IJFANS INTERNATIONAL JOURNAL OF FOOD AND NUTRITIONAL SCIENCES
ISSN PRINT 2319 1775 Online 2320 7876
 UGC CARE Listed (Group -I) Journal Volume 11, Iss 10, 2022

New Trends in Data Mining Techniques

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Abstract:

Data mining is a process that involves extracting useful information and insights from large data sets using various techniques and methodologies. Over the years, the field of data mining has evolved with new trends and technologies that have enabled the development of more sophisticated and accurate models. This paper examines five new trends that have emerged in data mining patterns, including anomaly detection, ensemble learning, graph mining, time-series analysis, and deep reinforcement learning. We analyze these trends and discuss their potential implications for the future of data mining, and also explore new innovations in algorithms that have enhanced these trends.

Introduction:

Data mining is a rapidly-evolving field that is constantly changing with the emergence of new trends and technologies. The goal of data mining is to extract valuable information from data that can be used for decision-making and other purposes. In recent years, data mining has evolved with the emergence of new trends that have enabled the development of more sophisticated and accurate models. This paper examines five new trends that have emerged in data mining patterns and analyzes their potential implications for the future of data mining, while also exploring new innovations in algorithms that have enhanced these trends.

New Trends in Data Mining Patterns:

Anomaly Detection:

Anomaly detection is a new trend in data mining that involves identifying unusual patterns or outliers in data. Anomaly detection has been used in various applications, including fraud detection, intrusion detection, and medical diagnosis. Anomaly detection involves the use of statistical techniques, such as clustering and density-based methods, to identify unusual patterns in data. One new innovation in anomaly detection is the use of deep learning techniques, such as autoencoders, to identify anomalies in data. Autoencoders can learn the normal patterns in data and detect anomalies based on deviations from these patterns.

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Ensemble Learning:

Ensemble learning is another new trend in data mining patterns that involves combining multiple models to improve accuracy and reduce overfitting. Ensemble learning has been used in various applications, including image classification, speech recognition, and natural language processing. Ensemble learning involves the use of techniques such as bagging, boosting, and stacking to combine multiple models and improve accuracy. One new innovation in ensemble learning is the use of neural architecture search (NAS) techniques to automatically search for optimal model architectures for ensemble learning. NAS can improve the efficiency and accuracy of ensemble learning by automatically selecting the best model architectures for the given dataset.

Graph Mining:

Graph mining is a new trend in data mining patterns that involves analyzing complex data structures, such as social networks, biological networks, and financial networks. Graph mining has been used in various applications, including social network analysis, bioinformatics, and fraud detection. Graph mining involves the use of techniques such as clustering, community detection, and centrality analysis to analyze complex data structures. One new innovation in graph mining is the use of graph neural networks (GNNs) to learn node and edge representations for graph data. GNNs can improve the accuracy and efficiency of graph mining by learning informative representations of graph data.

Time-Series Analysis:

Time-series analysis is another new trend in data mining patterns that involves analyzing data that changes over time. Time-series analysis has been used in various applications, including finance, healthcare, and weather forecasting. Time-series analysis involves the use of techniques such as autoregression, moving averages, and spectral analysis to analyze data that changes over time. One new innovation in time-series analysis is the use of recurrent neural networks (RNNs) to model temporal dependencies in data. RNNs can improve the accuracy and efficiency of time-series analysis by capturing long-term dependencies in data.

Deep Reinforcement Learning:

Deep reinforcement learning is a new trend in data mining patterns that involves training agents to learn optimal behavior in dynamic

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Examples :

Amazon Web Services (AWS) - AWS provides a range of cloud-based services, including data storage and processing. Amazon EMR (Elastic MapReduce) is a cloud-based data processing service that allows users to run big data frameworks such as Apache Hadoop and Spark on the AWS infrastructure.

Microsoft Azure - Azure is a cloud-based computing platform that provides a range of services, including data storage and processing. Azure Machine Learning is a cloud-based machine learning service that enables users to build, train, and deploy machine learning models.

Google Cloud Platform - Google Cloud Platform provides a range of cloud-based services, including data storage and processing. Google Cloud Dataflow is a cloud-based data processing service that enables users to process large datasets using Apache Beam.

IBM Watson - IBM Watson is a cloud-based cognitive computing platform that provides a range of services, including data analytics and machine learning. Watson Analytics is a cloud-based data analysis service that enables users to explore and visualize data using natural language queries.

Snowflake - Snowflake is a cloud-based data warehousing platform that provides a range of services, including data storage, processing, and analytics. Snowflake enables users to analyze large datasets using SQL-based queries and machine learning models.

Results:

Our review of the literature identified several trends in data mining techniques. One of the most significant trends is the use of deep learning techniques, which has shown great promise in analyzing and interpreting large datasets. The use of cloud computing has also become increasingly popular, as it allows for faster and more efficient data processing. Data visualization techniques have also become more advanced, allowing for better visualization and interpretation of data. Natural language processing techniques have also been used to analyze unstructured data, such as text and speech. Finally, the use of blockchain technology has shown great potential in data security and privacy.

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Discussion:

The discussion section provides an interpretation of the results and discusses their significance. The latest trends in data mining techniques have significant implications for various fields such as healthcare, finance, and marketing. For example, the use of deep learning techniques can be used to analyze medical images and assist doctors in making more accurate diagnoses. In finance, cloud computing can be used to process large amounts of financial data and make more accurate predictions. Data visualization techniques can be used in marketing to analyze customer behavior and preferences.

Conclusion:

The latest trends in data mining techniques have the potential to revolutionize various fields and provide valuable insights into large and complex datasets. However, there are also challenges associated with data mining, such as data security and privacy concerns. As such, it is important to continue to develop new and innovative data mining techniques while also addressing these challenges.

References:

- Chen, M., Mao, S., & Liu, Y. (2014). Big data: A survey. Mobile Networks and Applications, 19(2), 171-209.
- LeCun, Y., Bengio, Y., & Hinton, G. (2015). Deep learning. Nature, 521(7553), 436-444.
- Mell, P., &Grance, T. (2011). The NIST definition of cloud computing. National Institute of Standards and Technology, 53(6), 50.
- Bostrom, R. P., &Heinen, J. S. (2013). MIS problems and failures: a socio-technical perspective. MIS Quarterly, 17(3), 317-336.
- Liu, B. (2012). Sentiment analysis and opinion mining. Synthesis Lectures on Human Language Technologies, 5(1), 1-167.
- Swan, M. (2015). Blockchain: blueprint for a new economy. O'Reilly Media, Inc.