Keynote: Algorithmic Fairness, Intersectionality, and Uncertainty

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In this talk I examine a fundamental dilemma facing intersectional algorithmic fairness in practice. As regulatory frameworks like the EU AI Act require intersectional approaches to fairness, we confront two interrelated problems that threaten meaningful implementation.

First, the problem of statistical uncertainty: When considering intersectional groups—as opposed to groups defined by a single (demographic) attribute—the number of groups increases exponentially while sample sizes decrease dramatically. This creates statistical uncertainty that renders standard fairness metrics meaningless at best, or morally problematic at worst. Second, the problem of ontological uncertainty: The question of which groups warrant fairness consideration remains theoretically underdetermined. The needed ontological theory would yield G, the set of all groups that are to be included in a fairness audit. The options for such theories include that G consist of (a) groups generated from all possible combinations of protected attributes, (b) some relevant combination, or (c) some relevant groups, such as those groups with a history of disadvantage. This theoretical ambiguity enables "fairness gerrymandering", that is, strategically defining G to achieve desired outcomes.

These problems generate a dilemma. If we include all intersectional groups, statistical uncertainty makes meaningful fairness audits impossible. If we restrict attention to select groups, we face a tension between accommodating ontological uncertainty on the one hand and preventing fairness gerrymandering on the other. Rather than viewing this as grounds for abandoning intersectional fairness, I hypothesize that more work is needed to identify: (1) new approaches to fairness auditing that explicitly account for statistical uncertainty about small groups, and (2) clearer theoretical principles for determining relevant group ontologies.

Biography. Johannes Himmelreich is a philosopher who teaches and works in a policy school. He is an Assistant Professor in Public Administration and International Affairs in the Maxwell School at Syracuse University. He works in the areas of political philosophy, applied ethics, and philosophy of science. Currently, he researches the ethical quandaries that data scientists face, how the government should use AI, and how to check for algorithmic fairness under uncertainty.

He published papers on "Responsibility for Killer Robots," the trolley problem and the ethics of self-driving cars, as well as on the role of embodiment in virtual reality.

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He holds a PhD in Philosophy from the London School of Economics (LSE). Prior to joining Syracuse, he was a post-doctoral fellow at Humboldt University in Berlin and at in the McCoy Family Center for Ethics in Society at Stanford University. During his time in Silicon Valley, he consulted on tech ethics for Fortune 500 companies, and taught ethics at Apple.