

# Lecture 1 – Knowledge Representation with Graphs

## Hands-On 1.1 Creating a Knowledge Graph from Natural Language Text

FIZ Karlsruhe – Leibniz Institute for Information Infrastructure

## Autumn 2023

**FIZ Karlsruhe**

Leibniz-Institut für Informationsinfrastruktur

# Creating a Knowledge Graph from Natural Language Text

# Creating a Knowledge Graph from Natural Language Text (as intuitive humans)

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**Natural language encodes semantics implicitly.**

Example:

Pulp Fiction was released in 1994. The film is in the genre of neo-noir. It plays in the city of Los Angeles and was directed by Quentin Tarantino. The actor John Travolta played the fictional character of Vincent Vega in the film.

# Creating a Knowledge Graph from Natural Language Text (as intuitive humans)

How can we make this implicit knowledge explicit?

## A Knowledge Graph

- mainly describes **real world entities and their interrelations**, organized in a graph,
- defines possible **classes** and **relations** of entities in a schema,
- allows for potentially **interrelating arbitrary entities** with each other and
- covers various topical **domains**.

## **How can we extract a Knowledge Graph from a simple text (as humans)?**

Pulp Fiction was released in 1994. The film is in the genre of neo-noir. It plays in the city of Los Angeles and was directed by Quentin Tarantino. The actor John Travolta played the fictional character of Vincent Vega in the film.

# **1) Let's make the text better digestible and break it down.**

Pulp Fiction was released in 1994.

The film is in the genre of neo-noir.

It plays in the city of Los Angeles and was directed by Quentin Tarantino.

The actor John Travolta played the fictional character of Vincent Vega in the film.

2) What are important concepts in the text?

Pulp Fiction was released in 1994.

Pulp Fiction	1994
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The film is in the genre of neo-noir.

Film	Genre	Neo-Noir
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It plays in the city of Los Angeles and was directed by Quentin Tarantino.

City	Los Angeles	Quentin Tarantino
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The actor John Travolta played the fictional character of Vincent Vega in the film.

Actor	John Travolta
Fictional Character	Vincent Vega



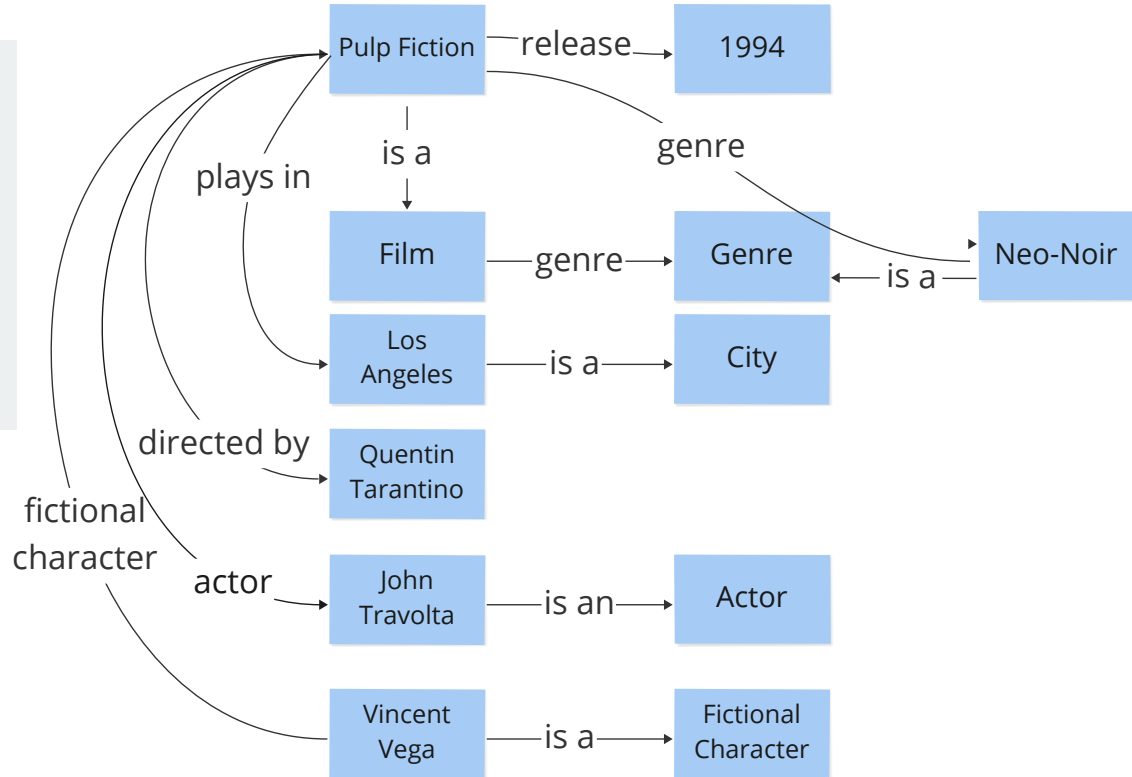
### 3) What relations are given in the text?

Pulp Fiction was released in 1994.

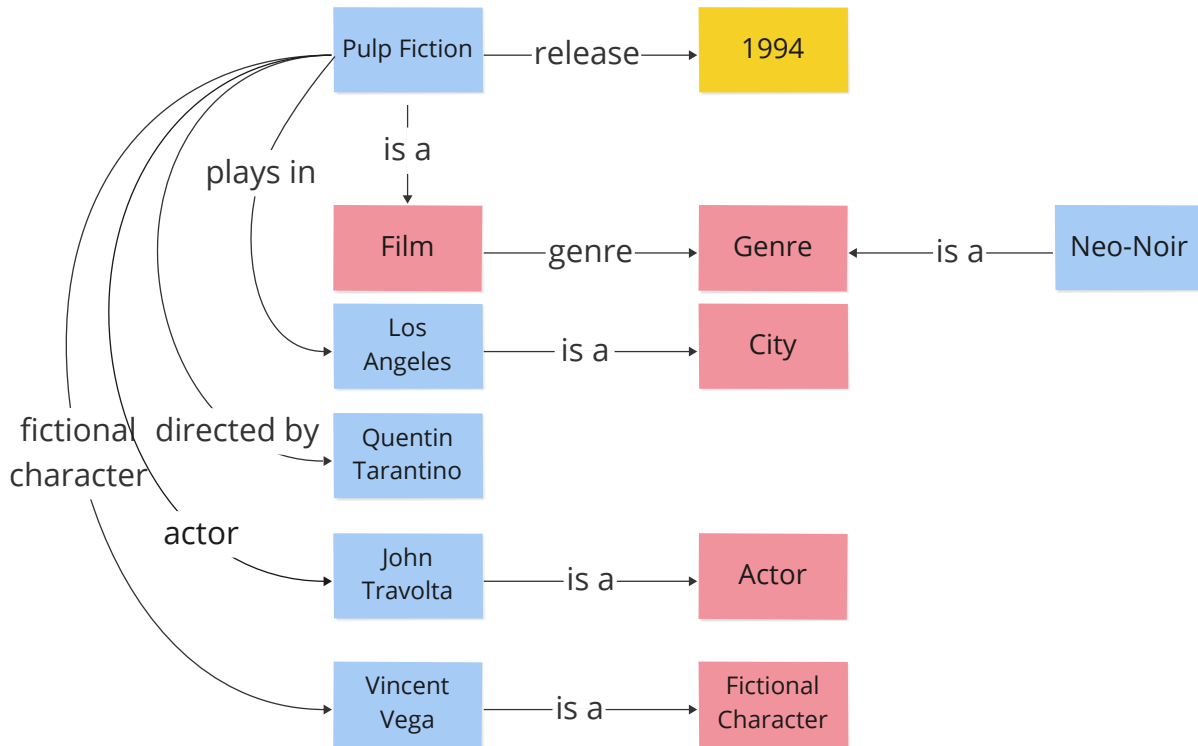
The film is in the genre of neo-noir.

It plays in the city of Los Angeles  
and was directed by Quentin Tarantino.

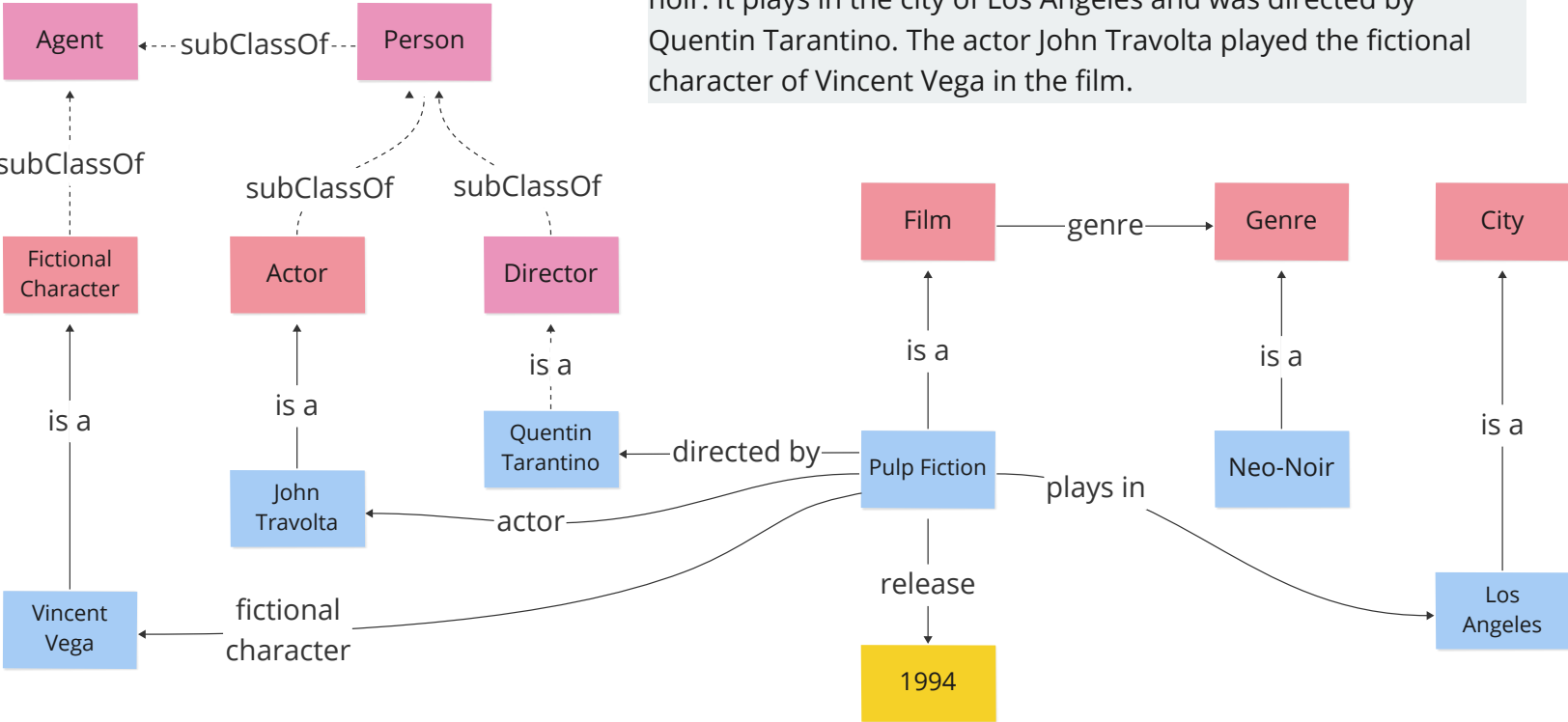
The actor John Travolta  
played the fictional character of Vincent Vega  
in the film.



#### 4) What are possible instances classes and literals



5) What knowledge can we further deduce?



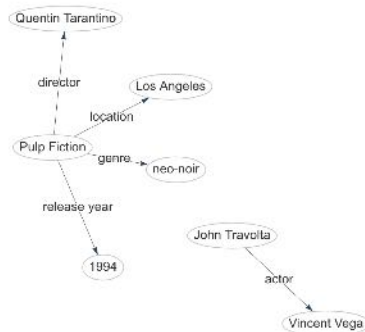
**How would Graph-GPT do it?**

Pulp Fiction was released in 1994. The neo-noir film plays in the city of Los Angeles and v

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Generate

Clear



Pro tip: don't take a screenshot! You can right-click and save the graph as a .png 🖨️

<https://github.com/varunshenoy/GraphGPT>



Thank you very much  
for your Attention!

## Knowledge Graphs - Lecture 1 – Knowledge Representation with Graphs

### Hands-On 1.1

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Autumn 2023