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DOI: 10.1007/978-981-19-7753-4_68

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Artificial intelligence and replacement of human talent: Case study of higher education in times of pandemic

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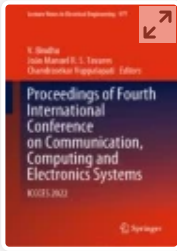
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Abstract. The use of technology has invaded unprecedented professional areas that we could never have imagined, such as medicine, engineering, among others. The employ of robots has spread throughout the world mainly in manufacturing companies where they have reduced production times and costs and are guaranteeing greater production and quality in products. The objective of this research is to identify new challenges for organizations to visualize the harmony between technological growth and human talent. In addition, it is showing that the arrival of the new industrial revolution brings with it dramatic changes in job profiles. This research was carried out using data mining with the development of decision trees that allowed us to address the current problems of artificial intelligence and the replacement of human talent as a higher education case study. Applying this prediction and data segmentation technique, information was obtained that was analyzed for future decision-making in the field of education and the application of artificial intelligence in the study population. In addition, a structured questionnaire validated by experts was designed for data collection and reliability was measured with Cronbach's Alpha coefficient. Subsequently, the instrument was applied to teachers and students of higher education in the province of Tungurahua, with 100 informant agents. As a result, companies must seek a balance between machine and man. In addition to replacing humans, robots could be incorporated responsibly into work environments.

Keywords: Artificial Intelligence, Data Mining, Decision Trees, Industry 4.0, Human Talent Management.

1 Introduction


The current pandemic scenario has forced several areas such as medicine, engineering, higher education, among others, to use more and more diverse technologies that have occasionally emerged. In fact, the particular case of artificial intelligence (AI) that has found a lot of acceptance due to the implicit offer, means changing the way of living and working. [1].



Proceedings of Fourth International Conference on Communication, Computing and Electronics Systems, pp 891–901

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Conference paper | [First Online: 15 March 2023](#)

Part of the [Lecture Notes in Electrical Engineering](#) book series (LNEE, volume 977)

Abstract

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Keywords

Artificial intelligence **Data mining**

Decision trees **Industry 4.0**

Human talent management

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References

1. Tripathi A, Kaur P, Suresh S (2021) AI in fighting Covid-19: pandemic management. *Proc Comput Sci* 185:380–386

2. Shamman A, Hadi A, Ramul A, Abdul Zahra M, Gheni H (2021) The artificial intelligence (AI) role for tackling against COVID-19 pandemic. *Mater Today Proc* (in press)

3. Vaishya R, Javaid M, Khan IH, Haleem A (2020) Artificial intelligence (AI) applications for COVID-19 pandemic. *Diabetes Metab Syndr Clin Res Rev* 14(4):337–339

4. Gopinath N (2021) Artificial intelligence: potential tool to subside SARS-CoV-2 pandemic. *Process Biochem* 110:94–99

5. Armás-Arias S, Páez-Quinde C, Ballesteros-Lopez L, López-Pérez S (2021) Decision trees for the analysis of digital marketing in the tourism industry: Tungurahua case study. In: *Multidisciplinary international congress on science and technology. CIT 2021, Quito*

6. Ashraf A, Imran W, Véchet L (2022) Analysis of the impact of a pandemic on the control of the process safety risk in major hazards industries

using a fault tree analysis approach. *J Loss Prev Process Ind* 74:104649

7. Gutiérrez Cortes W, Rivera Tovar C (2021) Human talent in geriatrics in Colombia and its relevance for the management of COVID-19. *Lancet Healthy Longevity* 2(3):e123–e124

8. Wang B, Yang Z, Xuan J, Jiao K (2020) Crises and opportunities in terms of energy and AI technologies during the COVID-19 pandemic. *Energy AI* 1:100013

9. Xu Z, Su C, Xiao Y, Wang F (2021) Artificial intelligence for COVID-19: battling the pandemic with computational intelligence. *Intell Med* (in press)

10. Radanliev P, De Roure D, Walton R (2020) Data mining and analysis of scientific research data records on Covid-19 mortality, immunity, and vaccine development—in the first wave of the Covid-19 pandemic. *Diabetes Metab Syndr Clin Res Rev* 14(5):1121–1132

11. Muhammad Shah A, Yan X, Qayyum A, Ali Naqvi R, Jamal S (2021) Mining topic and sentiment dynamics in physician rating websites during the early wave of the COVID-

19 pandemic: machine learning approach. *Int J Med Inform* 149:104434

12. Khan M, Mehran M, Haq Z, Ullah Z, Naqvi S (2021) Applications of artificial intelligence in COVID-19 pandemic: a comprehensive review. *Exp Syst Appl* 185(15):115695

13. Guerrero M, Vanderloo L, Rhodes R, Faulkner G, Moore S, Tremblay M (2020) Canadian children's and youth's adherence to the 24-h movement guidelines during the COVID-19 pandemic: a decision tree analysis. *J Sport Health Sci* 9(4):313–321

14. Karl M, Kock F, Ritchie B, Gauss J (2021) Affective forecasting and travel decision-making: an investigation in times of a pandemic. *Ann Tourism Res* 87:103139

15. Moosavi J, Bakhshi J, Martek I (2021) The application of industry 4.0 technologies in pandemic management: literature review and case study. *Healthc Analyt* 1:100008

16. Spieske A, Birkel H (2021) Improving supply chain resilience through industry 4.0: a systematic literature review under the impressions of the COVID-19 pandemic. *Comput Ind Eng* 158:107452

17. Javaid M, Haleem A, Vaishy R, Bahl S, Suman R, Vaish A (2020) Industry 4.0 technologies and their applications in fighting COVID-19 pandemic. *Diab Metab Syndr Clin Res Rev* 14(4):419–422

18. Connell C, Lemyze C, McGill W (2021) The persistent link between growing talent and growing the top line: lessons from fast-growing firms in the COVID-19 recession. *Organ Dyn* 50(4):100807

19. Li W, Huang Z, Tan B, Chen G, Li X, Xiong K, Zhu R, Li R, Li S, Ye H, Liang Z, Dong X, Zhou S, Chen S, Xi H, Cheng H, Xu R, Tu S (2021) General recommendation for assessment and management on the risk of glucocorticoid-induced osteonecrosis in patients with COVID-19. *J Orthop Transl* 31:1–9

20. Bhaskara G, Filimonau V (2021) The COVID-19 pandemic and organisational learning for disaster planning and management: A perspective of tourism businesses from a destination prone to consecutive disasters. *J Hosp Tourism Manage* 46:364–375

Acknowledgements

Thanks to the Technical University of Ambato, to the Directorate of Research and Development (DIDE

acronym in Spanish) for supporting the research

group: Marketing C.S.

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About this paper

Cite this paper

Guerrero-Velástegui, C.A., Peñaherrera-Zambrano, S., Ballesteros-López, L., López-Pérez, S. (2023). Artificial Intelligence and Replacement of Human Talent: Case Study of Higher Education in Times of Pandemic. In: Bindhu, V., Tavares, J.M.R.S., Vuppalapati, C. (eds) Proceedings of Fourth International Conference on Communication, Computing and Electronics Systems . Lecture Notes in Electrical Engineering, vol 977. Springer, Singapore. https://doi.org/10.1007/978-981-19-7753-4_68

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DOI

https://doi.org/10.1007/978-981-19-7753-4_68

Published	Publisher Name	Print ISBN
15 March 2023	Springer, Singapore	978-981-19- 7752-7

Online ISBN	eBook Packages
978-981-19- 7753-4	Engineering Engineering_(R0)

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SENESCYT EBOOK (3001263379) - Universidad Tecnica de Ambato (3000176811)

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