DECISION MAKING USING INTERNET OF THINGS AND MACHINE LEARNING: A BIBLIOMETRIC APPROACH TO TRACKING MAIN RESEARCH THEMES

INTERNATIONAL CONFERENCE ON DATA ANALYTICS FOR BUSINESS AND INDUSTRY (DATA’20)


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1. INTRODUCTION

CONTEXT
The internet has become an integral part of our life, we connect daily for informational, social, entertainment and even work and economic purposes. Therefore, it is completely normal to connect to the internet; But it is not only people, also these everyday objects or things in our environment who connect to the network to take advantage of its benefits. This next stage in the evolution of the internet, in which connectivity extends to the objects which surround us, is known as the Internet of Things.

OBJECTIVE
The main aim of the present research is to analyze several criteria that are applied in Decision Making using Internet of Things and Machine Learning from 2013 to 2020 using Scopus.

The analysis is developed using VOSviewer.
1. Introduction

2. Methodology

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5. Conclusions
2. METHODOLOGY

SOFTWARE TOOL
VOSviewer was employed to develop a conceptual science mapping analysis based on co-words bibliographic networks.

METHODOLOGY STAGES
1. **Performance analysis.** Relative contribution of the research themes to the whole research field: number of published documents, number of citations, and different types of bibliometric indicators (**h-index**).
2. **Detection of the research themes.** Co-word analysis, followed by a clustering of keywords to topics/themes.
3. **Visualizing research themes and cluster.** Science Map and Cluster Network (occurrences and links). Research themes mapped in a two-dimensional conceptual science map and clustered (Figure 1).
2. METHODOLOGY

Figure 1: Science Map. (a) Research theme and (b) Cluster
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3. DATASET

CORPUS AND DATABASE

QUERY
TITLE-ABS-KEY("decision") AND TITLE-ABS-KEY("internet of th") AND TITLE-ABS-KEY("machine lear").

TIME PERIOD
The corpus was evaluated in a single period from 2013 to 2020.

CORPUS SIZE
- 703 documents (articles), 3,472 cites and 13,964 keywords (citations count up to 7th September 2020).
- 2013: 2 documents, 76 cites and 38 keywords.
- 2014: 2 documents, 18 cites and 44 keywords.
- 2015: 12 documents, 187 cites and 191 keywords.
- 2016: 18 documents, 128 cites and 403 keywords.
- 2017: 53 documents, 653 cites and 1,134 keywords.
- 2018: 131 documents, 1,279 cites and 2,965 keywords.
- 2019: 314 documents, 1,060 cites and 5,927 keywords.
- 2020: 171 documents, 161 cites and 3,262 keywords. (* on going)
Figure 2: Distribution of publications and cites
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4. CONCEPTUAL ANALYSIS

Figure 3. Network visualization map of Decision Making using Internet of Things and Machine Learning
## 4. CONCEPTUAL ANALYSIS

<table>
<thead>
<tr>
<th>Cluster</th>
<th>Themes (the most productive)</th>
<th>Weight</th>
<th>Total link strength</th>
<th>Occurrences</th>
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<td>energy efficiency</td>
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The impact achieved is summarized in the following indicators:
- Average citations per publication: 4.94
- h-index: 27 publications
CONCLUSIONS

MAIN CONCLUSION

- In terms of bibliometric performance, the dimension of literature related to Decision Making using Internet of Things and Machine Learning showed a noteworthy increase in the last years (2013–2019).
- The most productive countries are: India, United States of America, China, United Kingdom, Canada, Spain, France, Germany, mainly.
- The main themes covered by these cluster are: Learning Systems, Data Mining, Big Data Analytics, Decision-tree Algorithm, Classification Of Information, Support Vector Machine, Machine Learning Techniques, Artificial Intelligence, Network Security, Learning Algorithms, Deep Learning, Reinforcement Learning Approach and Neural Networks.

FUTURE WORKS

- A global analysis could be carried out taking into account a wider time span and enriching the query with more search terms. Second, the evolution of the research themes could be studied across the consecutive time periods for the main sectors in other knowledge areas.
REFRENCES

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