

DATE: 23/02/2022

Event Coordinators:

1. Chhaya Narvekar
2. Sushama Khanvilkar

Date & Place:

Online using Google Meet

23rd February 2022

Xavier Institute of
Engineering

Department:

Information Technology
& Computer Engineering

No of participant:

80

An online guest lecture was organized for T.E. (IT) and T.E.(COMP) on the topic “*Semantic Technologies - Knowledge Graph and Ontology*” and it was delivered by Dr. Ujwala H. Bharambe PhD (IITB) who works as an **Assistant Professor Thadomal Shahani Engineering College, Mumbai.**

The guest lecture was conducted using Google meet on 23rd February 2022 and was organized by Ms. Chhaya Narvekar from I.T Department and Ms. Sushama Khanvilkar from Computer Department.

Total 76 students attended the guest lecture and the objective of the guest lecture was to provide an insight to the third year students about the semantic technologies used in Artificial Intelligence in the form of Knowledge Graph and Ontology. Similarly, the speaker elaborated on how these technologies are applicable in the different domains in real time and explained the concept very well with analogies.

The speaker shared her views on ‘artificial intelligence concepts related to knowledge representation, ontology and knowledge graph, recent applications.

The students were quite astonished at the way graph data structures used for knowledge representation in Artificial Intelligence. Overall, the session was very informative, interesting and motivating for students to explore knowledge representation and ontology in Artificial Intelligence.

Student Feedback and Benefits: The students found the session very informative, useful and excellent. It was a knowledge gaining session about knowledge representation using graph data structure.

Ms. Chhaya Narvekar
Assistant Professor
I.T Dept.

Ms. Sushama Khanvilkar
Assistant Professor
COMP Dept.

Dr. Y. D. Venkatesh
Principal

Images of the guest lecture

Today's Agenda

- Knowledge Representation
- Ontology
- Knowledge Graph

What is Artificial Intelligence ?

- Traditional programming approach and AI approach

Facets of Knowledge

- Declarative Knowledge:**
 - Declarative knowledge is to know about something.
 - It includes **concepts, facts, and objects**.
- Procedural Knowledge:**
 - Procedural knowledge is a type of knowledge which is responsible for knowing how to do something.

Ontology Component

Ontology Languages

- A formal language used to encode an ontology
- Formal language based on a logic paradigm that can represent concepts and the constraints between them. Reasoning capabilities of the language depend on the paradigm in which the language is based on.

Comparison

RDF	Relational Database	XML
Flexible - can store any connections between nodes	Data structured into pre-defined tables	Structure depends on XML language or tree structure
Data connected into a graph	Relations form sets or tables	Most naturally maps to a Hierarchical or tree structure
URIs to name things	Naming of columns is local	XML namespaces make similar use of URIs
Enables data to be combined	No natural link to web, but frequently used to store data behind websites	Closely linked to web languages
Use of web technology	SPARQL query language	Xpath/Xquery/XSLT to extract information
Comparatively new. Software and tools are still developing	Established for 30 years plus. Many mature scalable tools available	Mature technology with many tools
Some RDF stores use a relational database to store the triples	There are tools to expose data from a RDBMS as RDF	RDF can be expressed in XML, accessible XML documents with RDF metadata

Ontology and knowledge graph

- Ontologies represent the **backbone of the formal semantics** of a knowledge graph.
- A user could be another human being or a software application that wants to **interpret the data in a reliable and precise way**.
- Ontologies ensure a **shared** understanding of the data and its meanings.

Knowledge Graph