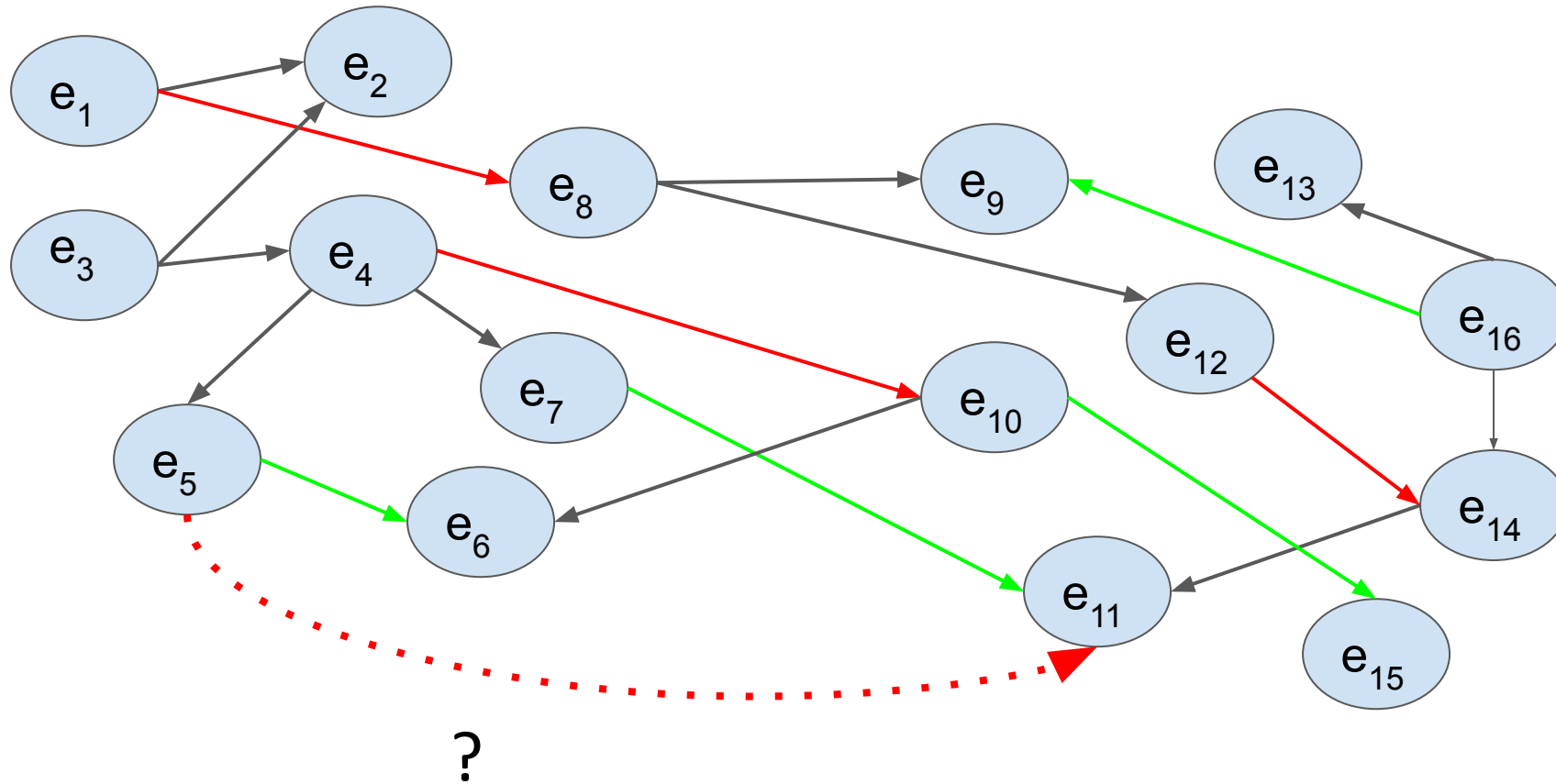


# Semantic Entity Enrichment by Leveraging Multilingual Descriptions for Link Prediction (Position Paper)

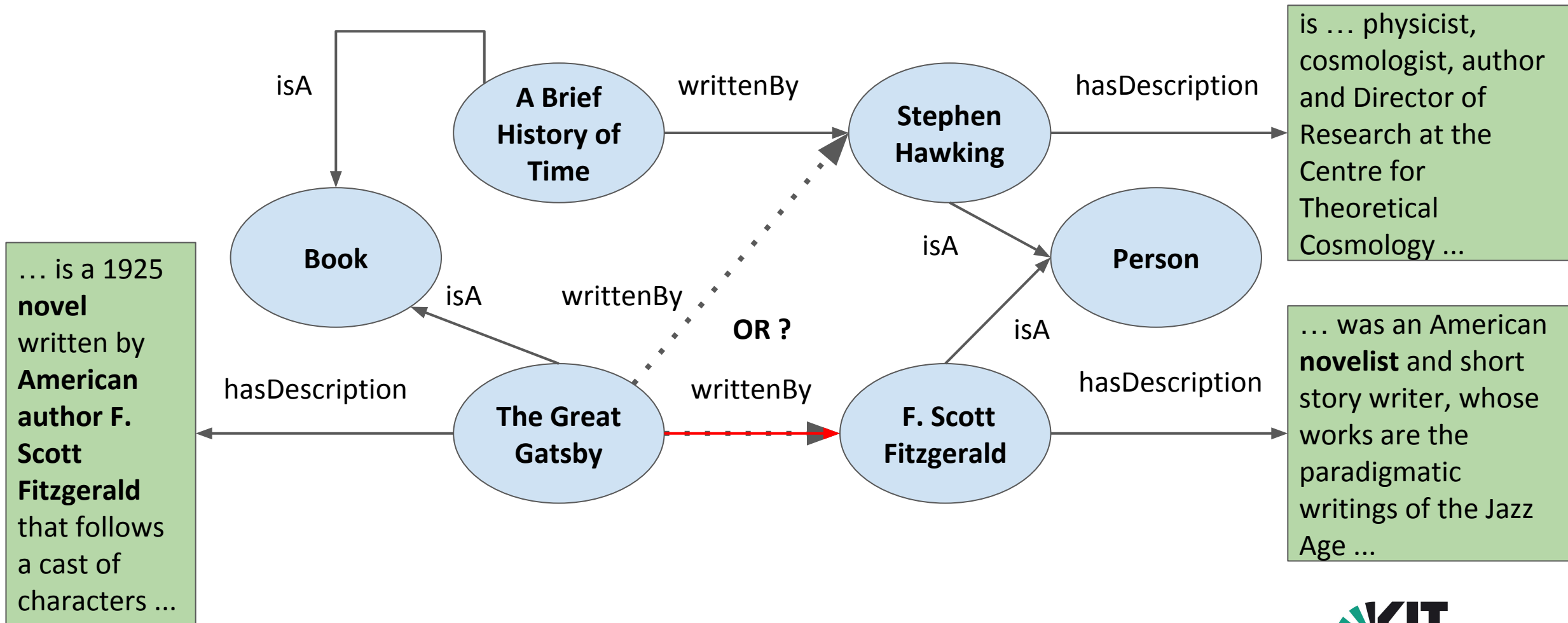
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# What is Link Prediction (LP) ?



# Why Entity Descriptions for LP ?



# Why Multilingual Entity Descriptions for LP?

**Samuel Zachary Arkoff** (12 June 1918 – 16 September 2001) was an American producer of B movies.<sup>[1]</sup>

**Samuel Z. Arkoff** est un producteur américain né le 12 juin 1918 à Fort Dodge, Iowa, et décédé le 16 septembre 2001 à Burbank, Californie.

Il fonde en 1956, avec **James H. Nicholson**, la société de production American International Pictures (AIP).

Il est un des spécialistes de la série B (produisant par exemple Roger Corman), ce qui ne l'a pas empêché de produire des cinéastes comme Martin Scorsese ou Brian De Palma.

**Samuel Z. Arkoff** is an American producer born on June 12 , 1918in Fort Dodge , Iowa , and died September 16 , 2001in Burbank , California .

He founded in 1956 , with **James H. Nicholson** , the production company American International Pictures (AIP).

He is one of the specialists in the B series (producing for example Roger Corman ), which did not prevent him from producing filmmakers like Martin Scorsese or Brian De Palma .

From **French** to **English**  
using  
Google Translate

# Related Work

- DKRL [1] and MKBE [2]
  - use CNN to encode entity descriptions.
- Jointly [3]
  - uses LSTM to encode entity descriptions.
- SSP [4]
  - adopts a topic model to generate a representation for an entity based on its description.
- LiteralE [5]
  - represents entity descriptions using a document embedding technique.

## Problem:

➔ **None of these models utilize multilingual entity descriptions!**

# Problem Statement

How to combine **complementary** or **additional information** present in entity descriptions provided in **multiple natural languages** for the task of LP?

# Potential Solutions

## 1. Applying Language Translators

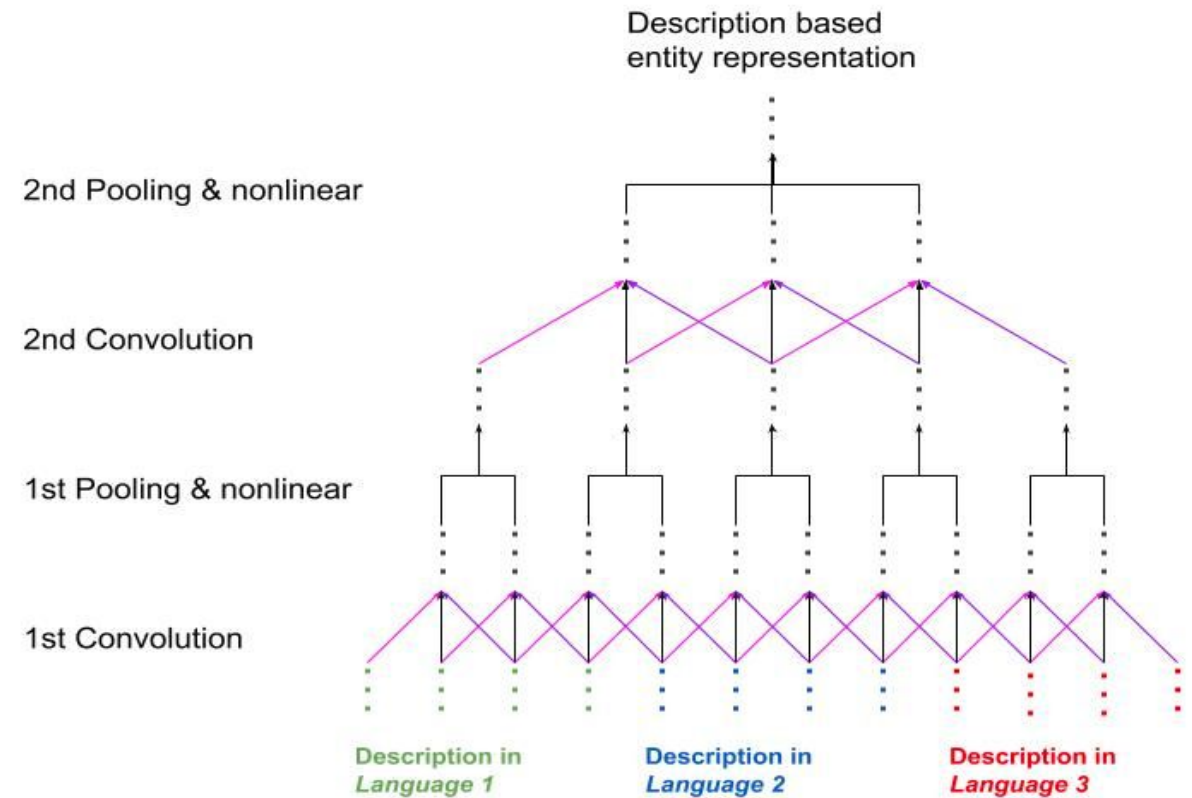
- A straightforward way to incorporate multilingual entity descriptions in the existing neural network encoder based KGE models, such as **DKRL**, **MKBE**, and **Jointly**.
- First, all the descriptions must be converted into one language (English).
- Then, the pre-trained embeddings of the words present in the descriptions would be passed as inputs to the encoder.

### Main challenge:

**→ The errors that occur during machine translation will be propagated to the encoder.**

# Potential Solutions

- Using Multilingual Word Embeddings (Inspired By **KDCoE** [6])
  - KDCoE leverages a weakly aligned multilingual KG for entity alignment task using descriptions of entities.
  - Attentive Gated Recurrent Unit encoder (AGRU) is used, in KDCoE, to encode multilingual descriptions with multilingual word embeddings as inputs.



A CNN encoder adopted from DKRL [1]



# Future Work

- Conducting detailed analysis on the nature and quality of the multilingual entity descriptions available in different KGs such as DBpedia and Wikidata.
- Evaluating the proposed potential solutions on different datasets.
- Adopting the solutions for other tasks such as triple classification and entity classification.



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