Design and Development of AI Agents for Academic Project Planning and Management

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Abstract

Academic projects enable practical learning but often suffer from poor planning, task allocation, and progress monitoring due to manual management. This project introduces AI agents using Large Language Models via Ollama, with MongoDB for data storage and Streamlit for the user interface. The system automates literature review, task planning, and progress tracking to improve efficiency, collaboration, and project quality. It provides a scalable and intelligent project management framework for academic environments.

Keywords

Artificial Intelligence, Academic Project Management, AI Agents, Scrum Methodology, Literature Review Automation, Report Generation

Objectives

1. To collect and summarize relevant academic research information.
2. To plan projects with structured timelines, milestones, and suitable methodologies.
3. To break down goals into tasks, allocate them to team members, and track progress with alerts.
4. To facilitate collaboration and manage resources through communication hubs and repositories.
5. To generate structured documentation and provide AI-driven evaluation and feedback.

Outcomes

1. Improved task allocation, tracking, and accountability among team members.
2. Enhanced mentor visibility and academic supervision.
3. Automated generation of structured academic reports.

Introduction

Academic projects are essential in engineering education for applying theoretical knowledge to real-world problems. However, effective project management is often hindered by poor planning, task distribution, and limited progress monitoring. Integrating Artificial Intelligence in academic project management addresses these challenges by automating planning, collaboration, and documentation.

Literature Survey

1. **AI Task Modelling Framework et al. [3]:** Automated task modeling and assignment planning using large multimodal models..
2. **Iris.ai et al. [4]:** AI-driven literature exploration and summarization platform for academic research.

Methodology

- Users register and log in with role-based access to personalized dash-boards.
- Frontend securely interacts with backend APIs.
- AI agents automate summarization, planning, and task allocation.
- Team collaboration is enabled through shared tasks and progress tracking.
- Email notifications provide timely project updates.
- AI-driven reports monitor project progress.

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