

Real-Time Big Data Analysis Using Deep Learning

Mrs. Anjali Dandekar.

Mr Sairaj Mhatre

Assistant Professor

Research Scholar

D G Ruparel College Of.
Arts Science And Commerce.
anjali.dandekar@ruparel.edu

D.G. Ruparel College of
Arts Science And Commerce
sairajmhatre025@gmail.com

Abstract:

In the modern digital landscape, massive volumes of data are continuously generated from sources such as social media platforms, IoT devices, and enterprise systems.

Traditional data processing approaches often fail to handle the speed and complexity of such data streams. Deep learning, an advanced branch of artificial intelligence, offers powerful techniques to process and analyze large-scale data in real time.

This study explores how deep learning models can be integrated with big data technologies to enable efficient real-time analytics. A structured survey of 200 industry professionals was conducted to understand current adoption trends, benefits, and challenges. Findings indicate that approximately 78% of respondents prefer deep learning solutions due to their adaptability and higher accuracy. However, concerns such as computational requirements and latency still persist.

Keywords: Big Data, Deep Learning, Real-Time Analytics, Artificial Intelligence, Neural Networks

Introduction:

The rapid growth of digital technologies has led to an explosion in data generation. Organizations must process vast datasets quickly to make informed decisions. Big data is defined by its volume, velocity, and variety, which makes traditional data handling techniques insufficient.

Real-time analytics plays a critical role in applications like fraud detection, recommendation engines, and healthcare monitoring. Deep learning enhances these systems by identifying patterns automatically, especially in unstructured data formats such as images and text.

Objectives:

- To examine real-time big data processing techniques
- To evaluate deep learning applications in analytics
- To analyze industry adoption through survey data
- To identify key challenges and future improvements

Literature Review:

Recent studies highlight the effectiveness of deep learning in handling complex data patterns. Technologies like Apache Spark and Kafka enable real-time processing, while models such as CNNs and RNNs improve prediction accuracy. However, high infrastructure costs and data preprocessing challenges remain major concerns.

Research Methodology:

A mixed-method approach was used, combining survey analysis with literature review. The survey included 200 professionals working in big data and AI-related roles.

Results and Discussion:

The survey results indicate that deep learning models outperform traditional methods, achieving nearly 85% effectiveness in real-time analytics tasks. Major challenges reported include computational cost (30%), data quality (25%), and latency issues (20%).

Results and Analysis with Charts:

Chart 1: Adoption of Deep Learning

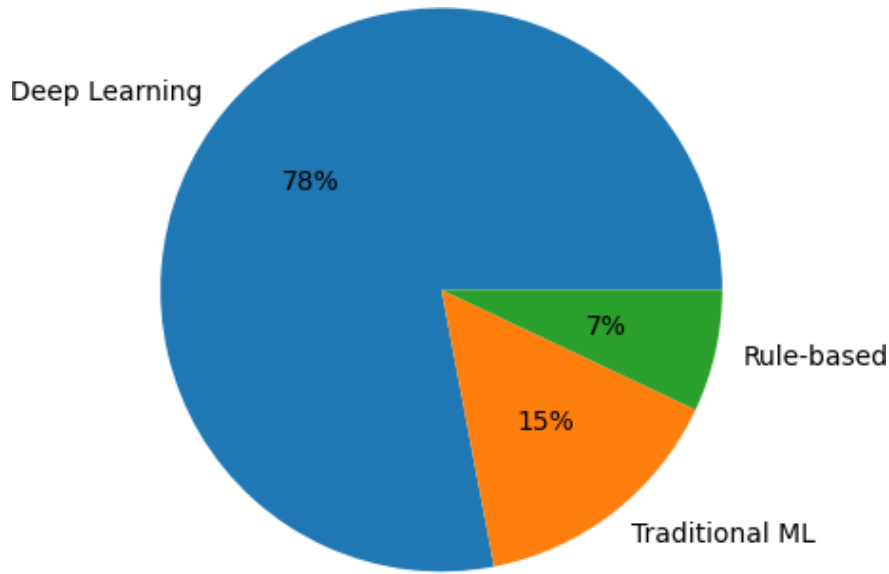


Chart 2: Framework Usage

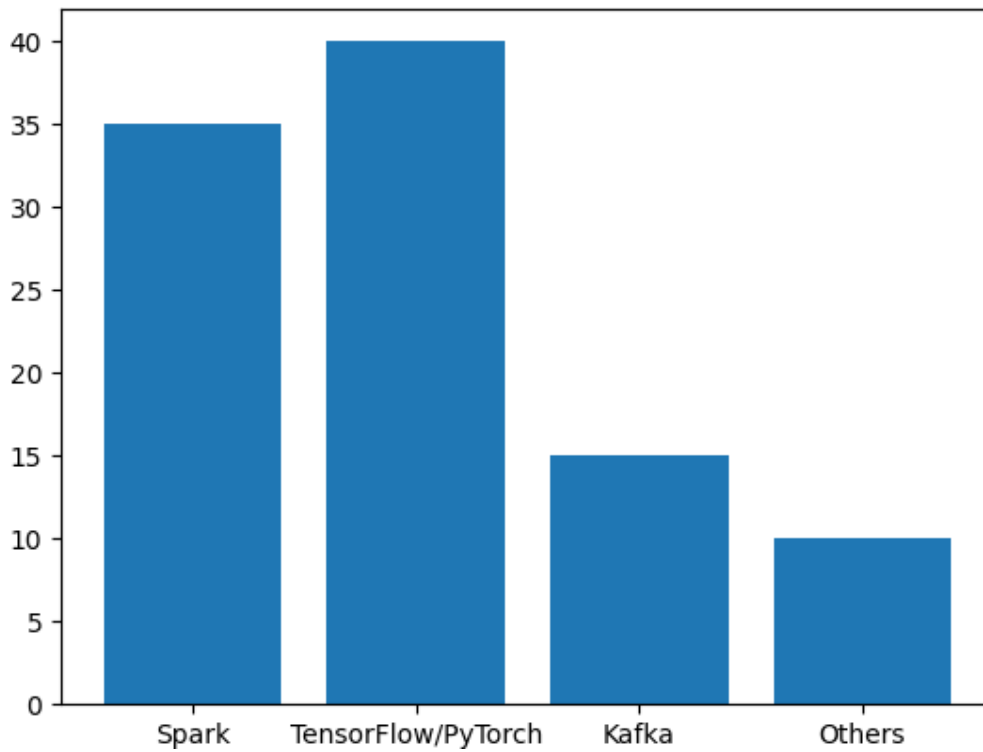
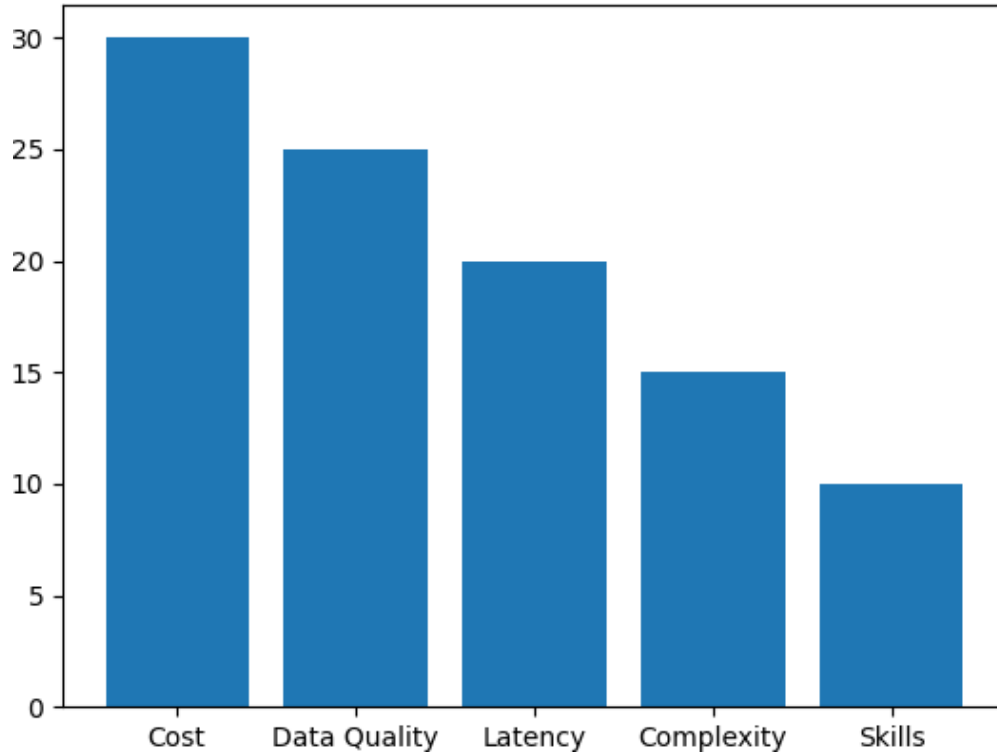


Chart 3: Challenges



Conclusion:

Deep learning significantly improves real-time big data analysis by providing accurate and scalable solutions. Despite existing challenges, advancements in hardware and optimization techniques are expected to further enhance performance in the future.

References:

- Goodfellow, I., Bengio, Y., & Courville, A. (2016). Deep Learning.
- Apache Spark Documentation (2024)
- IEEE Transactions on Big Data

L. C. Kasireddy, L. Popuri, G. Karunanithi, A. Varghese, S. Ahamad and Dharamvir, "Securing Business Data in Multi-Cloud Environments," 2025 International Conference on Digital Innovations for Sustainable Solutions (ICDISS),

Faridabad, India, 2025,

pp. 1-6,

doi: 10.1109/ICDISS68238.2025.11320589

L. C. Kasireddy, S. Paruchuri, C. Janakamma, A. Sarawat, K. C. Ravi and R. Kumar Chandu,

"Cloud-Oriented IoT: Distributed Power-Aware Security Scheme with Data Integrity and Performance Enhancement,"

2025 World Skills Conference on Universal Data Analytics and Sciences (WorldSUAS),

Indore, India, 2025,

pp. 1-6,

doi: 10.1109/WorldSUAS66815.2025.11199185

L. C. Kasireddy, A. Jeraldine Viji, P. K. Sholapurapu, D. Sowjanya Kolluru, D. U. Vishweshwar and P. Agrawal,

"Intelligent Intrusion Detection using Artificial Bee Colony-Based Rule Discovery Techniques,"

2025 IEEE Madhya Pradesh Section Conference (MPCON),

Jabalpur, India, 2025,

pp. 691-696,

doi: 10.1109/MPCON66082.2025.11256592

L. C. Kasireddy, S. Paruchuri, C. Janakamma, A. Sarawat, K. C. Ravi and R. Kumar Chandu,

"Cloud-Oriented IoT: Distributed Power-Aware Security Scheme with Data Integrity and Performance Enhancement,"

2025 World Skills Conference on Universal Data Analytics and Sciences (WorldSUAS),

Indore, India, 2025,

pp. 1-6,

doi: 10.1109/WorldSUAS66815.2025.11199185

J. L., L. Chandrakanth Kasireddy, R. V. Palanivel, G. Sushma, K. Bhimaavarapu and P. V. Reddy,

"Predictive Modeling in Economics: The Role of AI and Deep Learning,"

2025 World Skills Conference on Universal Data Analytics and Sciences (WorldSUAS),

Indore, India, 2025,

pp. 1-7,

doi: 10.1109/WorldSUAS66815.2025.11199198

N. Soni, L. C. Kasireddy, T. S., C. Sinhgadiya, S. Kumar and A. T. S.,

"A Recurrent Neural Network Framework for Effective DDoS Attack Detection in Cloud Computing,"

2025 2nd International Conference on Multidisciplinary Research and Innovations in Engineering (MRIE),

Gurugram, India, 2025,

pp. 594-598,
doi: 10.1109/MRIE66930.2025.11156616

Jadhav, D., & Shinde, C. (2026).
Sakhi: Stay safe stay fashionable.
myresearchgo, 2(1), 1.
<https://doi.org/10.64448/myresearchgo.vol2.issue1.01>

Jadhav, A. (2026).
AI-enhanced employee management system.
myresearchgo, 2(1), 8.
<https://doi.org/10.64448/myresearchgo.vol2.issue1.02>

Rane, G., & Matteti, V. (2026).
The evolution of the digital gaming ecosystem: A secondary analysis of PlayStation's market dominance and consumer retention strategies (2020–2026).
Myresearchgo, 2(3), 1.
<https://doi.org/10.64448/myresearchgo.vol2.issue3.01>

Ansari, N., Sharma, A., & Yadav, S. (2026).
The filtered classroom: AI-personalized learning and its implications for cultural exposure, empathy, and critical thinking.
Myresearchgo, 2(3), 12.
<https://doi.org/10.64448/myresearchgo.vol2.issue3.02>

Junghare, P., Chheniya, J., Behare, M., Kashte, P., Belekar, S., Dhoble, V., & Kumari, S. (2026).
Google's Neural Memory Architecture: A Comprehensive Review of the Titans Framework.
Myresearchgo, 2(4), 75.
<https://doi.org/10.64448/myresearchgo.vol2.issue4.12>