Lab 1 – EduSense

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1. Introduction

Concerns are mounting over the increasing use of AI tools like ChatGPT and Grammarly by students, driven by fears that over-reliance will erode vital skills such as critical thinking, creativity, and problem-solving. Studies support these worries, with one finding that students who depend heavily on AI for assignments score significantly lower on writing tasks. A 2024 review further noted that students who lean too heavily on AI dialogue systems struggle with analytical reasoning and independent thought, while many users unquestioningly accept AI-generated responses without verification. This reliance poses a significant challenge, leading to a decline in essential skills and a potential drop in the quality of student work, which can also become difficult for educators to identify as AI-assisted plagiarism.

EduSense is a mobile and web-based application currently being developed to address these issues by helping students and educators engage with AI more thoughtfully. Rather than providing direct answers, the app encourages independent thinking through guided questions, reflective prompts, and challenge modes that limit or delay AI input. Key features for educators include the ability to upload assignments, monitor student AI interactions, and identify comprehension difficulties, with built-in controls like copy/paste restrictions and usage tracking. The goal of EduSense is to support and enhance the learning process, not replace it, by actively helping students build stronger problem-solving and critical thinking skills

2. EduSense Product Description

EduSense is a web-based app that helps integrate AI into education in a responsible way. It addresses worries about students over-relying on AI by helping them use it as a supportive tool to boost critical thinking, problem-solving, and creativity. Educators can use the platform to upload assignments, track student interactions with the AI assistant, and find areas where students need extra help. By guiding students to use AI thoughtfully, EduSense ensures they gain the benefits of modern technology while still developing essential academic skills.

EduSense is designed to promote independent thinking and responsible AI use in education. Instructors can upload assignments, giving them control over learning materials

and enabling seamless integration into classroom activities. The platform provides students with access to a large language model (LLM) for support, but instead of offering direct answers, it uses guided prompts and leading questions to help them develop their own solutions. This approach encourages critical thinking and problem-solving without fostering over-dependence on AI.

From a technical standpoint, EduSense is a web-based application accessible on any modern device. Its software stack includes a Django-based frontend with HTML, CSS, and JavaScript, a Python backend to manage user requests and LLM interactions, and a PostgreSQL or Firebase database for storing data. The platform integrates with various LLMs, such as OpenAI, Claude, or LLM, and features an integration with the Canvas LMS Rust API to sync assignments and track student-AI interactions, offering a comprehensive and innovative educational tool.

The image below shows the core EduSense system components deployed by Team Emerald, providing a detailed visual representation of the platform's architecture. From a technical standpoint, EduSense is a web-based application accessible on any modern device.

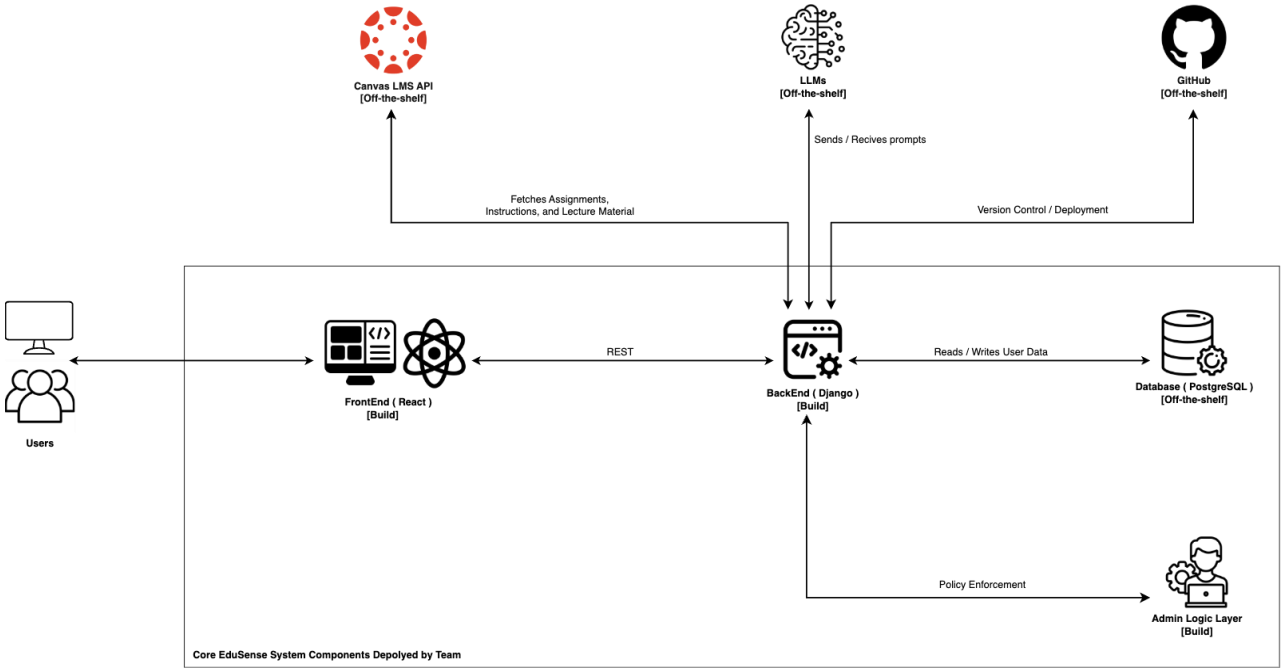

Figure 1: Major Functional Component Diagram

This comprehensive architecture highlights how EduSense leverages both custom-built components and off-the-shelf solutions to create an innovative and robust educational tool for tracking student-AI interactions and syncing with learning management system.

3. Identification of Case Study

EduSense is a tool for students and educators in academic settings that promotes the responsible use of AI by helping students build independent thinking skills while allowing teachers to guide their interactions. Beyond academics, EduSense has potential for corporate trainers, lifelong learners, and other educational institutions by fostering critical thinking and ethical AI use in various professional development contexts. However, its successful implementation requires addressing potential challenges related to equitable access, adequate teacher training, and data privacy.

To effectively deploy EduSense beyond academia, its developers must adapt its core features to suit professional environments while proactively addressing key implementation challenges. In a corporate training setting, for example, the AI monitoring features would need to track skill development and ethical decision-making, rather than academic integrity. The system must be scalable to accommodate large organizations and must be able to integrate with existing corporate learning management systems. Clear policies around data privacy and consent will be essential to build trust with adult learners and corporate trainers, while ensuring the tool remains a constructive aid for professional growth.

4. Glossary

- Artificial Intelligence (AI): A commonly used term encompassing any machine learning algorithm designed to train from a given input to provide an expected output.
- Large Language Model (LLM): An advanced machine learning algorithm trained on massive text datasets to understand and generate human-like language.
- Canvas LMS: A learning management system used by educators to manage course content, assignments, and communication with students.
- Challenge Mode: Setting that encourages learners to try on their own before getting help. It limits access to answers to encourage thinking through the assignment first.
- Guided prompts: Targeted questions or hints created to help students think critically and come up with their own solution.
- MFCD (Modified Functionality Component Diagram): A diagram showing the major hardware and software components of the product and how they interact.
- Usage Tracking: The process of recording how users interact with the system, such as which features they use or how they engage with LLM prompts.

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