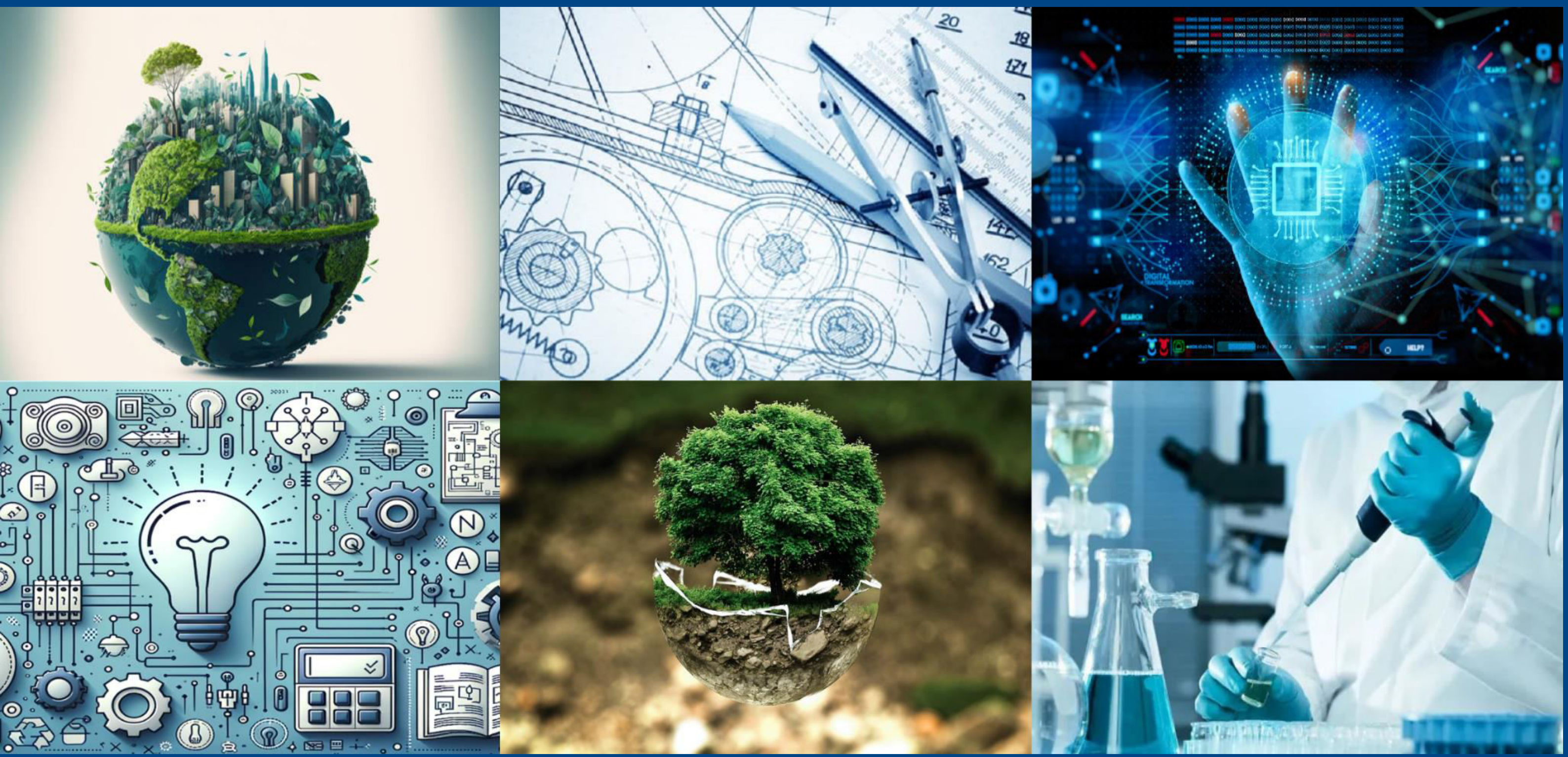
ISSN: 2582-7219

International Journal of Multidisciplinary Research in Science, Engineering and Technology

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)



Impact Factor: 8.206

Volume 8, Issue 6, June 2025

© 2025 IJMRSET | Volume 8, Issue 6, June 2025| DOI:10.15680/IJMRSET.2025.0806015

ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 8.206| ESTD Year: 2018|

International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

Meta's LLaMA2 AI: Impact on Radiology, Finance and Beyond

Anvith Shenoy B, Jayashree M

PG Student, St Joseph Engineering College, Vamanjoor, Mangalore, India

Assistant Professor, St Joseph Engineering College, Vamanjoor, Mangalore, India

ABSTRACT: Artificial Intelligence models like OpenAI's ChatGPT and Google's Gemini have already left an impression in various fields through practical application. Ever since the release, there has been a significant rise in the development and deployment of models. Meta's LLaMA is among the few models that have been coming onto the rise to operate on standalone machines. It also has been already researched and deployed in radiology and finance. Although limited by the information due to lack of internet connectivity, it rivals its online counterparts. This research paper focuses on the extent of this model, i.e., its limitations and fields of use.

I. INTRODUCTION

Artificial intelligence (AI) has emerged as a technology that has revolutionized numerous industries. Among this technological wave are advanced AI models like OpenAI's ChatGPT and Google's Gemini, which made significant inroads into natural language processing and complex decision-making processes. However, the landscape of AI continues to evolve, with new models pushing the boundaries of what is possible.

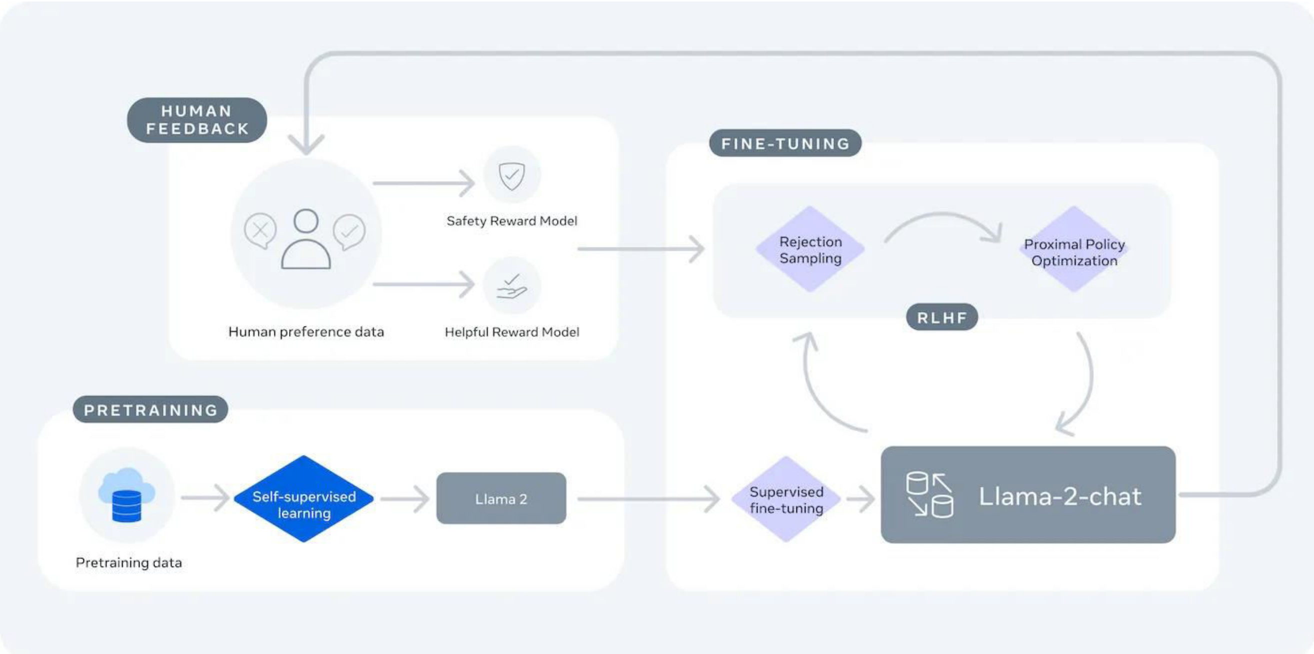


Figure 1: Meta's LLaMA2 AI model architecture

Meta's LLaMA (Large Language Model Meta AI) represents a notable advancement. Unlike many contemporary AI models that rely heavily on cloud-based infrastructure and continuous internet connectivity, LLaMA functions efficiently on standalone machines. This unique capability positions itself as a versatile tool for environments where internet access is limited or data privacy concerns necessitate local processing.

ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 8.206| ESTD Year: 2018|

International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

Despite its promising applications, LLaMA is not without limitations. The absence of internet connectivity restricts its access to real-time data updates and online resources, posing challenges in rapidly changing environments. This paper aims to provide a comprehensive review of LLaMA's capabilities, its impact on radiology and finance, and the potential limitations and improvements that could enhance its effectiveness.

By examining the current literature, evaluating real-world deployments, and comparing LLaMA with other leading AI models, this research offers a nuanced understanding of where LLaMA stands in the broader AI landscape and how it can drive innovation and efficiency in various domains.

II. LITERATURE REVIEW

Artificial Intelligence (AI) has been steadily advancing, in various industries, particularly radiology and finance. Over the years, Research has delved into the capabilities and limitations of AI, helping shape the development of more sophisticated models like Meta's LLaMA2.

In the medical field, especially radiology, AI has shown great promise in assisting with diagnostic tasks. Esteva et al. (2017) demonstrated that deep neural networks could achieve dermatologist-level accuracy in classifying skin cancer by analyzing large datasets of medical images. This study marked a critical milestone, highlighting AI's potential to support medical professionals in making more accurate and timely diagnoses. However, the adaptability of these AI models to diverse medical conditions and varied imaging data remained a challenge, limiting their widespread adoption.

Huang et al. (2017) addressed some limitations by introducing Densely Connected Convolutional Networks (DenseNets), allowing efficient feature reuse and improved image classification performance. DenseNets' ability to better capture patterns within complex datasets made them a valuable tool in medical imaging, offering enhanced accuracy in tasks like tumor detection. These advancements laid the groundwork for more recent models like LLaMA2, which aims to further refine diagnostic accuracy by incorporating advanced neural architectures and attention mechanisms.

The application of AI in finance has been equally transformative. AI models have enhanced the decision-making processes in risk management, fraud detection, and financial forecasting. The M4 Competition, as detailed by Makridakis et al. (2020), provided a comprehensive evaluation of forecasting methods, including those powered by AI, across 100,000-time series datasets. The findings emphasized the superiority of AI models in predictive accuracy, which is crucial for tasks like detecting financial anomalies and forecasting market trends. Despite their effectiveness, these AI systems often grapple with the issue of false positives, where legitimate activities are incorrectly flagged as suspicious, leading to inefficiencies and customer frustration.

The development of Meta's LLaMA2 AI model is deeply rooted in the progress made by earlier AI innovations. The presentation of the BERT show by Devlin et al. (2018) revolutionized normal dialect preparation (NLP) by utilizing profound bidirectional transformers to get the setting of words in a sentence more precisely. This breakthrough was critical for applications requiring nuanced language comprehension, such as automated customer service and sentiment analysis in finance. Building on these concepts, Vaswani et al. (2017) presented the consideration instrument, which permitted AI models to center on particular parts of input information more viably. LLaMA2 leverages these advancements, enabling it to process and analyze complex data inputs with greater accuracy, making it particularly useful in fields that demand high precision, like radiology and finance.

Language models, as explored by Radford et al. (2019) and Brown et al. (2020), further illustrated the versatility of AI by showing that models could perform multiple tasks without explicit supervision, using large datasets to learn and adapt. This capability is mirrored in LLaMA2, which uses similar techniques to improve its performance across various applications, from medical diagnostics to financial analysis. The ability to generalize across tasks is a significant advantage, allowing LLaMA2 to be deployed in different scenarios without requiring extensive retraining.

Despite the significant advancements, ethical concerns surrounding AI persist. Minsky (1961) was one of the early pioneers, to voice concerns about the risks of intelligent systems, cautioning against the unchecked development of AI.

© 2025 IJMRSET | Volume 8, Issue 6, June 2025| DOI:10.15680/IJMRSET.2025.0806015

ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 8.206| ESTD Year: 2018|

International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

III. METHODOLOGY OF PROPOSED SURVEY

Data Collection

The research involved the collection of data, through a comprehensive review and cross-verification of information, including Google. To ensure the accuracy and comprehensiveness of the data, several AI models were employed. Specifically, Gemini, ChatGPT, and Meta's LLaMA2 were utilized to analyse and validate the collected information.

Data Verification

The data from external sources were cross-verified using advanced AI models. This process involved:

- **Gemini:** Used for analyzing and synthesizing information across diverse data sources, providing insights into the capabilities and impact of Meta's LLaMA2 AI model.
- **ChatGPT:** Employed to generate contextual understanding and interpret data regarding the impact of AI in radiology and finance.
- **LLaMA2:** Utilized for in-depth analysis and validation of the findings, ensuring the reliability of the information regarding the AI model's performance and applications.

Analysis

The analysis was carried out in several stages:

- **Data Synthesis:** Information gathered was synthesized to form a comprehensive view of Meta's LLaMA2 AI model's impact; the synthesis involved comparing and contrasting findings from different sources to build a coherent understanding.
- **AI Model Evaluation:** The AI models were used to generate detailed data evaluation. Each model's output was analyzed to assess consistency and accuracy, contributing to a robust analysis of the AI model's capabilities and implications.

Ethical Considerations

The usage of AI models involved adhering to best practices in data handling and analysis, ensuring the integrity of the process. All data handled complied with ethical guidelines for research and AI use.

Validation

To validate the findings, the results were cross-checked with existing literature and case studies relevant to Meta's LLaMA2 AI model. This process ensured that the derived conclusions were accurate and reflected a thorough understanding of the AI model's impact.

IV. CONCLUSION AND FUTURE WORK

This study explores the capabilities of Meta's LLaMA2 AI model, demonstrating its potential to enhance diagnostic accuracy in radiology and improve financial analyses. While LLaMA2 offers significant advancements, challenges like integration difficulties and data privacy concerns require addressing. Future research should focus on evaluating the model's long-term impact, developing strategies for better system integration, and addressing ethical and privacy issues. Gathering user feedback and comparing LLaMA2 with other AI models will also be crucial for refining its capabilities and exploring its broader applications.

REFERENCES

[1] Brown, T., Mann, B., Ryder, N., Subbiah, M., & Kaplan, J. (2022). Language Models are Few-Shot Learners. Proceedings of the 34th Conference on Neural Information Processing Systems (NeurIPS 2022). https://arxiv.org/abs/2005.14165

[2] Meta Platforms, Inc. (2023). Meta's LLaMA2: Technical Overview. Meta AI. https://www.meta.ai/research/llama2

[3] Radford, A., Narasimhan, K., Salimans, T., & Sutskever, I. (2018). Improving Language Understanding by Generative Pre-Training. OpenAI. https://www.openai.com/research/language-unsupervised

ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 8.206| ESTD Year: 2018|

International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

[4] Vaswani, A., Shazeer, N., Parmar, N., Uszkoreit, J., Jones, L., Kaiser, Ł., Polosukhin, I. (2017). Attention is All You Need. Proceedings of the 31st International Conference on Neural Information Processing Systems (NeurIPS 2017). https://arxiv.org/abs/1706.03762

[5] Kozlov, M. (2023). AI in Finance: Current Applications and Future Trends. Financial AI Insights. https://www.financialaiinsights.com/ai-finance-trends

[6] Joulin, A., Mikolov, T., Grave, E., Bojanowski, P., Mikolov, T., & Grave, E. (2017). Bag of Tricks for Efficient Text Classification. Proceedings of the 15th Conference of the European Chapter of the Association for Computational Linguistics (EACL 2017). https://arxiv.org/abs/1607.01759

INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY RESEARCH IN SCIENCE, ENGINEERING AND TECHNOLOGY

| Mobile No: +91-6381907438 | Whatsapp: +91-6381907438 | ijmrset@gmail.com |

www.ijmrset.com