Research Proposal - Forecasting AI Research Trends: A Multi-Method Approach

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Research Statement: The Challenges of Rapid AI Evolution

Situation

AI research is advancing at an unprecedented pace.

Problem

Researchers face difficulties staying current with emerging trends.

Solution

Develop a systematic approach to predict future AI research directions.

Research Question: "How can knowledge mining techniques be utilized to predict emerging trends in AI research?"

Existing Research on AI Trends

Nature Machine Intelligence (2023)

A graph-based benchmark for AI forecasting.

Future Healthcare Journal (2024)

Bibliometric analysis of AI in healthcare.

PNAS (2020)

Semantic & neural networks to predict quantum physics trends.

Frontiers in AI (2024)

AI in the Internet of Medical Things (IoMT).

Note: studies split between NLP and Bibliometric approaches

Data 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	Review AI papers and citation analysis
ACL Anthology	NLP and computational linguistic research
IEEE Xplore	AI research in engineering and science

Knowledge Mining Methods

Topic Modeling

Identifies trending AI topics to find research trends.

Time Series Forcasting

Predicts future trends, used to forecast AI subfields.

Citation Network Analysis

Find influential papers to map AI knowledge flow.

Knowledge Graphs

Structures research knowledge to link AI concepts overtime.

Expected Outcomes

01 Identify the current hot topics in AI research

02 Map the flow of influential ideas and papers

03 Predict emerging subfields and future research directions

04 Provide a structured knowledge framework for AI researchers

References

Citations:

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