

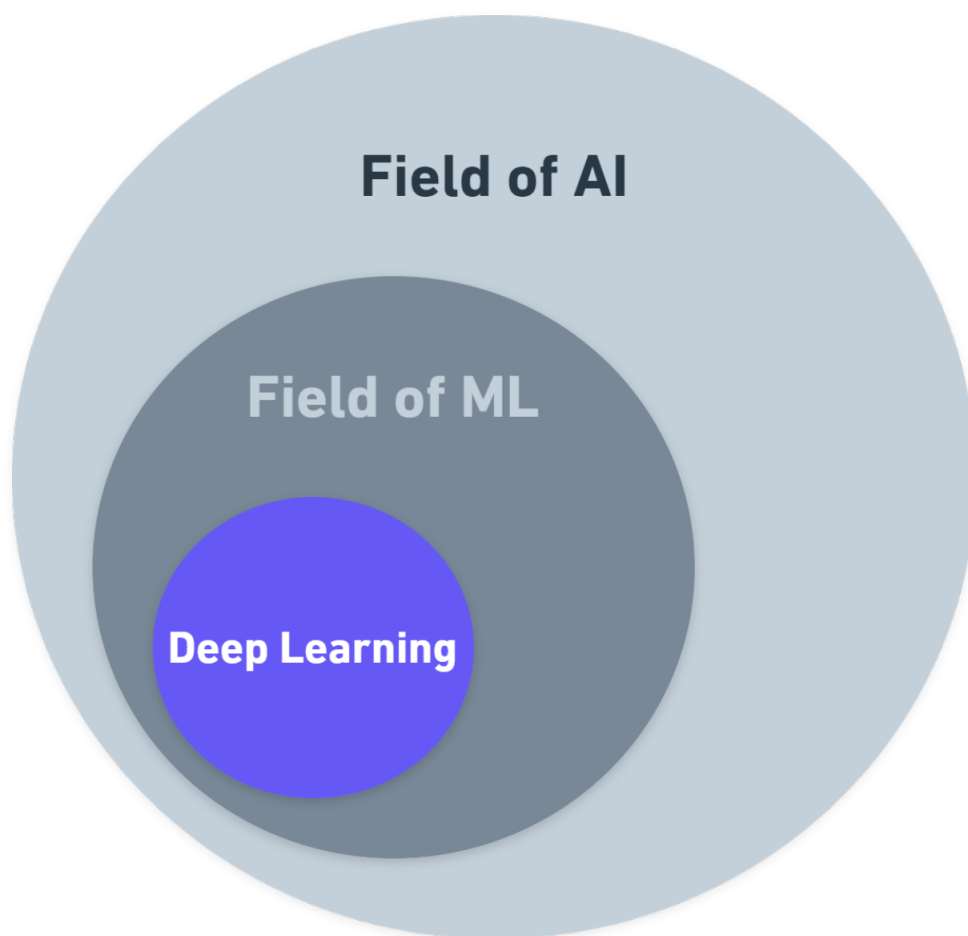
# Introduction to Deep learning

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## 1 Deep learning

### 1.1 Introduction

- To understand what deep learning is, we first need to understand the relationship deep learning has with machine learning, neural networks, and artificial intelligence. The best way to think of this relationship is to visualize them as concentric circles:



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- At the outer most ring you have artificial intelligence (using computers to reason). One layer inside of that is machine learning. With artificial neural networks and deep learning at the center.
- *Broadly speaking, deep learning is a more approachable name for an artificial neural network. The “deep” in deep learning refers to the depth of the network. An artificial neural network can be very shallow.*
- Neural networks are inspired by the structure of the cerebral cortex. At the basic level is the perceptron, the mathematical representation of a biological neuron. Like in the cerebral cortex, there can be several layers of interconnected perceptrons.
- Machine learning is considered a branch or approach of Artificial intelligence, whereas deep learning is a specialized type of machine learning.