When do ranking algorithms reinforce inequalities in social networks? (work in progress)

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MOTIVATION

Everyday we connect with friends, collaborate with colleagues, and cite other researchers. All these interactions are leveraged by certain systems to **recommend** us **new connections**!

These recommendations are based on **ranking algorithms** such as *Who-to-follow* and *PageRank*.

Who-to-follow

PageRank

Unfortunately, such algorithms tend to increase the popularity of users that **are already popular**, and that can lead to **loss of opportunities** for certain groups of people (e.g., minorities).

CAN WE REDUCE RANKING INEQUALITIES WITHOUT ALGORITHMIC INTERVENTIONS?
Yes, by connecting with people strategically!

METHODS

- **Different types of social networks:**
  We propose a network model that generates *scale-free directed* networks with tunable *homophily, group size* *(fraction of minorities)*, and *edge density*.

- **Vertical inequalities (individual level):**
  We quantify the skewness of the rank distribution using Gini coefficients.

- **Horizontal inequalities (group level):**
  We quantify the fraction of minorities that appear in the top of the rank, *(see example)*.

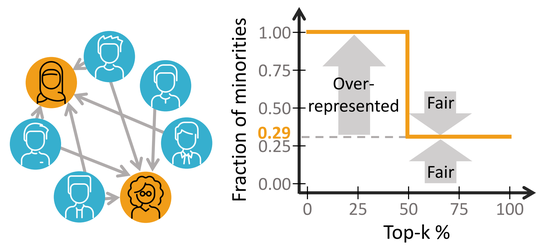
Minorities are not always under-represented. They **are just not well connected!**

Click or **take a picture** to **see more details.**

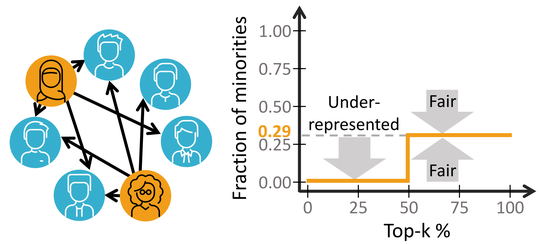
EXAMPLE:
minorities 0.29 | majorities 0.71

FRACTION OF MINORITIES IN THE TOP OF THE RANK (PageRank)

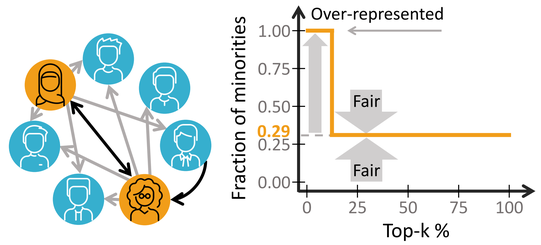
a) Only majorities follow minorities



b) Only minorities follow majorities



c) Minorities follow majorities, and minorities follow each other, and one majority follows one minority



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