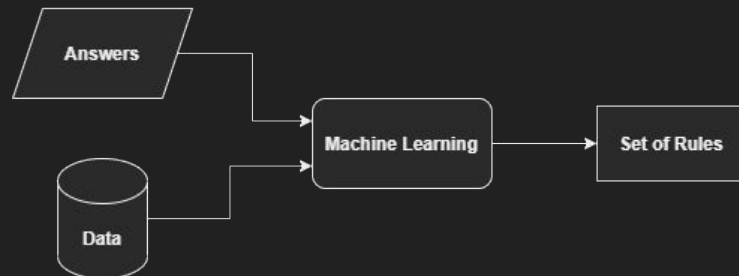
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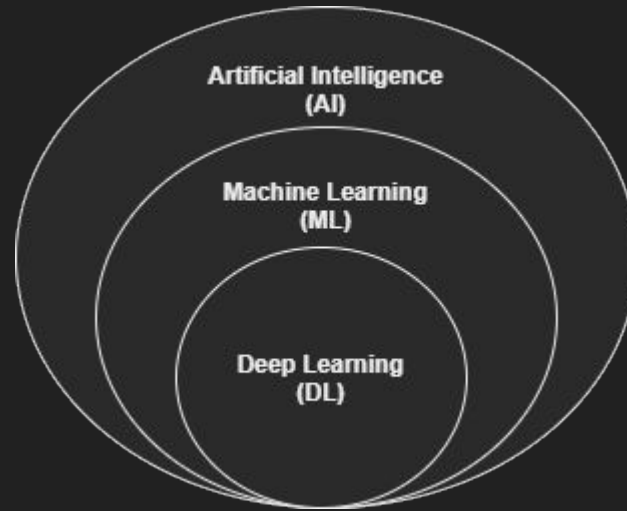
## Traditional Programming



## Machine Learning

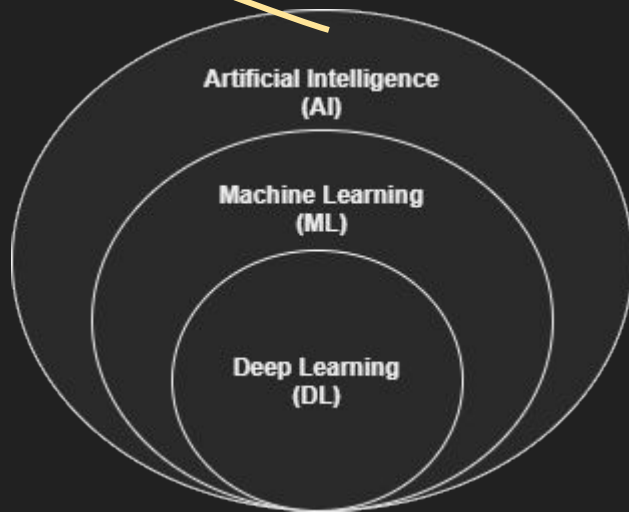


# AI vs ML vs DL



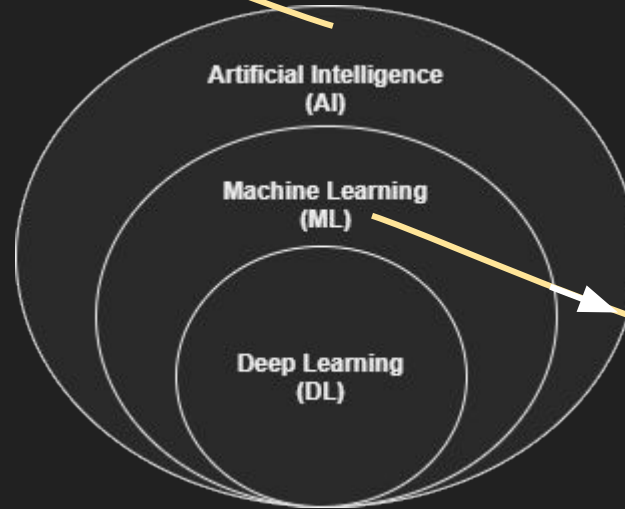
# AI vs ML vs DL

Programs with the  
ability to learn and  
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# AI vs ML vs DL

Programs with the ability to learn and reason like humans

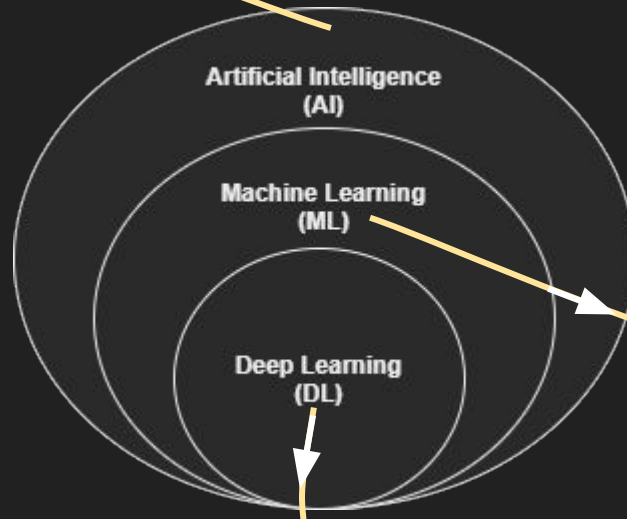


Algorithms with the ability to learn without being explicitly programmed



# AI vs ML vs DL

Programs with the ability to learn and reason like humans



Algorithms with the ability to learn without being explicitly programmed

Subset of ML in which Artificial Neural Networks adapt and learn from vast amounts of data

# The Origin

Arthur Samuel from IBM developed a computer program for playing checkers in the 1950s which started to beat good checkers players.

He first came up with the phrase “Machine Learning” in 1952.



Taken from Google Arts and Culture

# The Origin (cont.)

## Perceptron [1957]

Frank Rosenblatt combined Hebb's brain cell model with Samuel's ML efforts and created the perceptron.

## Nearest Neighbor Algorithm [1967]

The nearest neighbor algorithm was conceived, which was the beginning of basic pattern recognition.

## Multilayer Perceptron

There are many opinions about this. But multilayer perceptron with backpropagation was first popularized by Geoffrey Hinton.

# Types of ML Algorithms

- Supervised Learning
- Unsupervised Learning
- Semi-Supervised Learning
- Self-Supervised Learning (SSL)
- Reinforcement Learning (RL)
- Active Learning

# Supervised vs Unsupervised Learning

