

From Graph to Knowledge Graph - Algorithms and Applications

Modality: On Demand

Duration: 25 Hours

About this course:

Many times, datasets are graph-like. Graphs are easy to define and can explain the relationship between entities clearly. These datasets can range from social and biological networks to knowledge-based graphs and the World Wide Web.

Complete knowledge of graphs is crucial to fully understand how different applications work.

This course starts with the basic concepts of graphs and then move onto the modeling of large-scale and complex graphs and knowledge-based graphs. Throughout the course, you will get to explore various techniques to program applications using both knowledge-based and complex graphs.

Concepts ranging from traditional analysis to data mining techniques and deep learning and embedding approaches are the main core topics for this course.

Course Objective:

After completing the course, students will be able to:

- Explore and discuss different data networks with varying structures and properties;
- Represent results with graphs, using the data from deep learning and different embedding techniques;
- Use NLP basics for graph representation;
- Implement knowledge graphs for building search-based applications;
- Use embedding methods to make knowledge graphs.

Audience:

The target audience for this course are:

- Data Analysts
- Data Scientists

Prerequisite:

Before enrolling for the course, students must have a basic concept of the following:

- Add-math
- Beginner level programming
- Basics of Machine Learning
- Certificate of the following Big Data course or equivalent skills

- 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