

Growth of artificial intelligence (AI) education

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1. Abstract

Artificial Antelligence (AI) has become a reality, being now part of our routines and penetrating every aspect of our lives, including education. It is still a field in its infancy, but as time progresses, we will witness how AI evolves and explore its untapped potential. Against this background, this chapter examines current insights and future perspectives of AI in various contexts, such as natural language processing (NLP), machine learning, and deep learning. For this purpose, social network analysis (SNA) is used as a guide for the interpretation of the key concepts in AI research from an educational perspective. The research identified three broad themes: (1) adaptive learning, personalization and learning styles, (2) expert systems and intelligent

This paper explores the phenomena of the emergence of the use of artificial intelligence in teaching and learning in higher education. It investigates educational implications of emerging technologies on the way students learn and how institutions teach and evolve. Recent technological advancements and the increasing speed of adopting new technologies in higher education are explored in order to predict the future nature of higher education in a world where artificial intelligence is part of the fabric of our universities. We pinpoint some challenges for institutions of higher education and student learning in the adoption of these technologies for teaching, learning, student support, and administration and explore further directions for research.

2.Introduction

Smart production systems require innovative solutions to increase the quality and sustainability of manufacturing activities while reducing costs. In this context, artificial intelligence (AI)-driven technologies, leveraged by I4.0 Key Enabling Technologies (e.g., Internet of Thing, advanced embedded systems, cloud computing, big data, cognitive systems, virtual and augmented reality), are ready to generate new industrial paradigms. On a very broad account, the areas of artificial intelligence are classified into 16 categories [4–8]. These are reasoning, programming, artificial life, belief revision, data mining, distributed AI, expert systems, genetic algorithms, systems, knowledge representation, machine learning, natural language understanding, neural networks, theorem proving, constraint satisfaction, and theory of computation. A number of impressive documentations of established research methods and philosophy have been discussed for several years. Unfortunately, little comparison and integration across studies exists. In this article, a common understanding of AI and ML research and its variations was created. This paper is not attempting to provide an all-encompassing framework on the literature on AI and ML research. Rather, it attempts to provide a starting point for integrating knowledge across research in this domain and suggests paths for future research. It explores certain novel disciplines: Environmental pollution, medicine, maintenance, manufacturing, etc.

3.Method and material

The methodological approach used mixes bibliometric, content analysis, and social network techniques. In this study, a state-of-the-art research was conducted through the SCOPUS and Web of Science databases. •

Step 1: Identification;

Step 2: Screening; and

Step 3: Inclusion.

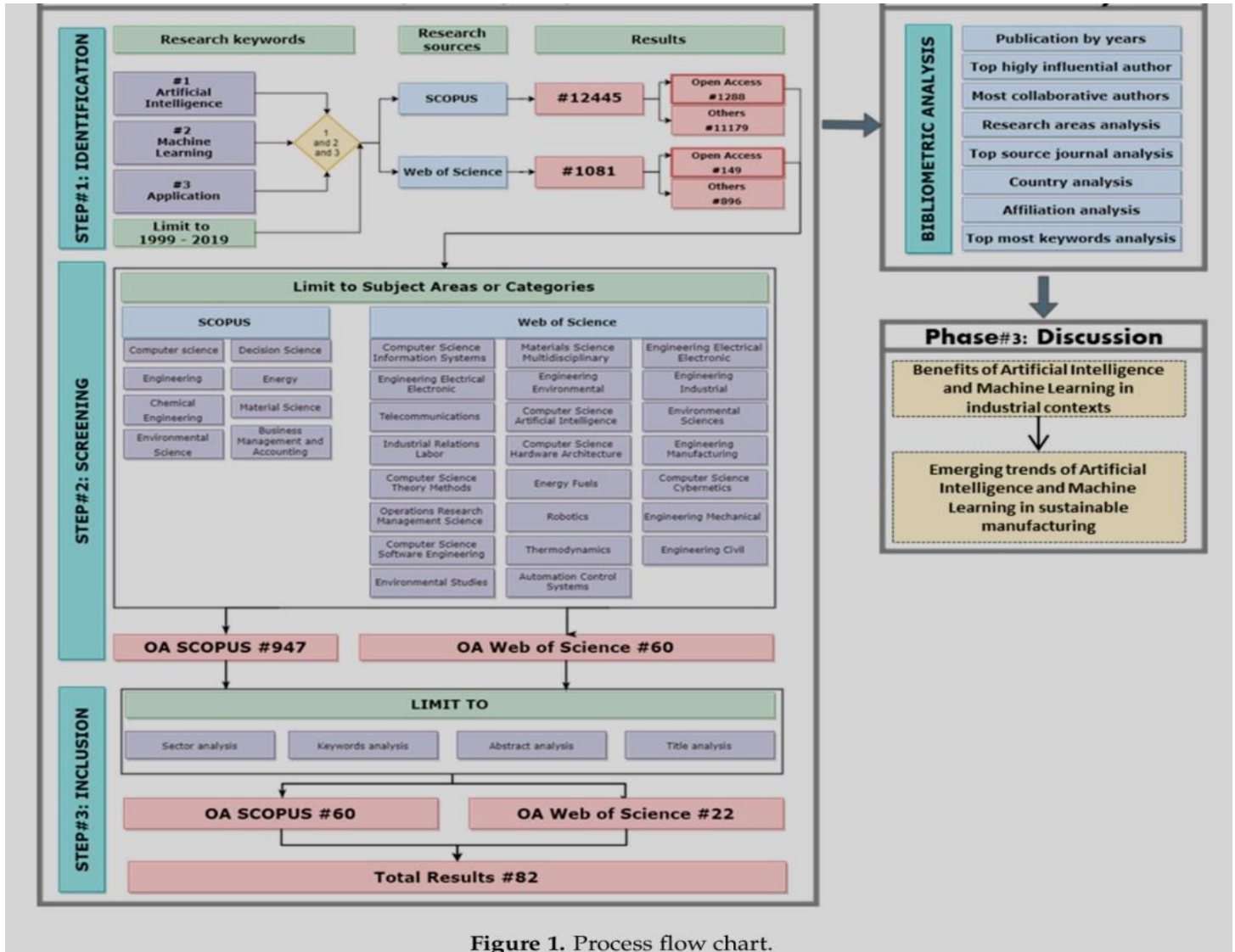


Figure 1. Process flow chart.

The indicators chosen to perform the analysis were total papers (TPs), which is the total number of publications, and total citations (TCs), which is the total number of citations. SNA finds application in various social sciences, and has lately been employed in the study of various phenomena, such as international trade, information dissemination, the study of institutions,

and the functioning of organizations. The analysis of the use of the term SNA in the scientific literature has undergone exponential growth in the use of this mode of computable representation of complex and interdependent phenomena. For the purpose of the study, UCINET, Net Draw software was used, which was expressly designed for the creation and graphic processing of networks, and was used to represent the keywords in the network, and Excel for data input.

4.Data & Results

The first phase consisted of the search for documents, which included the activities of collecting the material belonging to the academic universe. This first phase was divided into three databases and a time horizon of 20 years was chosen, from 1999 to 2019. The choice of keywords for performing the survey was based on the awareness that AI and ML can be an important tool in the effort to adopt responsible business practices in the context of smart production. In this regard, it is worthy to note that with the increasingly urgent discussions of climate change, it seemed appropriate to focus our research on

Table 1. Keywords and time period.

Keywords	Time Period
Artificial Intelligence	1999–2019
Machine Learning	
Application	

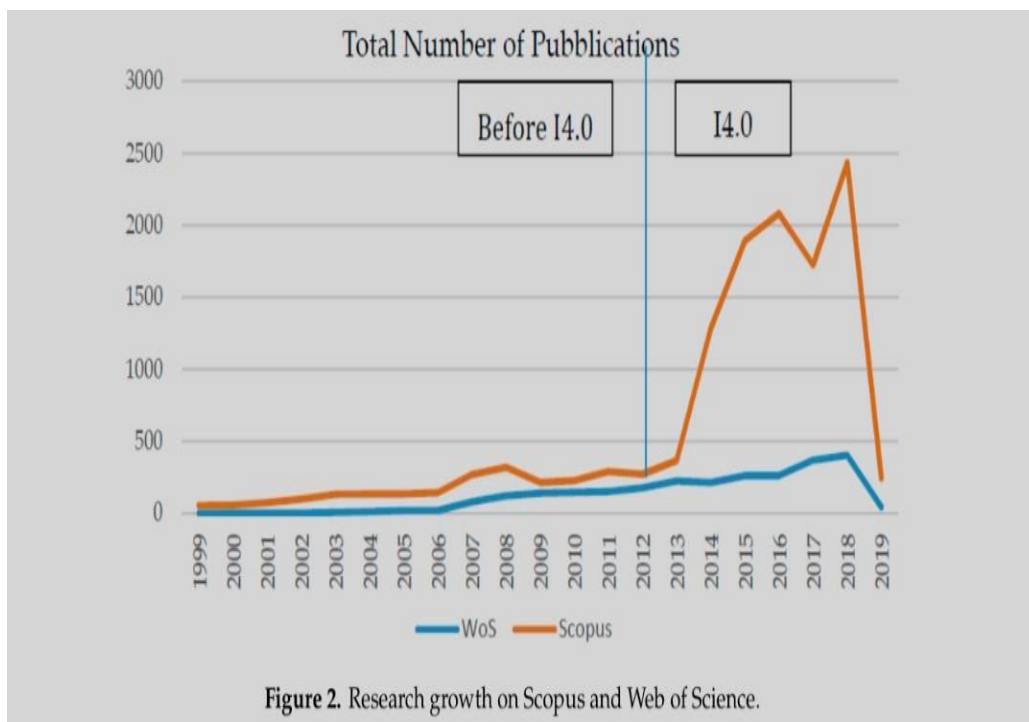


Figure 2. Research growth on Scopus and Web of Science.

5. Conclusion

This research focused on the study of the state of the art of AI and ML applications, selecting literature on what has now become a particularly hot topic in scientific research. The literature available on any subject is now wide and a complete coverage of all the documents published with respect to particular topic can be challenging or even impossible. Therefore, a systematic selection of the most relevant literature was implemented. This document provides a systematic review of applications in various scientific fields using ML techniques. For the selection of documents, objective and clear methods of investigation were used, independent of the experience of the researchers. Among the objectives of the document, it aimed to not only provide a comprehensive framework on the literature on the research of AI and ML but also a starting point for integrating knowledge through research in this area and to suggest future research paths. It is important to underline that this document was produced using only two databases, i.e., WoS and Scopus, in which only documents with open access

were included. There are, therefore, many other documents with restricted access and other indexing databases, such as Google Scholar, that could be integrated for future research.

6. Acknowledgement

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7. Reference

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<https://pdfs.semanticscholar.org>

<https://www.futurecustomer.com/artificial-intelligence-and-sustainability>