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Abstract

In this paper, we propose and demonstrate a prototype for leveraging Generative AI (GenAI) in financial risk analysis, specifically focusing on fine-tuning GPT models with proprietary data. Financial risk modeling, development, validation, and approval require not only advanced AI techniques but also careful implementation, given the vast and complex datasets involved in such tasks. The research underscores the critical importance of human oversight in mitigating potential failures that can arise from fully automated mathematical models. The study explores the application of Large Language Models (LLMs) in various financial risk domains, such as credit risk assessment, market risk forecasting, and anomaly detection. While synthetic data generation is excluded from this work, the research highlights the use of zero-shot classification leveraging Hugging Face models and OpenAI tools. ChatGPT achieved over 70% accuracy in generating relevant questions and demonstrated 60% correctness in classification tasks. Additionally, we present a prototype pipeline that integrates GenAI capabilities into financial workflows, which is implementable on small-scale computing systems. This includes backend testing via Flask and rapid prototyping using cURL commands, offering a practical approach to testing and deploying models. By fine-tuning GenAI with domain-specific data and optimizing decision-making processes, this research highlights the transformative potential of integrating generative AI into financial risk management. The study provides insights into enhancing model efficiency, regulatory compliance, and scalability. Moreover, it addresses critical challenges such as handling large datasets and ensuring ethical AI use in decision-making systems. This work contributes to advancing the adoption of GenAI in financial analytics, paving the way for innovative, robust, and efficient methodologies to support the evolving demands of the financial sector.

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