Mathematics Basics

Mathematics and AI

HUAWEI

Objectives

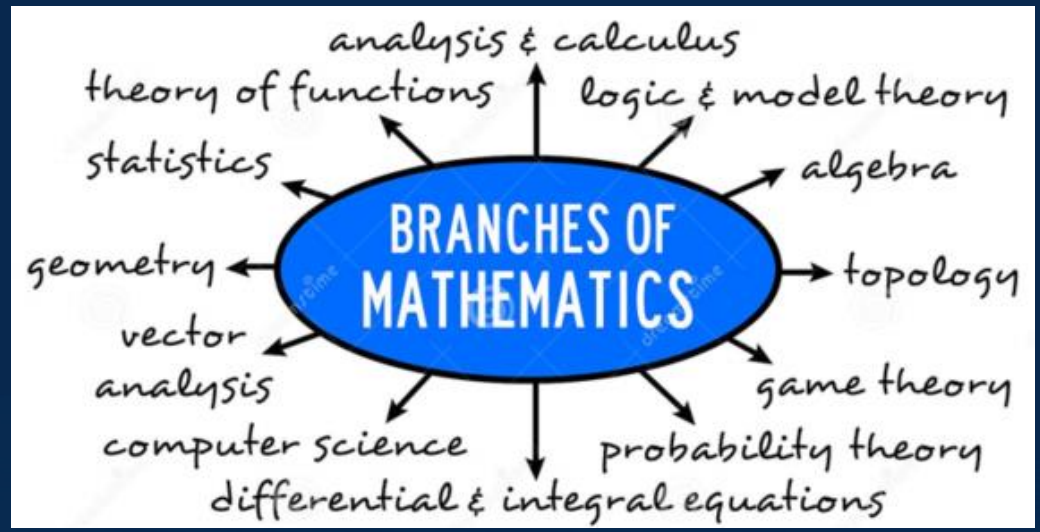
- After completing this course, you will be able to:
  - How we apply basic math in different AI directions.
  - Master the basic knowledge and application of Linear Algebra.
  - Master the basic knowledge and application of statistics and probability.
  - Master how we solve the optimization problems

Contents

- Mathematics and AI
  - Linear Algebra
  - Statistics and Probability
- Optimization Problems

Mathematics and AI

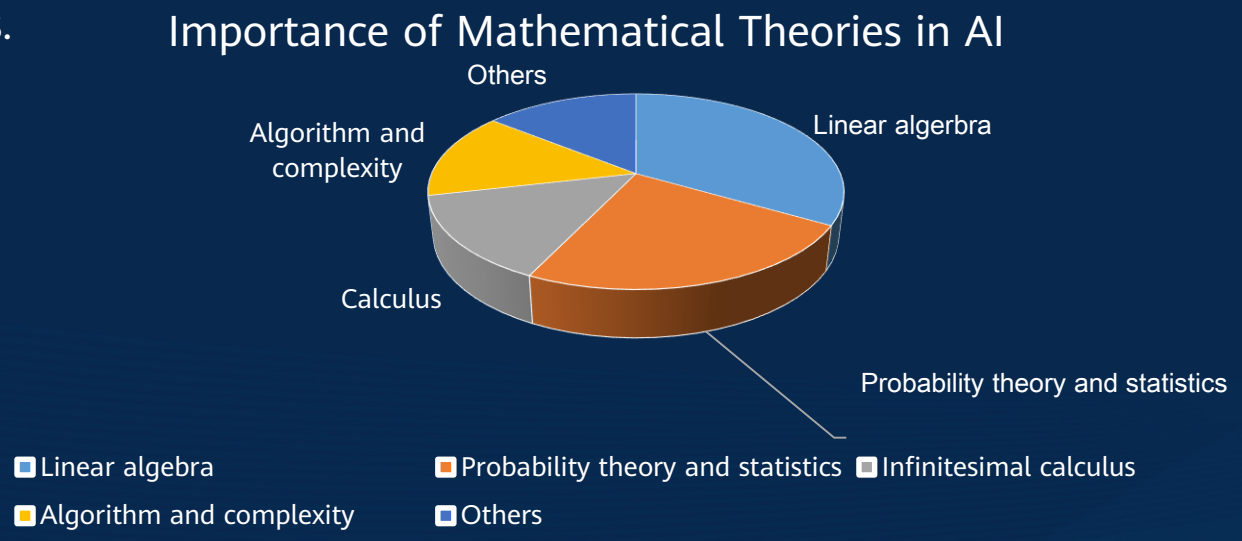
Artificial intelligence (AI) is a multidisciplinary study that can be applied in many fields. The mathematical knowledge required depends on the application fields. Linear algebra, statistics and probability, infinitesimal calculus are the foundation of AI. By learning these mathematics basics, engineers will be able to understand the underlying algorithm and develop new algorithms.



Dreamstime.com

Mathematics and AI

- Linear algebra is the core and essential theory for description of deep learning algorithms. These algorithms are usually described in matrix representation, a method that arranges to-be-processed unstructured data in the form of discrete matrices or vectors. For example, an image can be represented as arrays of orderly pixels. Voice data can be represented in the form of vectors. A neural network (NN) in essence can be seen as the combination of countless matrix operations and non-linear transformations.
- Probability theory and statistics are used to study the distribution and processing of data. Deep learning algorithms are designed for prediction, which involves uncertainty. Probability theory and statistics are the subjects focusing on probability.
- Calculus is the basis for mathematical analysis.



Thank you.

把数字世界带入每个人、每个家庭、
每个组织，构建万物互联的智能世界。

Bring digital to every person, home, and organization for a fully connected, intelligent world.

HUAWEI