Countering Bias in Personalized Rankings : From Data Engineering to Algorithm Development

Team Details-

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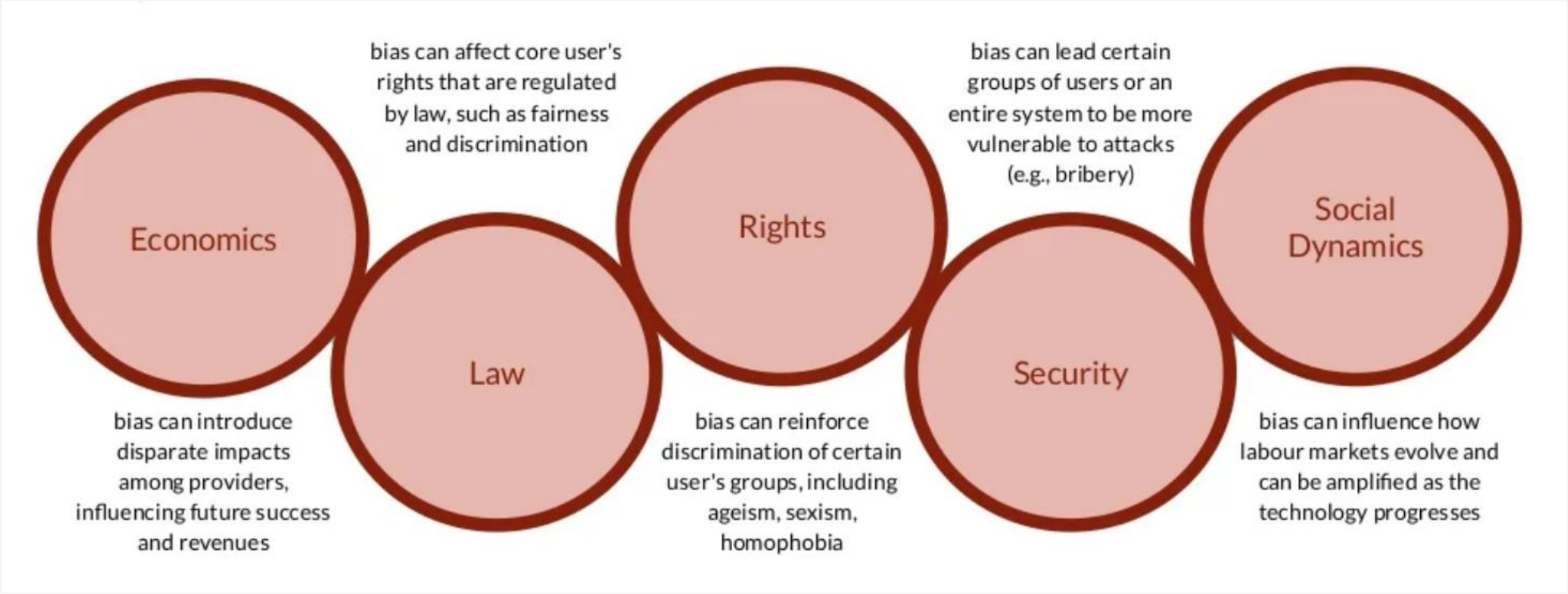
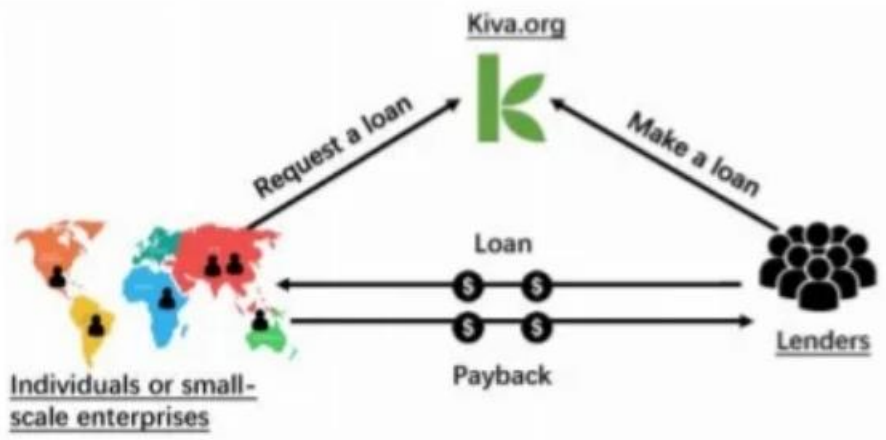
Perspectives impacted by bias



How Biases can influence **economy**

- Loan recommender systems are designed to assist **lenders** in looking for promising **borrowers**
- Such systems model lenders' historical behaviors and generate **personalized recommendations**
- Certain **geographical regions** such as Asia and Africa **dominate recommendation**
- Others like Oceania and Eastern Europe **barely receive** recommendations



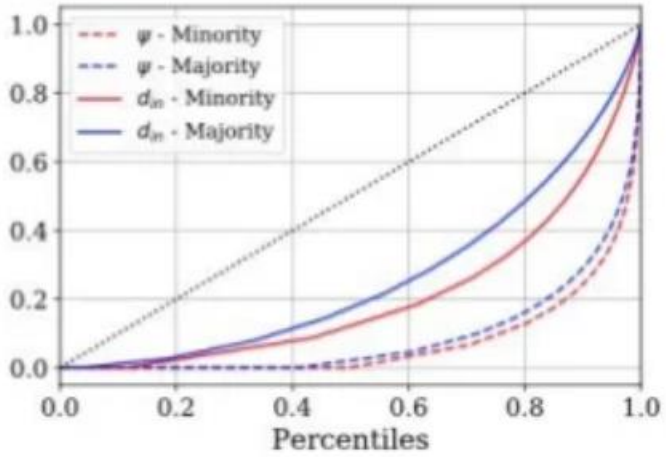
Biases that Impact on **LAW**

The right to non-discrimination, which can be undermined by inherent biases, is embedded in the normative framework of the **European Union**, e.g.:

- Mentions can be found in Art. 21 of the EU Charter of Fundamental Rights
- Article 14 of the European Convention on Human Rights
- Articles 18-25 of the Treaty on the Functioning of the European Union

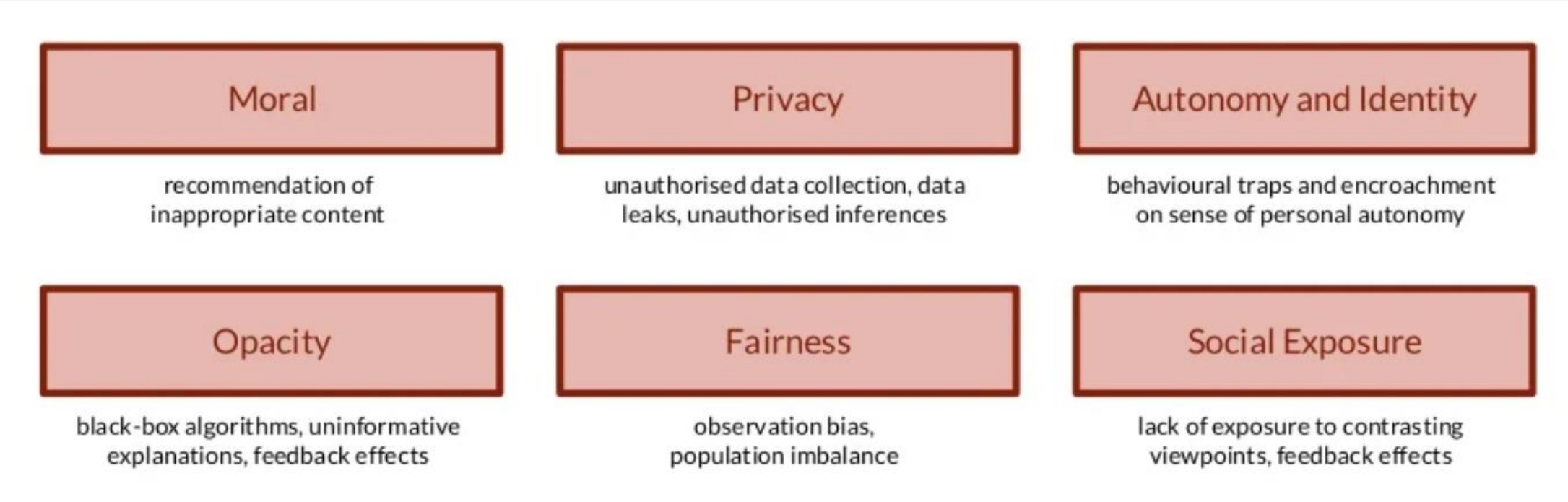
Biases associated with **social dynamics**

- **People recommendation** in social networks, with users divided into groups based on gender
- A range of **state-of-the-art algorithms**, such as Adamic-Adar, SALSA, and ALS are inspected
- People recommenders produce disparate visibility on the two subgroups of gender
- **Homophily** plays a key role in **promoting or reducing** visibility for different subgroups

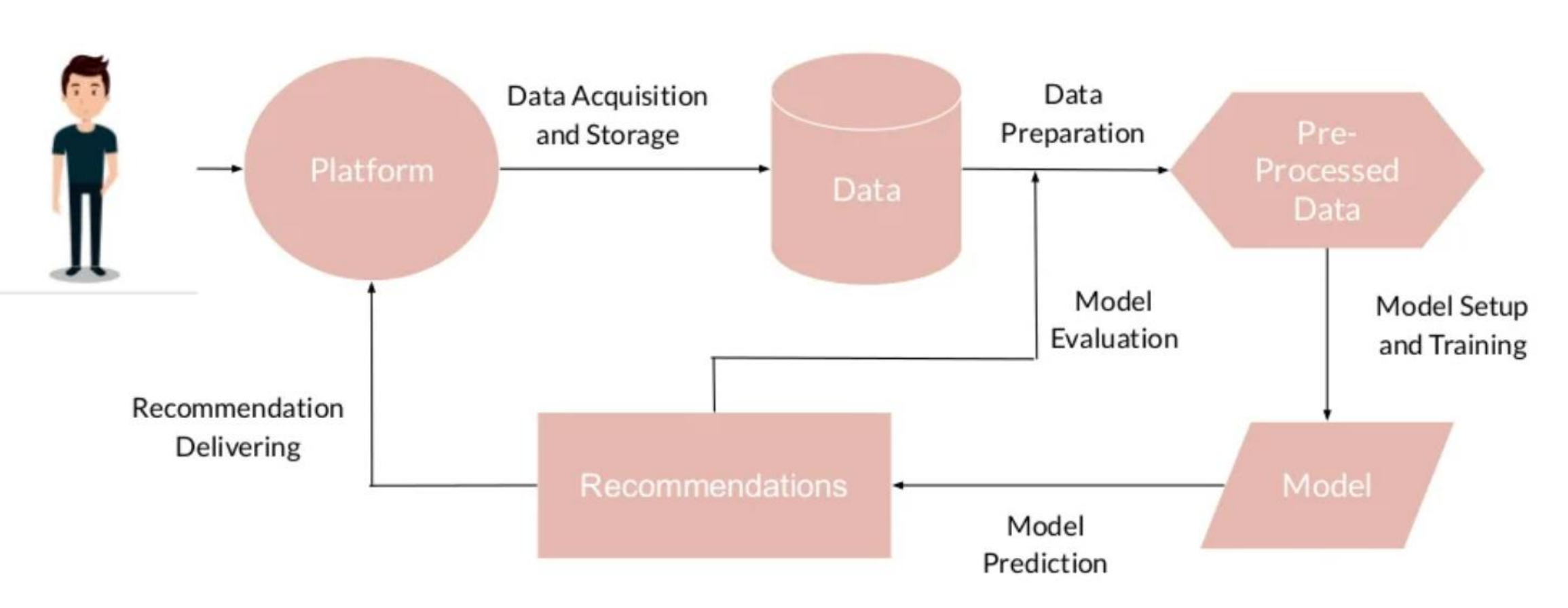


Lorenz Curves (inequality). Recommendations introduce more inequality than degree distribution, and this inequality is stronger in the minority class.

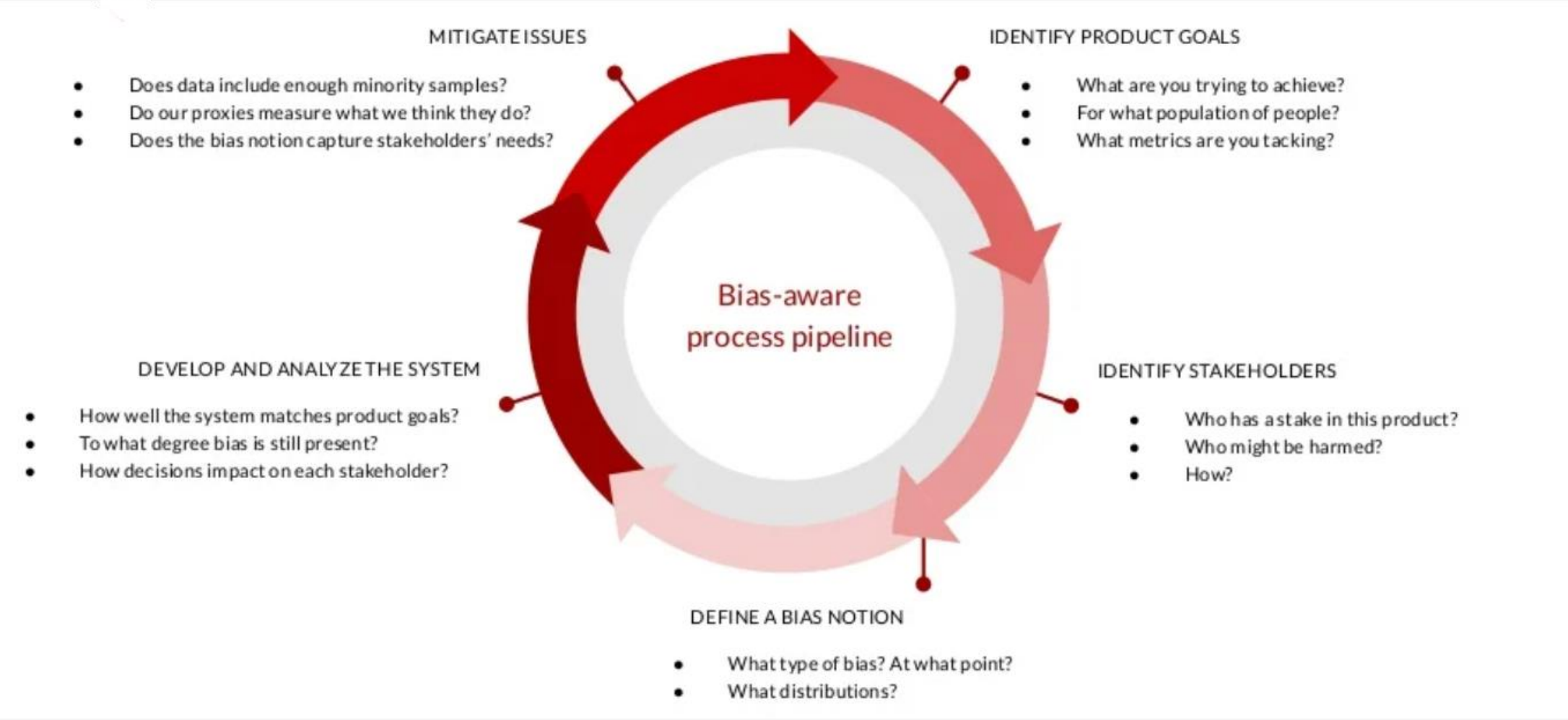
Ethical aspects influenced by Biases



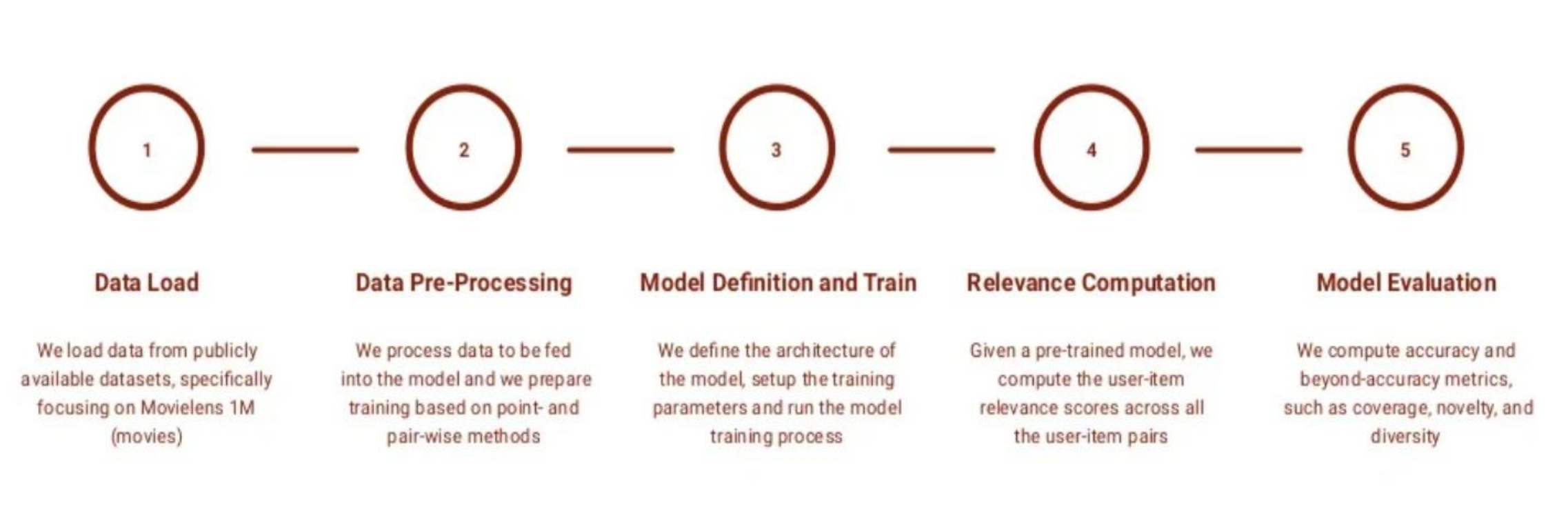
Recommendation pipeline



Bias-aware process pipeline



Steps of this Hands-on



Code are added in Git-hub Repo: https://github.com/bkkinfo/Countering-Bias-in-Personalized-Rankings

Thank You!