

Utilising Artificial Intelligence and Data Science to Improve Decision Making: An Extensive Analysis

Kashish Nagarkar¹, Priyanka Kanire^{2,3}, Ms. Neha Mittal³

Students, BCCA, Dr. Ambedkar Institute of Management Studies and Research, Nagpur, India^{1,2}

Assistant Professor, Department of BCCA

Dr. Ambedkar Institute of Management Studies and Research, Nagpur, India³

neha_mittal@daimsr.edu.in

Abstract: *The main goal of this study is to provide an extensive analysis of how data science and artificial intelligence (AI) might be combined to improve decision-making processes. The goal of the project is to investigate the uses, approaches, difficulties, and potential future directions of using AI and data science to decision-making across a range of industries.*

Keywords: Data Science, Artificial Intelligence, Decision Making, Machine Learning, Predictive Analytics, Neural Networks, Natural Language Processing, Computer Vision, Applications, Challenges, Ethical Considerations

REFERENCES

- [1]. Amodei, D., Olah, C., Steinhardt, J., Christiano, P., Schulman, J., & Mané, D. (2016). Concrete problems in AI safety. arXiv preprint arXiv:1606.06565.
- [2]. Chen, J., & Guestrin, C. (2016). Xgboost: A scalable tree boosting system. In Proceedings of the 22nd acmsigkdd international conference on knowledge discovery and data mining (pp. 785-794).
- [3]. Floridi, L., Cowls, J., Beltrametti, M., Chatila, R., Chazerand, P., Dignum, V., ... & Vallor, S. (2018). AI4People—An ethical framework for a good AI society: Opportunities, risks, principles, and recommendations. *Minds and Machines*, 28(4), 689-707.
- [4]. Goodfellow, I., Bengio, Y., & Courville, A. (2016). *Deep learning* (Vol. 1). MIT press Cambridge.
- [5]. Kleinberg, J., Ludwig, J., Mullainathan, S., & Sunstein, C. R. (2018). Discrimination in the age of algorithms. *Journal of Legal Analysis*, 10(1), 113-174.
- [6]. Mittelstadt, B. D., Allo, P., Taddeo, M., Wachter, S., & Floridi, L. (2016). The ethics of algorithms: Mapping the debate. *Big Data & Society*, 3(2), 2053951716679679.
- [7]. Provost, F., & Fawcett, T. (2013). *Data science for business: What you need to know about data mining and data-analytic thinking*. O'Reilly Media, Inc.
- [8]. Rajkomar, A., Oren, E., Chen, K., Dai, A. M., Hajaj, N., Hardt, M., ... & Zhang, K. (2018). Scalable and accurate deep learning with electronic health records. *NPJ digital medicine*, 1(1), 1-10.
- [9]. Russell, S., & Norvig, P. (2021). *Artificial intelligence: A modern approach*. Pearson.
- [10]. Tsai, C. F., Huang, I. B., & Liao, Y. H. (2020). Predicting financial fraud in the publicly traded firms by computational intelligence algorithms: An integrated framework of feature selection, data preprocessing, and hybrid machine learning. *Journal of Business Research*, 117, 518-528.
- [11]. Verhoef, P. C., Venkatesan, R., McAlister, L., Malthouse, E. C., Krafft, M., & Ganesan, S. (2010). Creating value with big data analytics: Making smarter marketing decisions. *Journal of Interactive Marketing*, 28(2), 137-156.
- [12]. Zou, J. Y., Schiebinger, L., Bhalla, N. I., Lancet, D., Rajpurkar, P., Shue, L., ... & Ng, A. Y. (2020). Gender bias in natural language processing: Literature review. arXiv preprint arXiv:2103.09912.