Call for Masters Thesis

FIZ Karlsruhe
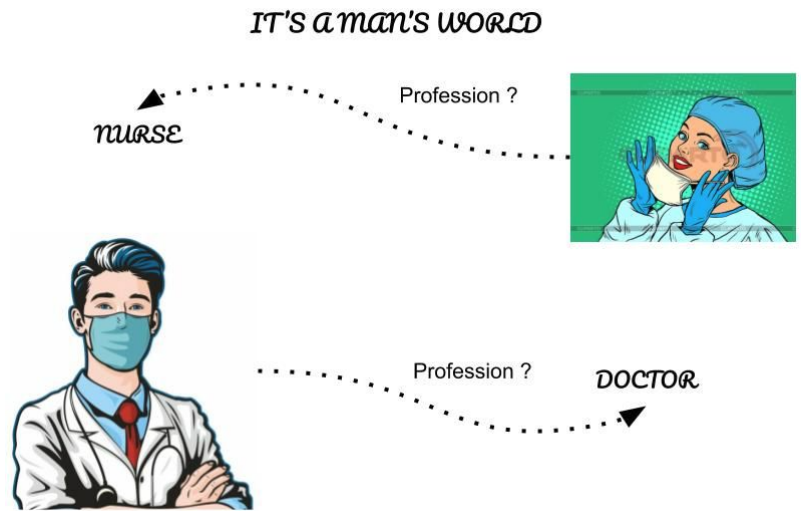Leibniz Institute for Information Infrastructure

Is Wikidata Socially Biased?

Many real world Knowledge Graphs (KGs) such as Wikidata are susceptible to having unbalanced distributions of people of different genders, ethnicities, religions, and nationalities [1]. Biases due to such unbalanced distributions are then propagated to the Deep Learning models making use of KGs such as embeddings (KGEs) that are trained on those KGs. A very recent study [1] has demonstrated that due to such unequal distribution in Wikidata, biases related to **professions** are seen in KGEs.

IT'S a man's WORLD

NURSE — Profession ?

Profession ? — *DOCTOR*

These biases when encoded in KGEs are harmful to downstream tasks such as machine translation that use such KGEs. The study [1] measures biases in Wikidata and Freebase KGs considering one relation (gender, ethnicity, religion, or nationality) at a time. As an example, in terms of gender bias, men are more likely to be bankers and women more likely to be homekeepers.

In this thesis, differently from [1], the emphasis would be on combining the different relations and measuring their effect on creating biases related to profession. For instance, answering questions such as: what are the most likely professions of people who are
- male and from Germany?
- female and from USA?

This thesis will be supervised by **Prof. Dr. Harald Sack, Genet Asefa Gesese, and Dr. Mehwish Alam, Information Service Engineering at Institute AIFB, KIT, in collaboration with FIZ Karlsruhe**.

[1] https://arxiv.org/abs/1912.02761

Which prerequisites should you have?

- Very Good programming skills in Python
- Interest in Machine/Deep Learning technologies

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