

# Algorithms in the Presence of Biased Inputs

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## Abstract

Algorithms for optimization problems such as selection, ranking, and classification typically assume that the inputs are what they are promised to be. However, in several real-world applications of these problems, the input may contain systematic biases along socially salient attributes associated with inputs such as race, gender, or political opinion. Such biases can not only lead the outputs of the current algorithms to output sub-optimal solutions with respect to true inputs but may also adversely affect opportunities for individuals in disadvantaged socially salient groups. This talk will consider the question of using optimization to solve the aforementioned problems in the presence of biased inputs. It will start with models of biases in inputs and discuss alternate ways to design algorithms for the underlying problem that can mitigate the effects of biases by taking into account knowledge about biases. This talk is based on several joint works with a number of co-authors [1, 2, 3, 4, 5, 6, 7, 8, 9, 10].

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