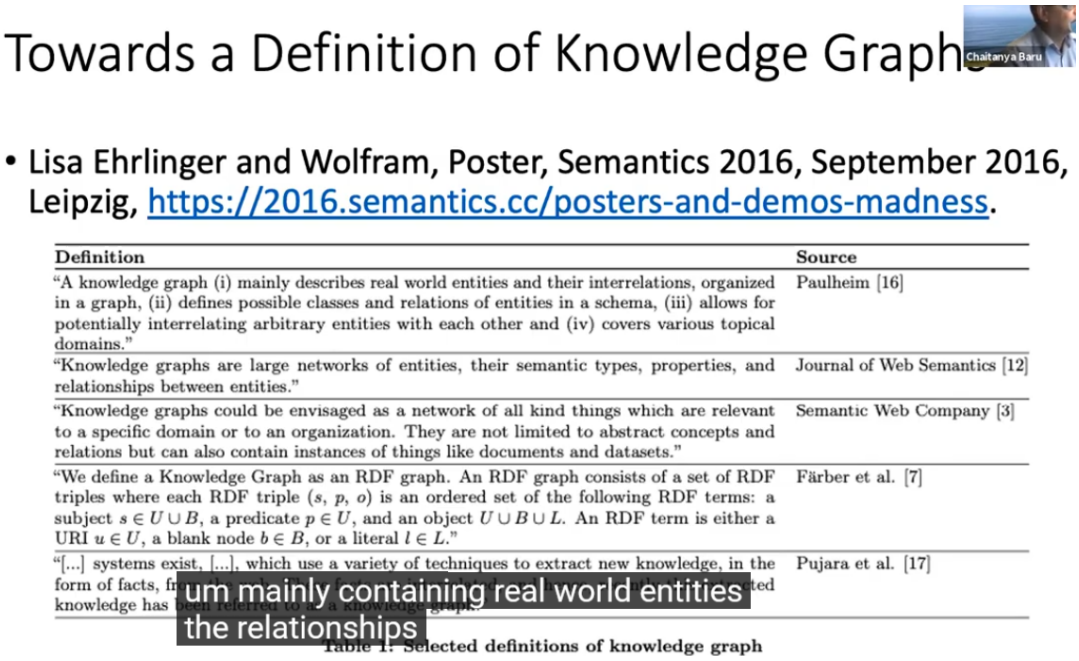
W1. Check List — Junyi

- What is a knowledge graph and components
  - A directed labeled graph in which the labels have well-defined meanings



  - Nodes
  - Edges
    - A pair of nodes + relationship
  - Labels
    - The meaning of relations
    - Needs documented explanations
- Knowledge graph and AI and semantic networks
  - A representation of AI
  - Semantic network is the earliest version KG
  - a Knowledge Graph is a variant of semantic network with added constraints whose scope, structure, characteristics and even uses are not fully realized and in the process of development.

▼ how to capture knowledge into the chosen representation in an economically scalable manner.

    ▼ Early approaches relied on knowledge engineering. Efforts to automate portions of knowledge engineering led to techniques such as inductive learning, and the current generation of machine learning

▼ KG and ML

    ▼ target output representation for natural language processing and computer vision algorithms → extraction

    ▼ As input: graph embedding

        ▼ represent each node in a knowledge graph by a vector, so that the similarity between the nodes can be calculated as a difference between their corresponding vectors. The vectors for each node are also referred to as graph embeddings

        ▼ To calculate knowledge graph embeddings, we define a method for encoding each node in the graph into a vector, a function to calculate similarity between the nodes, and then optimize the encoding function

        ▼ the simplest approach is to add the vectors for each of nodes in the graph and obtain a vector representing the whole graph