

From Graph to Knowledge Graph - Algorithms and Applications

Modality: Self-Paced Learning

Duration: 25 Hours

SATV Value:

CLC:

NATU:

SUBSCRIPTION: Learn, Master

About this course:

Many real-world datasets come in the form of graphs. These datasets include social networks, biological networks, knowledge graphs, the World Wide Web, and many more. Having a comprehensive understanding of these networks is essential to truly understand many important applications.

This course introduces the fundamental concepts and tools used in modeling large-scale graphs and knowledge graphs. You will learn a spectrum of techniques used to build applications that use graphs and knowledge graphs. These techniques range from traditional data analysis and mining methods to the emerging deep learning and embedding approaches.

Course Objective:

- Explore large-scale networks with different structures and properties;
- Learn graph representations using advanced deep learning and embedding techniques;
- Utilize NLP fundamentals to build knowledge graphs;
- Use knowledge graphs in modern search applications;
- Model knowledge graphs using embedding methods.

Audience:

- Data Analysts
- Data Scientists

Prerequisite:

- Advanced math skills
- Basic programming skills
- Fundamental knowledge on machine learning and deep learning techniques
- Skills equivalent to the following course on big data analysis
 - DAT223.1x:Processing Big Data with Azure Data Lake Analytics

Course Outline:

1 - Introduction and Overview

- Course Outline and Overview
- Lectures - Introduction Graph
- Lectures - Introduction Knowledge Graph
- Knowledge Checks - Module 1
- Environment Setup

2 - Graph Properties and Applications

- Lectures - Graph Basics
- Lectures - Graph Applications
- Knowledge Checks - Module 2

3 - Graph Representation Learning

- Lectures - Embeddings and Graph Embeddings
- Knowledge Checks - Module 3
- Challenge Lab 1 on Graph

4 - Knowledge Graph (KG) - Fundamentals and Construction

- Lectures - KG Fundamentals
- Lectures - KG Construction
- Knowledge Checks - Module 4

5 - Knowledge Graph (KG) - Inference and Applications

- Lectures - KG Inference
- Lectures - KG Applications
- Knowledge Checks - Module 5
- Challenge Lab 2 on Knowledge Graph

Final

- Final Exam
- Closing