

## Fair Artificial Intelligence Reasoning (FAIR)

Initiative: Künstliche Intelligenz – Ihre Auswirkungen auf die Gesellschaft von morgen

Ausschreibung: Künstliche Intelligenz – Ihre Auswirkungen auf die Gesellschaft von morgen - Planning Grant

Bewilligung: 06.02.2019

Laufzeit: 9 Monate

The interdisciplinary project FAIR sets out to investigate fair artificial intelligence. It addresses the following pivotal questions: How can theoretical concepts about fairness be integrated in algorithms? What are fair data and how can they be used for training artificial intelligence (AI)? Do people perceive decisions made by fair algorithms to be more legitimate than those made by human actors? Which factors contribute to perceiving algorithms as fair? FAIR uses higher education as a case in point. It tackles the emerging challenges for universities to apply machine learning systems which succumb to substantial biases and therefore may reinforce ethnic or gender stereotypes or marginalize minorities in society. Potential applications for AI in higher education are manifold. They include the provision of data-driven tools that enable future students to make more informed choices about whether to study at a university, as well as improving the choice about location and subject. From the perspective of universities, AI may contribute to admitting students based on more comprehensive and thus fairer criteria than grade point average (GPA). Novel technologies furthermore enable tailored tutoring programs to prevent potential student dropouts. Ensuring that machine learning algorithms reduce unfair and discriminatory biases that exist in the real world is a crucial challenge when applying AI in institutions of higher education. The final aim of this project is to program novel algorithms based on the principle of fairness and ultimately implement them at university level.

### Projektbeteiligte

#### **Prof. Dr. Frank Marcinkowski**

Universität Düsseldorf  
Philosophische Fakultät  
Institut für Sozialwissenschaften  
Kommunikations- & Medienwissenschaft  
Düsseldorf

#### **Prof. Dr. Ulrich Rosar**

Universität Düsseldorf  
Philosophische Fakultät  
Dekanat Philosophische Fakultät  
Geb. 24.51.01.33  
Düsseldorf

**Prof. Dr. Stefan Harmeling**

Universität Düsseldorf  
Mathematisch-Naturwissenschaftliche Fakultät  
Institut für Informatik  
Düsseldorf

**Prof. Dr. Stefan Conrad**

Universität Düsseldorf  
Mathematisch-Naturwissenschaftliche Fakultät  
Institut für Informatik  
Düsseldorf

**Prof. Dr. Michael Leuschel**

Universität Düsseldorf  
Mathematisch-Naturwissenschaftliche Fakultät  
Institut für Informatik  
Düsseldorf

**Open Access-Publikationen**

**Fairness-Aware Machine Learning: An Extensive Overview**

**Machine Learning and Artificial Intelligence in Higher Education: A State-of-the-Art Report on the German University Landscape**

**Wann ist Künstliche Intelligenz (un-) fair?**

**Implications of AI (un-)fairness in higher education admissions**

**Perceptions of Algorithmic Decision-Making: A Systematic Review of the Empirical Literature.**