Master
Spezifikation von Fairness-Anforderungen
Supporting the Specification of Fairness Requirements

Motivation

Automated Decision-Making Software (DMS) became responsible for sensitive decisions with far-reaching societal impact in many areas of our lives. However, the risk that a falsely developed DMS may lead to unlawful discrimination against persons has raised public and legal awareness on software fairness. For instance, Recital 71 of the European General Data Protection Regulation (GDPR) prescribes to implement technical and organizational measures appropriate to prevent discriminatory effects on natural persons on the basis of racial or ethnic origin. Furthermore, software fairness is stipulated by Article 22, which forbids decisions based on special categories of data as defined in Article 9, such as ethnicity and gender. These data are known as protected characteristics.

The works in the software fairness field can be classified into three broad categories based on their goals: First, *understanding fairness*: works that aim at providing (un)formalized fairness definitions and help to understand how discrimination can happen in our systems such as. Second, *mitigating discrimination*: works that aim at preventing discrimination. Approaches in this direction focus mainly on tackling discrimination in different stages of AI-based software development, namely, data preprocessing, inprocessing, and post-processing methods. Third, *discrimination detection*: works that aim at test/verify whether a system is fair with respect to certain fairness measure.

Despite the availability of many approaches in the field of software fairness, we have not found an existing approach that aim at supporting the specifying of fairness requirements at requirements engineering phase of the system development life cycle. According to Brun et al., as with software security, fairness needs to be a first-class entity in the software engineering process.

In this master thesis you will pursue the following research question:

- How to support the requirements engineers in specifying fairness requirements in a semi-automatic way?

Knowledge required to carry out the work: Java
Helpful knowledge: Requirements engineering, requirements templates, software fairness.

Organisatorisches

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