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Computing, Society, and Professionalism

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Term Paper Outline

1. Racial Bias in Healthcare Algorithms
   1. Definition of and background information on racial bias [6]
   2. Expansion on the significance of racial bias in technology [3, 10]
2. Case Studies
   1. Case Study 1: Optum Patient Prioritization Bias [8]
   2. Case Study 2: UnitedHealth Patient Cost Evaluation Bias [9]
3. The Relationship Between Racial Bias and Inequity in Care
4. Mitigating Bias in Machine Learning Algorithms
   1. Common methods used to mitigate bias [1, 2]
   2. Pros of mitigation [7]
   3. Cons of mitigation [4]
   4. Does this really make the model fair? [5, 10]
5. Conclusion
   1. Summarize Argument and Main Points
6. Why don’t all companies mitigate bias?

Works Referenced

[1] J. Huang, G. Galal, M. Etemadi, and M. Vaidyanathan, “Evaluation and mitigation of racial bias in clinical machine learning models: Scoping review,” *JMIR Medical Informatics*, vol. 10, no. 5, 2022. doi:10.2196/36388

[2] N. Norori, Q. Hu, F. M. Aellen, F. D. Faraci, and A. Tzovara, “Addressing bias in big data and AI for health care: A call for open science,” *Patterns*, vol. 2, no. 10, p. 100347, 2021. doi:10.1016/j.patter.2021.100347

[3] T. Panch, H. Mattie, and R. Atun, “Artificial Intelligence and algorithmic bias: Implications for health systems,” *Journal of Global Health*, vol. 9, no. 2, 2019. doi:10.7189/jogh.09.020318

[4] E. Briscoe and J. Feldman, “Conceptual Complexity and the Bias/Variance Tradeoff,” *Cognition*, vol. 118, no. 1, pp. 2–16, 2011. doi:10.1016/j.cognition.2010.10.004

[5] D. T. Newman, N. J. Fast, and D. J. Harmon, “When Eliminating Bias isn’t Fair: Algorithmic Reductionism and Procedural Justice in Human Resource Decisions,” *Organizational Behavior and Human Decision Processes*, vol. 160, pp. 149–167, 2020. doi:10.1016/j.obhdp.2020.03.008

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[8] C. Y. Johnson, “Racial Bias in a Medical Algorithm Favors White Patients Over Sicker Black Patients,” The Washington Post, https://www.washingtonpost.com/health/2019/10/24/racial-bias-medical-algorithm-favors-white-patients-over-sicker-black-patients/ (accessed Nov. 7, 2023).

[9] A. Akhtar, “New York is Investigating UnitedHealth’s use of a Medical Algorithm that Steered Black Patients away from Getting Higher-Quality Care,” Business Insider, https://www.businessinsider.com/an-algorithm-treatment-to-white-patients-over-sicker-black-ones-2019-10 (accessed Nov. 7, 2023).

[10] I. Grabski, “Fairness in Machine Learning,” Science in the News, https://sitn.hms.harvard.edu/uncategorized/2020/fairness-machine-learning/ (accessed Nov. 7, 2023).

Quality of References

Of the ten sources listed in the Works Referenced section, sources 1 through 7 are peer reviewed and sources 8 through 10 are not. Thus, the vast majority of these sources are highly reputable, coming from distinguished industry professionals. Furthermore, even for the articles that aren’t from a peer reviewed journal, they come from well-known and reputable sources as well, although not necessarily a scientific journal. Some of these sources include the Wall Street Journal, a Harvard Science Newsletter, and Business Insider. Additionally, many of the peer reviewed articles referenced are heavily trusted. For instance, sources 2 through 6 have been cited 147, 209, 180, 237, and 178 times, respectively, by other published peer-reviewed journals. These high numbers of citations are a testament to the quality of the findings in these journals. I believe I have conducted a large portion of the research that will be needed for this project already. However, while writing, if I find that I am lacking in sources to support my argument in any areas, I will conduct further research to find additional articles.