Applied Data Science and Analysis
Vol.2024, **pp**. 148–164
DOI: https://doi.org/10.58496/ADSA/2024/012; ISSN: 3005-317X
https://mc04.manuscriptcentral.com/adsa

Research Article

Emerging Trends in Applying Artificial Intelligence to Monkeypox Disease: A Bibliometric Analysis

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ARTICLEINFO

Article History

Received 17 Jul 2024
Revised 09 Aug 2024
Accepted 17 Aug 2024
Published 08 Sep 2024

Keywords

Monkeypox
Artificial Intelligence
Deep Learning
Machine Learning
Disease Diagnosis
Public Health
Bibliometric

ABSTRACT

Monkeypox is a rather rare viral infectious disease that initially did not receive much attention but has recently become a subject of concern from the point of view of public health. Artificial intelligence (AI) techniques are considered beneficial when it comes to diagnosis and identification of Monkeypox through the medical big data, including medical imaging and other details from patients' information systems. Therefore, this work performs a bibliometric analysis to incorporate the fields of AI and bibliometrics to discuss trends and future research opportunities in Monkeypox. A search over various databases was performed and the title and abstracts of the articles were reviewed, resulting in a total of 251 articles. After eliminating duplicates and irrelevant papers, 108 articles were found to be suitable for the study. In reviewing these studies, attention was given on who contributed on the topics or fields, what new topics appeared over time, and what papers were most notable. The main added value of this work is to outline to the reader the process of how to conduct a correct comprehensive bibliometric analysis by examining a real case study related to Monkeypox disease. As a result, the study shows that AI has a great potential to improve diagnostics, treatment, and public health recommendations connected with Monkeypox. Possibly, the application of AI to Monkeypox study can enhance the public health responses and outcomes since it can hasten the identification of effective interventions.

1. INTRODUCTION

Artificial intelligence (AI) has the ability of transforming different sectors since it has various characteristics such as data analysis [1] and processing as well as decision making [2]–[4]. The use of AI is not limited to any specific field including health care [5]–[9], finance [10], self-driving car [11], [12], environmental analysis [13], [14], Natural Language Processing [15], [16], production [17], learning and many others in a bid to improve on various operations, experiences and decisions [18]–[24]. Some of studies have shown how AI can be applied to improve the dependability of the AI systems in the domain of disaster response [25], and in the assessment of the forensic evidence and its prognosis [26]. Besides, the capability of AI to identify fake news and the improvement in the safety of the society through the application of smart technologies demonstrate how AI mimic social problems [27]. Also, AI is essential in cybersecurity and particularly for the protection against adversarial attacks [28], [29], and this shows that AI is critical in developing secure digital environment [30]. The above examples show that AI has the potential of transforming many sectors, encouraging creativity, and solving the most important problems of the world today. Also, AI with different sections is also enhancing the diagnosis and treatment of diseases including the new ones like Monkeypox (Mpox) in the healthcare industry.

Mpox is a rare viral zoonoses which has recently come into the limelight because of its effect to public health significance [31], [32]. The use of AI in the identification of research topics and issues in regard to Mpox helps in recognizing the trends that this disease is likely to exhibit in the future as well as coming up with potential research areas to explore [33], [34]. In addition, application of AI, especially deep learning techniques (DL) was found to be effective in the diagnosis and early

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identification of diseases utilizing big data drawn from medical imaging, laboratory and patient information systems [35]–[37].

The bibliometric analysis is needed by stating the need to use AI to address Mpox research and response endeavours. Having noticed the ever increasing complexity and globalization of Mpox it is important to use advanced technological tools in research and analysis [38]. Researchers are now able to use AI to comprehend more about the epidemiology, modes of transmission, its treatment, and prevention especially after COVID-19 [39].

This bibliometric analysis integrates AI and bibliometrics to guide future Mpox research directions; proposing research directions for Mpox studies based on gaps in the current literature [40], [41]. Furthermore, the findings from this study can be beneficial for the development of public health policies and interventions so that appropriate decisions are made and adequate resources utilised in a timely manner. With the help of artificial intelligence technologies, the researchers can significantly reduce the time for the discovery of proper and efficient ways of avoiding the further spread of Mpox and the becoming of severe consequences in the sphere of public health. Technical advancement; in the use of deep learning algorithms and big data collected from previous diseases has expanded the possibilities of medical research hence providing better diagnosis, individualized treatments, and better patient care.

Since Mpox remains an impending threat to the health of the global population, there is a need to harness AI to improve our understanding of this disease and improve on same [42], [43]. It is, therefore, no overstatement to refer to the bibliometric analysis through the use of AI as a revolutionary step in Mpox studies. Through discussion of the diverse among studies, it is possible to get precious knowledge that can help design specific preventive and controlling measures. Additionally, the application of AI in the approach can also lead to the discovery of new possible treatment targets, and better treatment regimens.

By using this kind of study approach, the scientific community can reveal new insights, make new contacts, and advance closer to the eliminating Mpox from the world. The growing attention to public health emergency and infectious disease preparedness and surveillance requires the use of artificial intelligence in bibliometric analysis as this study demonstrates. This way, researchers can use the approach of big data and advanced analytics to advance the existing knowledge about Mpox and enhance the approaches to diagnostics, treatment, and prevention. This is a clear indication that the integration of AI in Mpox research holds a lot of promise because it will bring new ideas, partnership and opportunity. Hence, it is extremely vital that researchers accept these technological improvements, as well as deploy them as a tool to contain the Mpox scourge in the world today. When the scientific community throws the doors wide open and include new ideas about research methodology and strategies that includes AI then Mpox research will be able to move forward and invite a better future for those who is affected with the disease.

The main contribution of this work was to apply an extensive number and a wide array of bibliometric tools, in combination with AI, allowed for the validation check which guaranteed robustness. The use of advanced data extraction methods allows the study to provide an accurate mapping and detailed analysis of research trends within different areas which is valuable for understanding Mpox research. Importantly, this work provides concrete tips that can be used to make better decisions and shape the focus of future research efforts as well as help refine how Mpox modelling is done. In the present work, a bibliometric analysis of 108 research papers was carried out. However, we did not cited all the papers for the analysis because we did not delve into the nuances of the studies. This aspect has only been considered for future work.

The paper is organized as follows: Section 1 provides a background overview of Mpox disease. Section 2 describes the methodology used for the bibliometric analysis of Mpox research using AI, while Section 3 summarises the results and discussions of the bibliometric analysis for the case study adopted in this work. Finally, some conclusions and suggestions are given to inspire the reader about the future directions that can be taken to use AI tools in the healthcare sector.

1.1 Background of Monkeypox

The Mpox health concern is a rare zoonotic viral disease that flows from the Orthopoxvirus genus that includes Monkeypox, variola virus which is responsible for smallpox as well the vaccinia virus [34], [44]. The virus was first discovered in a group of laboratory monkeys in 1958 that is why the name “Monkeypox” appeared The infection is usually observed in the areas of Central and West Africa most often and occasionally [42], [43], [45]. The disease is zoonotic, thus, people get infected through contact with infected animals mainly rodents, and through human to human transmission [46], [47]. The clinical signs of Mpox are similar to that of smallpox and these include fever, headache, from muscle aches and a rashes. The disease can be severe with case fatality rate as high as 10% among people infected in some outbreaks [48]–[50].

1.2 Significance of Bibliometric Analysis in Research

Bibliometric analysis is important in every research, because it helps to identify publication patterns, significant contributors and emergent topic in a particular field [23], [51]. Bibliometric analysis can, therefore, prove useful in the case of Mpox research as it gives an insight into the dynamics in the field, authors/institutions who have made significant contributions and the most influential papers. This approach allows to define new trends, directions in the development of the topic and

about what could be further researched when reading the work to expand the existing body of knowledge in the field of research.

2. METHODOLOGY

The methodology section of the bibliometric analysis of Mpox research using AI is central in comprehending the methodology used in the analysis. As it was the aim to search scientific publications from various portals with the help of instruments, a comprehensive approach of data collection was used. Such an approach not only made it possible to comprehend a vast number of investigations of different scientific disciplines but also made it possible to achieve the validity and reliability of the outcomes. Taking advantage of the effective technological equipment/e-tools, the process of data extraction was well facilitated to enhance the analysis of Mpox studies.

Therefore, various research trends within specific areas of study will be identified and analyzed with a lot of precision by using bibliometric instruments. However, it can be pointed out that bibliometrics allows the researchers to use the most suitable methods and theories. From it, useful conclusions may be obtained, which in turn will improve decision-making, help to identify the most effective focus areas and contribute to the further development of research approaches to Mpox.

2.1 Data Collection and Selection Criteria

When it comes to the methodology of conducting the bibliometric analysis of the Mpox research using AI, the data collection and the selection criteria was important. So, searching strategy used pertained to Mpox with AI that contains only peer-reviewed case reports, case series, and articles published from January 2020 to August 2024 in English language. This approach makes sure that all related literature is captured within a particular time frame which enhanced the reliability of the bibliometric analysis.

To investigate the integration of AI in Mpox research, a comprehensive search was conducted using Search query contain two keywords: “monkeypox” and “artificial intelligence”. The purpose of the query of this article was to include any type of research that focuses on the use of AI methodologies on Mpox to give a general picture of all the research works conducted so far.

The query was executed across multiple academic databases to ensure a broad collection of relevant literature. The query was executed across multiple academic databases to ensure a broad collection of relevant literature:

a. ScienceDirect (SD): 60 articles.
b. IEEE Xplore (IEEE): 32 articles.
c. Scopus: 43 articles
d. Web of Science (WoS): 80 articles.
e. PubMed: 36 articles

Such search provided a total of 251 articles. In a bid to minimize or rather eradicate redundancy in the dataset, the process of duplicate elimination was done. Literally, 77 articles were found to be duplicated and excluded hence leaving a total of 174 articles for further analysis.

Finally, the process of elimination by filtering the title led to narrow down the right research paper. This step resulted in the elimination of 66 other articles that were not relevant or falling under the same goal of this study as shown in Figure 1 .

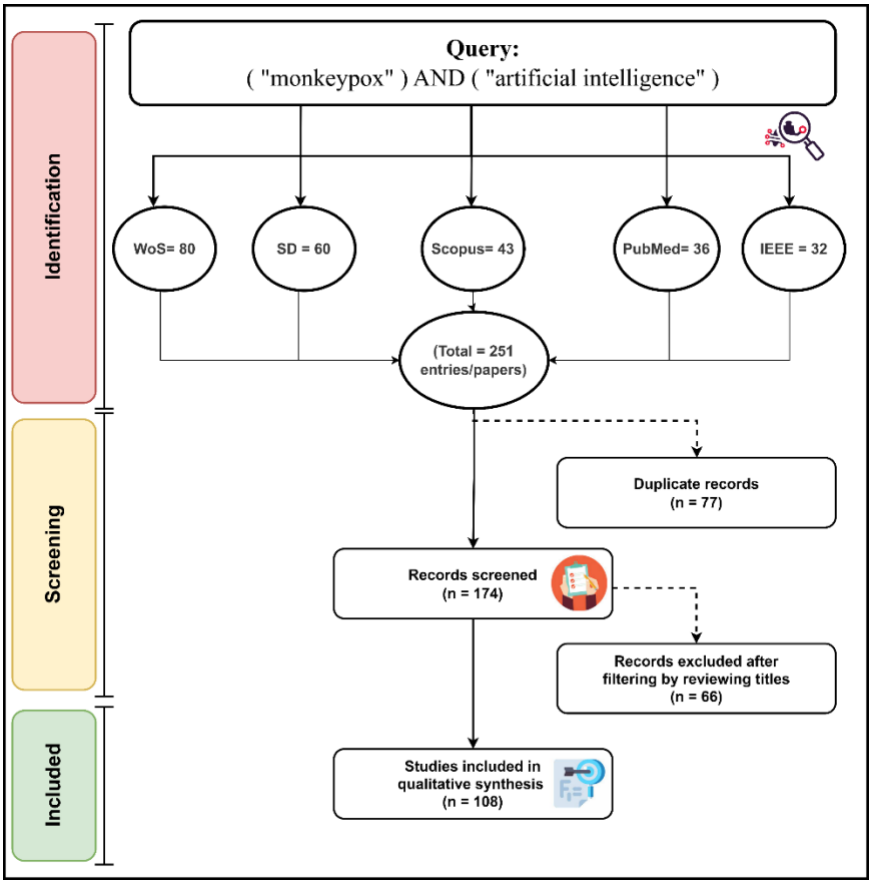

Fig. 1. Query search result and selection steps

The final total number of the articles was 108. These selected studies comprise the premise of the analysis, since they articulate on the way wherein AI is being harnessed to solve various facets of Mpox study, inclusive of diagnostic reliability, outbreak surveillance, and public health approaches. In this research a total of 108 articles was selected to apply bibliometric analysis to identify the state of AI in Mpox research, important achievements, and methodologies, and potential future prospects for this important area.

2.2 Maintaining the Integrity of the Specifications

Bibliometric analysis can be defined as the use of a number of methods and tools with the purpose of getting useful information from the wide sets of the scientific literature. These techniques require the use of computer programs as well as libraries that are specifically built to analyze bibliometric data. For instance RStudio library, has a built-in AI and analytics elements for bibliometric analysis.

However, it is also significant to note that the data sources, upon which these tools operate to provide accurate bibliometric data are extremely important. It is crucial to be familiar with what these bibliometric tools are able to do, and what their specific functions are for researchers who seek to perform accurate bibliometric studies. Thus, using these tools will help the researchers to prioritize the trends in the given field of research and to analyze statistical data, which will provide insights into the scientific activity in the given fields.

Bibliometrix is an R package which is a perfect tool for quantitative research in bibliometrics and scientometrics. Originally, it is aimed at processing scientific and scholarly publications through providing functions for data bibliographic data processing, bibliometric calculations, and visualization of the obtained results. Bibliometrix is especially helpful to scholars in the following ways; It helps in identifying the structure of a field of study, any trends that have been observed and/or the networks that are present in the field.

In this context, the library of Bibliometrix is capable of undertaking several forms of analysis on the dataset to understand the environment in the study of research.

Through Bibliometrix, the reader can get very useful information about the academic context of the papers research area just using the papers (. bib) file. This one enables to study the architecture and processes of the formation of scientific knowledge, works' citation, and interactions. This information will also be useful for further research activities and partnerships.

3. BIBLIOMETRIC ANALYSIS RESULTS AND DISCUSSION

Bibliometric analysis is a research approach that quantizes and evaluates the growth and performance of literature in the scientific arena. Understanding the data that is indexed in the bibliographic record of the scholarly publications will allow us to find trends, emergent works, cooperation profiles, and topics in the studied field. Overviews given by the bibliometric analysis results can meet its purpose of helping researchers to make specific decisions throughout the future development of the research domain, collaboration, and publication planning.
In the next sections, the results of the bibliometric analysis carried out of the dataset are presented in terms of the core parameters of research activity, impact and collaboration and the changing thematic focus of the research area.

3.1 Most Relevant Sources

Finding out the sources to be included are critical for bibliometric analysis as it captures the journals, conferences, and any other publication venues that have contributed much into the research area. These sources are where a lot of the cutting edge, high impact literature exists, they are thus useful to the researcher wanting to work in the field or get updated about the current developments (see Figure 2).

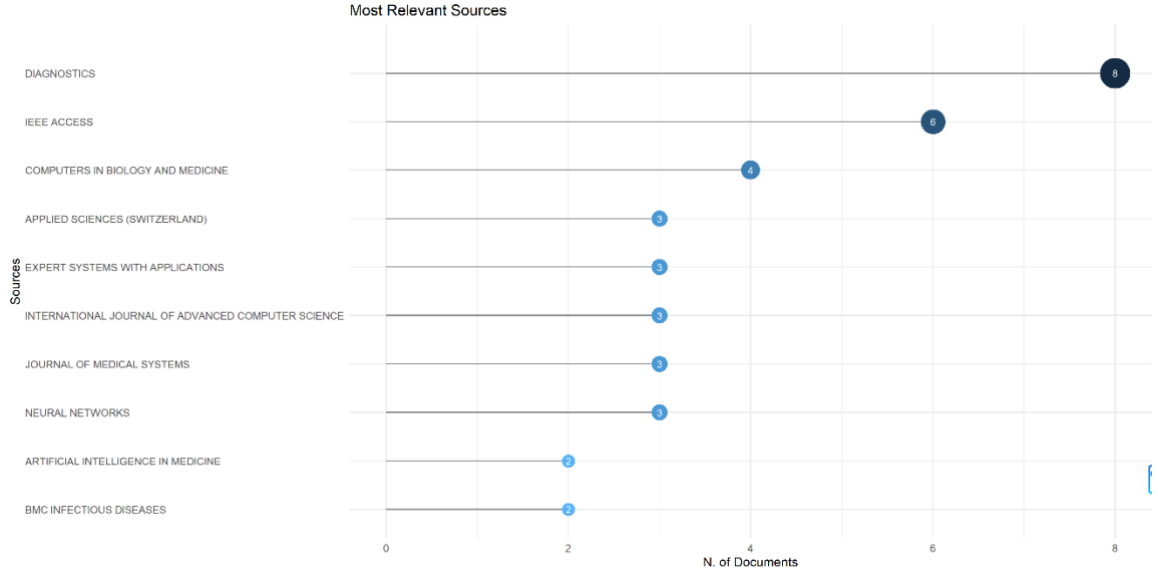

Fig. 2. Most relevant sources

The Figure shows the provided data in the form of a horizontal bar chart with the title 'Most Relevant Sources' where the Y-axis is the number of documents published by the particular important journals present in the given dataset. It is a graphical representation of the ranking of research articles in different journals which gives an understanding of which journals are dominant in the dissemination of the articles.
The journal "Diagnostics" is the most productive source and contains the largest amount – 8 documents [50], [52–58]. This means that, for work in this field, Diagnostics is a preferred mode of disseminating research findings, pointing to the fact that important issues of the field involve diagnostics.
The second is "IEEE Access" which the algorithm points out to as an important source to be published in with 6 documents identified [34], [59]–[63]. Since IEEE Access is a multidisciplinary and open-access journal, a high number of articles published in this journal is expected due to fair and open sharing of a huge number of highly cited articles.
There are 3 documents in the journals of Computers in Biology and Medicine [64]–[66], Applied Sciences (Switzerland) [46], [67], [68], Expert Systems with Applications [69–71], International Journal of Advanced Computer Science [72–74] and Journal of Medical Systems [75–77]. This goes to show that these journals are indeed necessary but not the primary journals in the publication of such works. These journals bring valuable material to the field in terms of application across the range from biology and medicine through to computing and expert systems.

3.2 Source Dynamics

From the angle of the dynamics of source production in the academic source literature, an understanding of the changes in the flows of the content of different journal sources is possible. This analysis allows scientists to determine to which journals' activity is increasing, is stable, or declining. It is only by comparing the sum total of publications over all the journals from 2022 to 2024 that one can see the general picture of the state of academia, as well as to help researchers and institutions make effective choices when it comes to choosing journals and distributing resources for publication.

Figure 3 provides these trends since the figure presents the cumulative values of the number of publications for several key journals. First of all, the 'Diagnostics' concept has risen steeply in the number of publications, having 8 documents by 2024. This rapid growth pattern provides the indication of "Diagnostics" as an influential journal in its category and concerning the matters linked to medical diagnosis in particular, as researchers continue to expand on this subject and improve diagnostics (see Figure3).

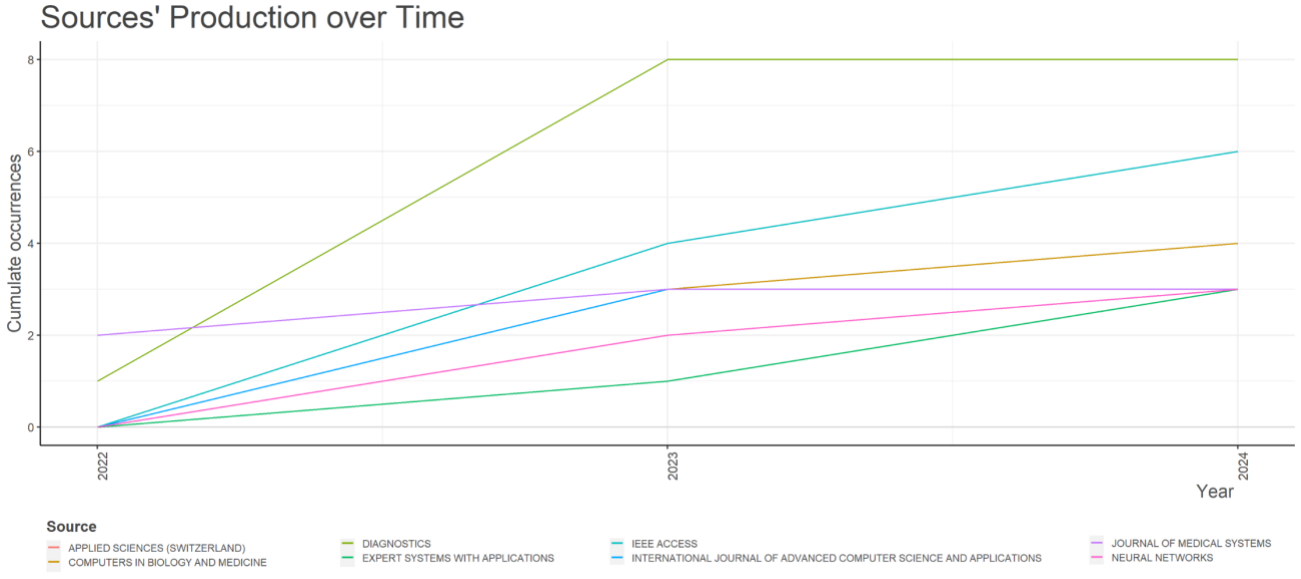

Fig. 3. Sources' production over time

Likewise, 'IEEE Access' shows a continuous rise in trend, which has 6 cumulative publications by 2024. It expresses the interdisciplinary visibility of the journal and its recognition of being one of the leading journals in terms of the scope of interests in engineering, computer science and applied sciences. Other journals include the Computers in Biology and Medicine, Applied Sciences (Switzerland), Expert Systems with Applications, and Journal of Medical Systems are some of the journals that have recorded moderate trends of articles published over the last two years.

Altogether, the presented changes in the analyzed journals' performance indicate the developments of the research area, as well as the fields that are rapidly growing and the fields that remain popular among researchers. It is useful to know these source dynamics with a view of where best to place the output of research as well as to guide institutions toward the most promising and promulgating areas of research. The figure does capture all these trends and serves as a useful tool to get an understanding of the key trends when it comes to source production and then determining the right course of action when it comes to academic publishing.

3.3 Most Relevant Words

The analysis of the most used words within the dataset, it can define such points of focus in current research activity. These words, derived from the titles, abstracts, and keywords of the publications reveal the main directions of development in the field and the most promising, in the opinion of the scientists (see Figure 4).

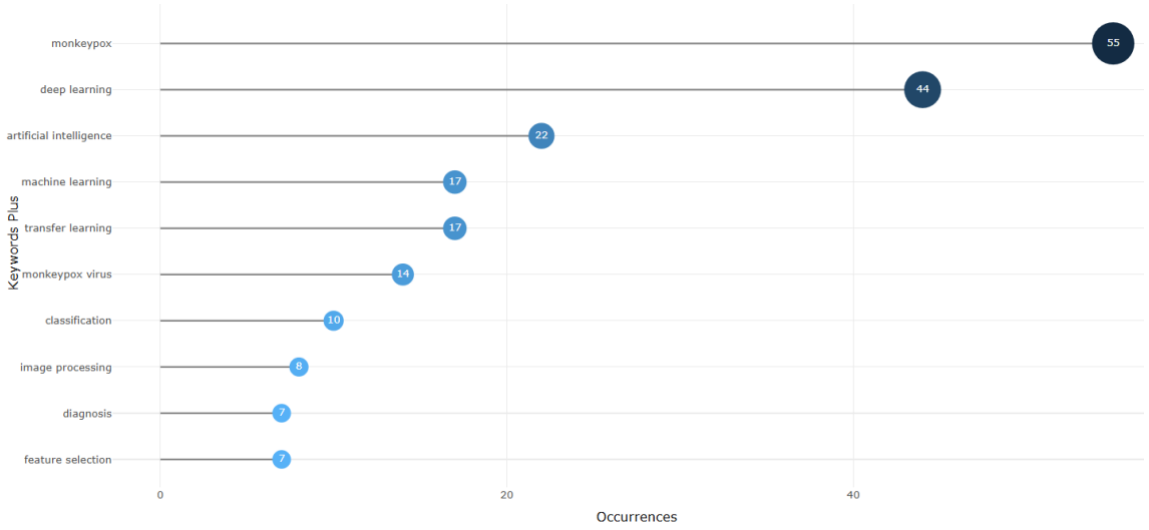

Fig. 4. Most relevant words

The term ‘Monkeypox virus is also present in many of the documents in the dataset and it occurs most often of all the terms within the dataset. This high frequency is indicative of a high interest in research for the Mpox virus, perhaps due to recent appear as well as the necessity to learn more about its spread, identification, and management. The increased frequency of this term reinforces the term’s relevance in global health studies and demonstrates the scientific community’s attempts to combat new diseases.

Such keywords as “Classification”, “Diagnosis”, “Feature selection” underscore the concentration on creation and improvement of methodology for the disease identification and classification. This interest corresponds well with the on-going work for the enhancement of diagnostic tools and algorithms which are critical for the progress of personalised medicine in addition to improving patient care. The terms “machine learning” also frequently used, is also indicative of a trend toward increasing the number of actually built machine learning models to improve the prediction accuracy while also increasing the model’s stability.

3.4 Most Relevant Word Clouds

Word clouds are a simple and effective method of presenting the words that recur most often in a given set of data, thus allowing for the identification of leading topics and research directions. Each of the word clouds for titles keywords and abstracts allows for insights to be gained from different aspects of the research literature.

The word cloud of the titles of the research articles reveals the trends and major topics construed by the authors, highlighting the specific focus and emphasis areas captured by them. It is evident that the most relevant terms in the context of the given word cloud are 'Deep Convolutional Neural,' 'Deep Learning Model,' and 'Monkeypox Skin Lesion' (see Figure 5).

Fig. 5. Word cloud for titles

Deep Convolutional Neural and Deep Learning Model (DL) indicate a high emphasis on the utilization of highly developed DL techniques especially the convolutional neural networks (CNN). These terms suggest that a large part of the work is to create and employ such models for analyzing data and for pattern identification.

These DL models are best applied specifically for the analysis of medical images as a tool for identification and classification of skin lesions resulting from Mpox virus as indicated by the term “Monkeypox Skin Lesion”. Perhaps it is due to the current unprecedented Mpox outbreak which necessitates development of better diagnostic mechanisms.

Through Word Cloud for Keywords, the reader gets an idea on core concepts and approaches specifically highlighted and employed by the researchers. The most used keywords include; Deep Learning and Mpox (see Figure 6).

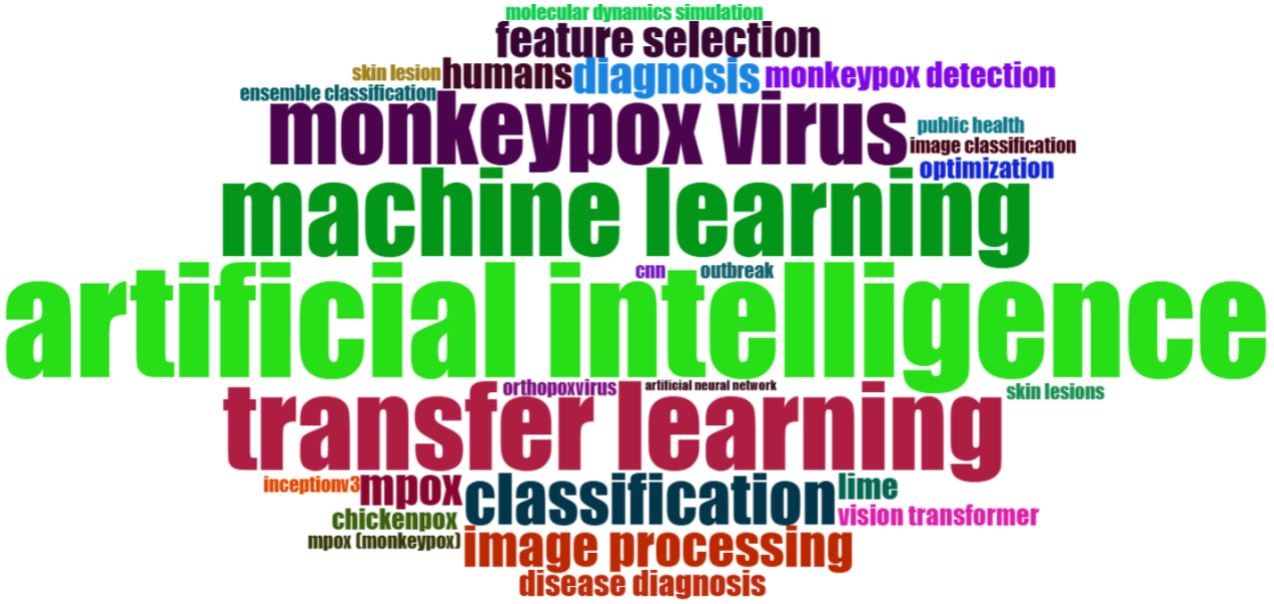

Fig. 6. Word cloud for keywords

In addition, the Word Cloud for Abstracts gives an envisaged picture of the specific research focus, approaches, and outcomes presented in the articles. Three of the most frequently used terms include; “Deep Learning Models”, “Convolutional Neural Networks”, and “Artificial Intelligence” (see Figure 7).

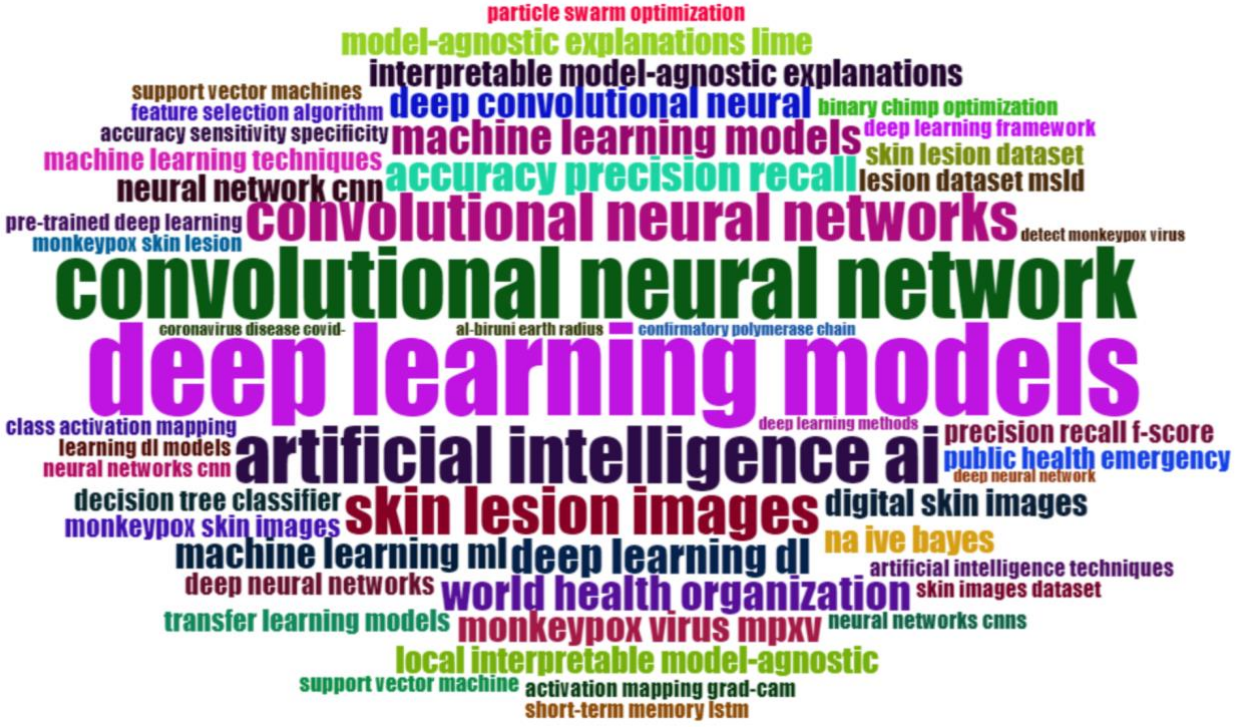

Fig. 7. Word cloud for abstract

3.5 Tree Map

Tree map is designed to depict the most essential topics of research and keywords most representative for the dataset, in terms of value and prevalence (see Figure 8). The largest area, Monkeypox (17%), also shows that the virus is being extensively researched with recent outbreaks generating the need for diagnosis and treatment. Likewise, ‘Deep Learning’

(14%) stands out as the term is widely used in numerous papers with a focal on its utilization in different research fields and especially in the healthcare sector to make diagnosis.

Fig. 8. Tree Map

Traditional categories such as “Artificial Intelligence – AI” (7%), “Machine Learning” (5%), “Transfer Learning” (5%) also speak about the importance of AI in today’s research work. These areas are important for generating ideas for new predictive models and new algorithms to enhance on accuracy and capacity of data analysis. The use of terms like ‘Diagnosis’, ‘Disease Diagnosis’, and ‘Public Health’ which is majorly linked with health serves as a pointer to how AI is fast being embraced in addressing medical concerns especially in times of newly mutated diseases such as Monkeypox.

The areas in the smaller rectangles of the tree map may represent areas that are relatively new to the field or areas that are not explored thoroughly but are related to the main topics of the research study such as; “Feature Selection,” “Image Processing,” “Vision Transformer” among others, though they register low occurrences they are a sign that the field is ever expanding, and more ideas are cropping up in the more specific subtopics. The variety of the keywords is explained by the interdisciplinarity of the modern research, that compose AI, Machine Learning, and health sciences, to solve the complicated issues.

In general, the tree map offers an overview of the current trends of the research focusing on the Quantified Self movement and its most popular topics. It gives emphasis on how effective the AI and DL are in the development of global medical research and public health and, at the same time, it indicates some significant areas that remain somewhat unexplored.

3.6 Co-occurrence Network

The co-occurrence network visualization helps identify the emerging topics and the interconnectedness of terms most frequently used in the abstracts of the research articles thus, providing the understanding of the major focus areas of the current research (see Figure 9).

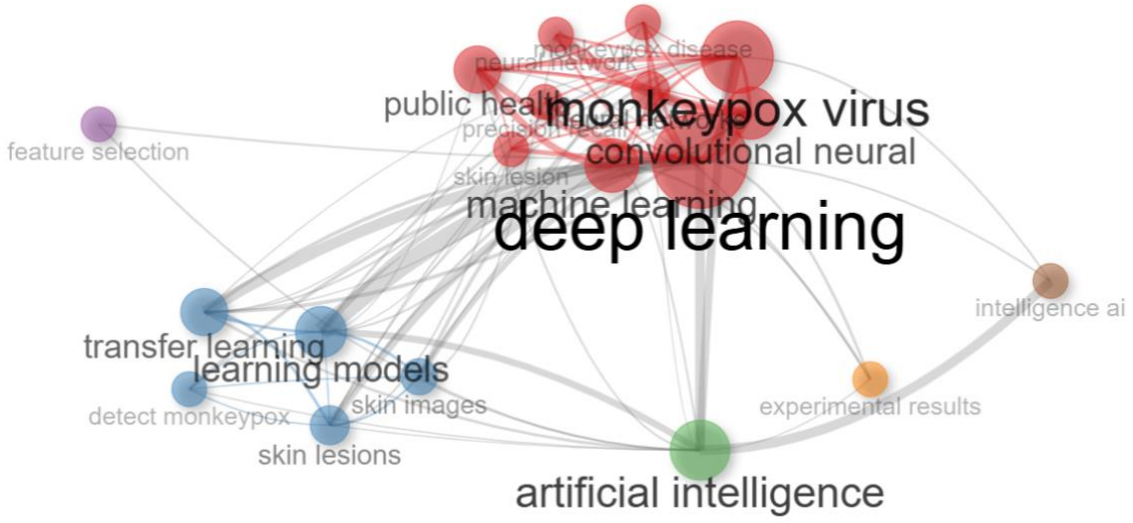

Fig. 9. Co-occurrence network

Interestingly, the most frequently used term, “Deep Learning”, act as a hub that shows how widely used it is in different studies. As for the keywords, their relation to other terms is basically as follows: ‘convolutional neural’ is connected to the term like ‘Monkeypox Virus’ and ‘Artificial Intelligence’, which signifies that DL techniques are widely used in medical and diagnostic fields, including counteraction of new threats such as the Monkeypox virus.

It also demonstrates a strong correlation between AI terms and Health inclined concepts like public health, skin lesions and disease detection indicating healthy symbiosis of AI in cutting edge health solutions to enhance health services and improve the life of populace. The continued use of terms such as “Transfer Learning” and “Learning Models” shows that developers continue to improve on AI algorithms, especially in medical diagnosis using image data as well as situations with little data. All in all, the network emphasizes an interdisciplinary approach that dominates contemporary scientific research, in which AI and DL occupy a prominent position and are used to solve such critical issues as global health. This interconnectedness focuses on cooperation towards improving the health care through AI resulting into direction of futures research and improvement on medical technology.

3.7 Thematic Map

The thematic map is a classification map that groups research themes according to the development of the topic density and importance or centrality of the research issue in the literature, thus providing an orienting view of the research field. The map divides themes into four quadrants: Motor Themes, Basic Themes, Niche Themes and the Emerging or Declining Themes (see Figure 10).

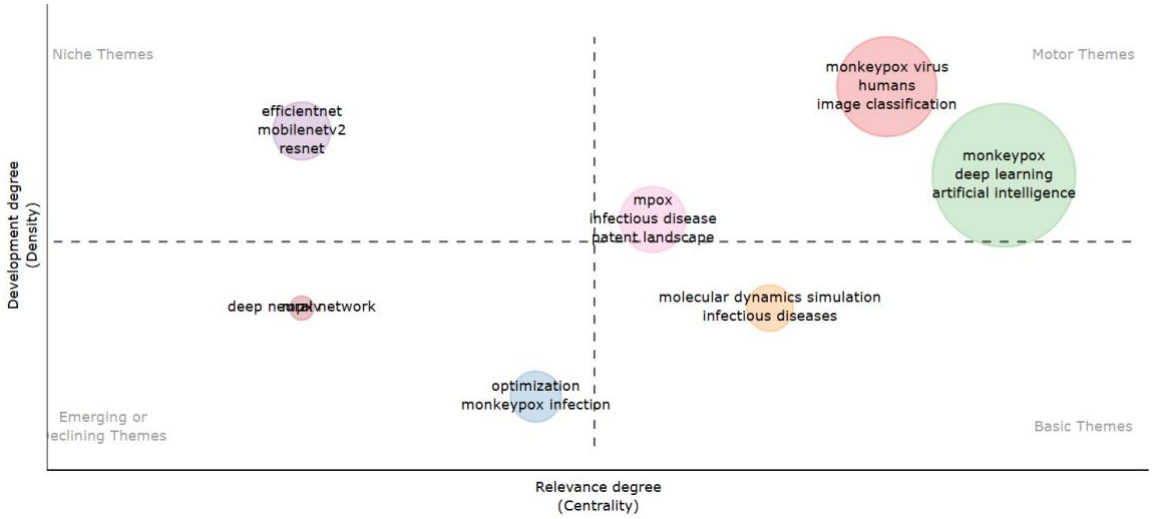

Fig. 10. Thematic map

High density and high centrality appeared in the Motor Themes quadrant, and some themes are located on this quadrant such as “Monkeypox, Deep Learning, Artificial Intelligence” and “Monkeypox Virus, Humans, Image Classification”. These themes are well articulated and timely and are driving most of the current studies in the field. The current positioning for the teams is derived from the special emphasis placed on employing AI and DL for healthcare purposes, including the assessment of Monkeypox with image classification methods.

The Basic Themes are (low density, high centrality) include; Molecular Dynamics Simulation, Infectious Diseases, etc. These themes are critical but rudimentary therefore denote their core support for encompassing literature. They occupy a central place as they offer important information needed for causing and managing infectious diseases, but more needs to be done for the optimization of these mediators.

Specialized Themes (high density-low centrality) include Niche Themes such as EfficientNet, MobileNetV2 & ResNet and they are narrower, very well developed in their respective areas; involving the improvement of the design of automated neural networks used in the AI field. Although they are less centralised, that implies that their focus is more specific to particular topics of research that is not very inclusive within the general field of study. These themes are important for the progress of particular technologies; however, they mostly do not related to other domains.

The Emerging or Declining Themes quadrant includes Low Density and Low Centrality publications such as the topics; “Deep Neural Network” or “Optimization, Monkeypox Infection”. These are either topics that researchers are likely to explore in future or topics that are unlikely to be of importance in the current research landscape. Due to low density and centrality they are not, perhaps, currently a primary concern but may represent possible new avenues for research or fields that are in need of rejuvenation.

In total, the use of the thematic map to visualize the research landscape gives a clear understanding of such things as the general themes defining the field, the important areas that need more research, the specific areas of the study, and the perspective or potentially shrinking topics. It makes it easier for the researcher or an institution to focus, plan, and find areas of growth in the changing research landscape.

3.8 Factorial Analysis

The factorial analysis plot provides an insight into the association between the vital research terms where they are classified into different sectors according to the frequency they appear together. The first two dimensions of the plot are called Dim 1 and Dim 2, which show the basic underlying concepts for the analysis of these terms, and the main topics in the research field were identified as follow (see Figure 11).

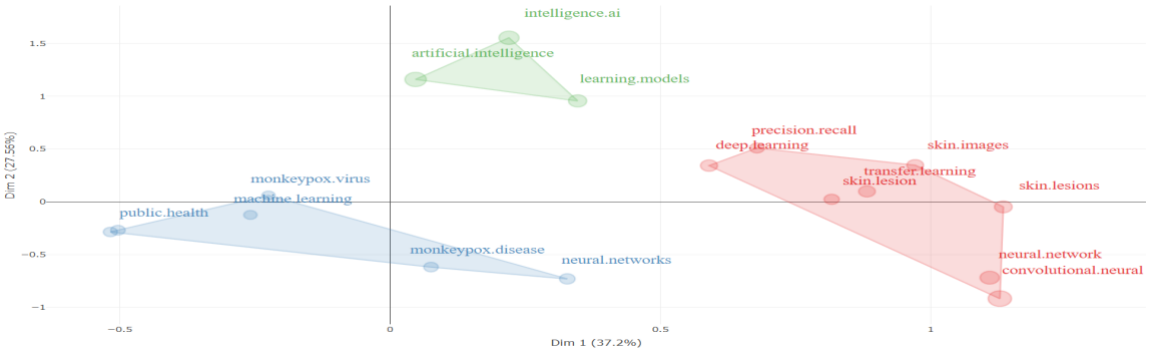

Fig. 11. Factorial analysis

As for the terms in the upper left quadrant, it can notice such terms as, for instance, “Artificial Intelligence,” “Intelligence. AI,” “Learning Models” that form a specific cluster devoted to the theoretical and practical aspects of AI and Machine Learning. This grouping implies that there is a great deal of effort placed on the AI technology development and improvement, which underlines the basic importance of AI technologies in the further research.

The lower right area consists of such keywords as ‘Deep Learning,’ ‘Convolutional Neural’, ‘Neural Network’ ‘Skin Lesion’ ‘Skin Images. ’ This grouping shows the focus on using DL methods to predict skin images and diagnosing skin lesion. It can be inferred that there is constant research to enhance these models’ efficiency, using terms such as ‘Precision,’ ‘Recall,’ or ‘Transfer Learning’ This goes a long way into speaking to the relevance of this research to healthcare.

The first cluster which includes the lower left coordinates and terms such as “Public Health”, “Monkeypox Virus”, “Monkeypox Disease”, “Neural Networks” and “Machine Learning” can be regarded as – AI Applicability to the topic. Presumably, the research in this cluster might address how machine learning using neural networks can be applied in the modeling as well as prediction of diseases and improvement of the response to epidemics by the public health agencies.

In total, the factorial analysis offer an unambiguous picture of the principal directions of the research, stressing on the places of AI and machine learning as in theoretical frameworks, and in the practical context for different fields including healthcare and public health. It facilitates seeking into the potential areas of further research, bringing investigations into line with the current mainstream, and enhancing interdisciplinarity work for development of these vital sectors.

4. CONCLUSION

The application of artificial intelligence (AI) and particularly artificial neural networks in Monkeypox (Mpox) has great potential toward improving the existing knowledge, methods of the diagnosis and treatment of the disease. In this area of study, the presented bibliometric analysis has shown that AI is a central enabler of researching new strategies for enhancing research approaches and a means for establishing new bearings and blind spots in the literature. By adopting deep and machine learning, the researchers and clinicians can enhance diagnostic performance and come up with the most appropriate therapy for the patients, AI also assist in developing better strategies of disease control and surveillance. In the present work, a bibliometric analysis of 108 research papers was carried out. However, the authors did not cited all the papers for the analysis since this work did not delve into the nuances of the studies. This aspect has only been considered for future work. It therefore emphasizes the need to continue to fund the development of AI technologies, and collaboration between multiple fields in order to tackle the international health threat posed by Mpox. These are findings can provide useful information on future research and constrain on public health to control and lessen the spread of Mpox in the world.

Conflicts of Interest

The author declares that there is no conflict of interest regarding the publication of this paper.

Funding

The authors receive no funding for this work.

Acknowledgment

The author extends appreciation to the institution for their unwavering support and encouragement during the course of this research.

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