Research Proposal

Research Statement: The AI research field is evolving rapidly, and researchers struggle to keep up with emerging trends.

Similar studies have been done before. A study published in *Nature Machine Intelligence* introduced a graph-based benchmark utilizing real-world data to forecast AI research directions.[1] Another study employed machine learning to analyze semantic networks, enabling predictions about future research trends within specific disciplines.[2] A study examined AI's role in healthcare by analyzing research articles to pinpoint hot topics and unresolved issues.[3] Similarly, another analysis focused on AI's integration into the Internet of Medical Things (IoMT), outlining the overall structure and general applications of AI in this domain.[4] The first two studies revolved around natural language processing and the last two were about bibliometric analyses.

Data:

The data for this research paper would come from multiple sources.

Data Source	Data Use
ArXiv	Pre-prints of AI research papers
Semantic Scholar	AI search for academic papers
Microsoft Academic Graph	Metadata and citation data
Google Scholar	Citation trends and influential papers
Scopus / Web of Science	Reviewed AI papers and citation analysis
ACL Anthology	NLP and computational linguistics research
IEEE Xplore	AI research in engineering and science

Knowledge Mining Methods:

Method	Purpose	Use
Topic Modeling	Identifies trending AI topics	Finding research trends
Citation Network Analysis	Finds influential papers	Mapping AI knowledge flow
Time-Series Forecasting	Predicts future research trends	Forecasting AI subfields
Knowledge Graphs	Structures research knowledge	Linking AI concepts over time

Citations:

Krenn, M., Buffoni, L., Coutinho, B. *et al.* Forecasting the future of artificial intelligence with machine learning-based link prediction in an exponentially growing knowledge network. *Nat Mach Intell* **5**, 1326–1335 (2023). https://doi.org/10.1038/s42256-023-00735-0

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Senthil, R., Anand, T., Somala, C. S., & Saravanan, K. M. (2024). Bibliometric analysis of artificial intelligence in healthcare research: Trends and future directions. *Future healthcare journal*, *11*(3), 100182. https://doi.org/10.1016/j.fhj.2024.100182

Chiroma H, Hashem IAT and Maray M (2024) Bibliometric analysis for artificial intelligence in the internet of medical things: mapping and performance analysis. *Front. Artif. Intell.* 7:1347815. doi: 10.3389/frai.2024.1347815