Transport and Telecommunication Institute
UWE Bristol

Artificial Intelligence Group Project

Project Proposal

AI Agent for Financial Report Analysis

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1. Problem Statement

Reviewing company annual reports by hand is time-intensive, leads to mistakes, and lacks consistency. Analysts often spend days pulling out important data from long documents. We have seen from recent reports that lots of financial spreadsheets have errors (V7 Labs, 2025), and varying formats make it even harder, causing overlooked details and delayed decisions.

The main problem is how to automate and streamline the analysis of annual reports using artificial intelligence. Our team wants to build an AI agent that handles the toughest parts like grabbing key info, figuring out ratios, and creating summaries to make everything more precise and quicker.

2. Background and Research

Early attempts to automate financial text analysis relied on rule-based systems and financial lexicons. Getting AI to handle financial text automatically is tough because of the specialized terms and need for exact math. Models like BERT and GPT started helping with language, but they struggle with finance specifics and reliable calculations. We checked out FinBERT (Araci, 2019) and BloombergGPT (Bloomberg, 2023), which do better after training on finance data. Then open-source ones like FinGPT (Yang et al., 2023) made things more accessible.

But issues remain, like getting facts right and doing numbers accurately. LLMs can mess up figures or make things up, which is not good for finance work. In our team deliberations, we selected Retrieval Augmented Generation (RAG) for pulling real sections from reports to back up answers (Iaroshev et al., 2024), and Program-Aided Language model(PAL) to develop Python code for accurate calculations (PAL , 2022). Most tools just summarize or answer questions, but few mix retrieval and coding. Our idea combines RAG and PAL in one agent, filling that gap for better financial analysis.

3. Project Objectives and Scope

This project will design and implement an AI-based agent that can autonomously analyze a company's annual report, extract key numerical data, calculates ratios, and provides summaries or answers to questions based on facts.

In Scope:

- Spotting and shortening key parts and data from reports.
- Using Python to calculate metrics like margins and liquidity.
- Answering queries by fetching related text.
- Pointing out trends or risks, with references to sources.

Out of Scope:

- Predicting future trends, giving stock advice, building new models.

4. Proposed Solution

Our AI agent will leverage three core components, drawing from recent studies (Wang et al., 2025; Kannammal et al., 2025; Zhang et al., 2025):

1. **LLM Base**: We intend to evaluate and compare GPT-4o and GPT-5 via API for handling text, or adopt open-source options like LLaMA-2 or FinGPT if required (Yang et al., 2023).We will incorporate LangChain to link the components and oversee the agent's workflow.

2. **Retrieval part (RAG)**: Decompose PDF reports into a searchable database. For questions, it grabs the best matching bits as proof (Jimeno-Yepes et al., 2024).

3. **Calculation tool (PAL)**: Incorporate a Python interpreter for the model to create and run code on numbers (PAL, 2022) and incorporate LLM models with LangChain tools. The results will show calculations plus quotes from the docs for clear tracking.

5. Work Packages

WP1 - Setup (Week 1): Set roles, goals and measures. Complete literature review. Aleksandrs leads.

WP2 - Data Preparation (Weeks 2-3): Gather and process 5 reports from EU and Latvia. Sandra manages parsing.

WP3 -Base and Retrieval (Weeks 3-4): Build vector DB and embedding with finance models (Jimeno-Yepes et al., 2024). Anjali handles this.

WP4 - LLM Setup (Weeks 4-6): Link in models in LangChain, craft prompts for summaries, Q&A, and calculations. Team effort.

WP5 - Calculation Module (Week 5): Make Python tools for ratios, check with examples. Parallel with WP4.

WP6 - Tests (Weeks 7-8): Run queries, match against real data for accuracy and clarity.

WP7 - Documentation (ongoing): Update Github with code, notes, Gantt, risk assessments and logs.

WP8 - Final Presentation and Evaluation (weeks 9-10): Prepare final presentation, submit individual reports and demonstrate the prototype.

6. Project Management Methodology

This project will follow an Agile approach for structured progress and adaptability to technical issues. Coordination via WhatsApp check-ins weekly, tracking with Gantt for deadlines and a risk log for problems like data access. GitHub holds all files for easy sharing. This was chosen after reviewing how it fits AI development (Wang et al., 2025).

7. Implementation Timeline

Phase	Period	Main Deliverables
Initiation	Week 1 (Oct 20–27)	Project setup, final proposal
Data Setup	Weeks 2–3 (Oct–Nov)	Collected reports, parsed text
Prototype Build	Weeks 4–6 (Nov)	Retrieval & LLM integration
Testing & Refinement	Weeks 7–8 (Dec)	Accuracy evaluation, prompt tuning
Wrap-up	Weeks 9–10 (Dec 15–28)	Documentation, presentation

8. Conclusion

This project is a solid AI solution to speed up report analysis by blending RAG for facts and PAL for math calculations, better than basic summarizers (Iaroshev et al., 2024; PAL, 2022).

The outcome: A prototype that extracts financial data, compute ratios, and give interpretable insights that is grounded in cited evidence. This innovation will improve efficiency for financial analysts and set a precedent for other industries.

References

1. Araci,D. (2019).*FinBERT: Financial Sentiment Analysis with Pre-trained Language Models*.Available at: https://arxiv.org/abs/1908.10063.
2. Bloomberg (2023).*Introducing BloombergGPT – 50B Finance Model*.Available at: https://arxiv.org/abs/2303.17564.
3. Kannammal, K. E.; Anirudh, R. K., Kuzhali, T. P., Ganishkar, G., Adrinath, C. (2025). *Fin-RAG A RAG System for Financial Documents. International Journal of*

Innovative Science and Research Technology. Available at: https://doi.org/10.38124/ijisrt/25apr1147.

4. Iaroshev, D. et al. (2024). *Evaluating RAG for Financial QA. Applied Sciences, 14(20), 9318*.Available at: https://www.mdpi.com/2076-3417/14/20/9318.

5. Jimeno-Yepes, A. et al. (2024). *Financial report chunking for effective retrieval augmented generation*.Available at: https://arxiv.org/abs/2402.05131.

6. PAL (2022).*Program-Aided Language Models (PAL)*.Available at: https://www.emergentmind.com/topics/program-aided-language-models-pal.

7. V7 Labs (2025). *AI Guide for Financial Statement Analysis*. Available at: https://www.v7labs.com/blog/financial-statement-analysis-with-ai-guide.

8. Wang, J. et al. (2025).*Financial Analysis Intelligent Financial Data Analysis System Based on LLM-RAG. International Journal of Finance and AI, 12(2), 45–56*.Available at: https://arxiv.org/abs/2504.06279.

9. Yang, Y. et al. (2023).*FinGPT: Open-Source Financial Large Language Models*. Available at : https://arxiv.org/abs/2306.06031.

10. Zhang, H., Zhang, J. and Zhou, J. (2025). *Research on Financial Statement Checking Relationship Recognition System Based on Large Language Models. Proceedings of DEAI 2025, Dongguan, China.* Available at:https://doi.org/10.1145/3745238.3745291