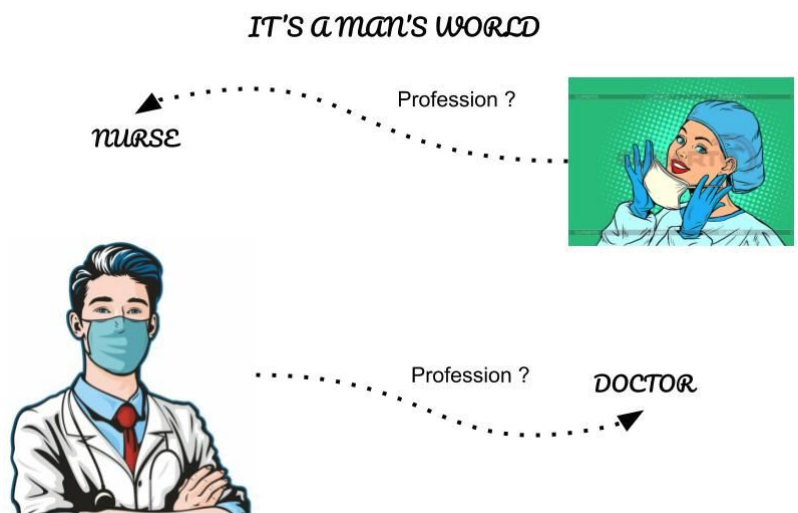


Is Wikidata Socially Biased?

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.



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

Contact person:
Dr. Genet Asefa Gesese
genet-asefa.gesese@partner.kit.edu
genet-asefa.gesese@fiz-karlsruhe.de