**Paper 1**

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Machine bias refers to the tendency for computers to make unfair or inaccurate decisions due to biased data, algorithms, or users. It is a subject of concern when applying these systems to society because of the variability and sensitivities of each person. In this paper, I will detail the context of machine bias, drawing references from experts in the field such as David Boonin and Clinton Castro. I will then explain David Boonin’s argument for the conclusion that indirect bias is not morally wrong, and finally provide some counterarguments from Castro.

Machine bias is a pervasive problem in our technologically dependent society. Algorithms used in hiring, credit scoring, and criminal justice systems can perpetuate existing biases and discriminate against certain groups. This bias can occur in several ways. The data used to train the algorithms may be biased. For example, a facial recognition algorithm that is trained on a dataset that is predominantly white may not accurately identify individuals with darker skin. Second, the algorithms themselves may be biased. For example, an algorithm used to predict recidivism could be biased against individuals of color if it takes into account factors such as zip code or cultural background. Finally, the people who design the algorithms may have their own biases, consciously or unconsciously, that are reflected in the output of the algorithms. Such as an introverted engineer who has no exposure to variability among cultural identities.

If bias is indirectly emitted, in other words unintentional, then can the emitter of the bias be blamed? Is the person with the bias doing something immoral? David Boonin argues that indirect bias is not morally wrong. He argues that bias is not a choice or behavior; instead, it is a feature of the way humans think and reason. Therefore, it cannot be claimed to be morally right or wrong. Boonin further argues that indirect bias, such as that which occurs through algorithms or statistical models, is even less morally relevant than direct bias, as it is not the result of an individual’s intentional actions. Boonin supports his argument by drawing a distinction between acts and omissions. According to Boonin, direct bias involves an act, whereas indirect bias involves an omission. He argues that while acts can be morally evaluated, omissions cannot, as they do not involve a positive action. Therefore, indirect bias cannot be said to be morally wrong.

While Boonin's argument may be compelling from a surface-level view, it is not without flaws. One of the main objections to Boonin's argument is that indirect bias can have significant consequences for individuals and society as a whole - when taken from the perspective of the groups of people both directly and indirectly impacted by the outcomes of bias machine actions. For example, an algorithm discriminating against certain groups can result in unfair treatment and perpetuate existing inequalities. Therefore, it can be argued that indirect bias is morally relevant and should be considered proactively when designing any inference systems. Another objection to Boonin's argument is that indirect bias is not simply an omission but an action. The design and implementation of algorithms that perpetuate bias can be seen as an intentional action that can be morally evaluated. Furthermore, the people who design and use these algorithms hold a responsibility to ensure that they are not perpetuating bias and discrimination past their own beliefs. In response to these objections, one could argue that while indirect bias can have negative consequences, it is not the result of a moral choice or action. Therefore, it is invalid to deem indirect bias to be morally wrong. One might also argue that indirect bias is a complex problem to solve and that it is not always possible to design algorithms that are completely unbiased. In some cases, it may be necessary to accept a certain level of bias in order to achieve other goals, such as accuracy or efficiency. Since, referring back to Boonins' argument, humans are naturally and subconsciously biased, to begin with.

In conclusion, machine bias is a serious problem that can have relevant consequences for individuals and society as a whole. While David Boonin argues that (indirect) bias is not morally wrong, his argument does not consider the full scope of the dilemma. The objections to his argument suggest that indirect bias is morally relevant and should be evaluated proactively and plentifully. While it may be difficult, or even impossible for - innately biased - humans to design algorithms that are completely unbiased, it is crucial to continue striving towards this objective in order to provide fairness and equality in critical decision-making processes. As society becomes increasingly dependent on technology and algorithms, it is crucial to address the issue of machine bias in order to create a more just and equitable world. Therefore, indirect bias is not morally wrong, but the more we learn about ourselves, the more we can detect our biases.