

CS 463: Senior Software Engineering Project

Sprint Report 3

Project Title: Prototype a web-based tool for creating and executing task-delineated, collaborative, AI-assisted assignments

Group 28

Project Deadline: End of Spring 2025

Project Mentor: Sanjai Tripathi

Team Roles

Name	ONID	Role
Oliver Zhou	zhouo	Project Manager
Trent Matsumura	matsumut	Developer - Backend
Ethan Lu	luet	Developer - AI Integration
Collin Kimball	kimbacol	Developer - Web UI
Sai Meenakshisundaram	meenakass	Documentation

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1. Sprint Overview

Planned for the Sprint

For Sprint 3, the team aimed to refine the chatbot's contextual understanding, develop instructor-facing grading and feedback systems, and conduct broader usability testing. Additional goals included implementing assignment submission tracking, optimizing performance for scalability, and improving documentation. A key stretch goal was integrating the **Happy Startup Canvas Dashboard**, inspired by Sanjai's mockup, to provide instructors with detailed analytics on student engagement, progress, and sentiment during AI-assisted assignments.

Accomplished During the Sprint

The team made significant progress on multiple fronts. Ethan improved the chatbot's ability to retain and apply assignment-specific context, reducing instances of premature transitions between tasks—a noted issue in the Happy Startup Canvas logs (e.g., Scone Sally's frustration with the AI moving to "Values" before she finalized "Vision"). Trent enhanced backend filtering for chat logs, enabling efficient extraction of metrics like **Response Count** and **Independent Input** for the dashboard. Collin integrated these analytics into a clean instructor UI, featuring visualizations for metrics such as **Task Completion** and **Negative Sentiment Indicators**.

The team also conducted usability testing with faculty, who praised the dashboard's potential to identify struggling students (e.g., Bagel Barry's confusion with hypothesis formulation). Minor issues, such as inconsistent **Active Time** calculations due to multi-session gaps, were documented for future refinement.

Issues Faced and How They Were Addressed

A key challenge was balancing subjectivity in metrics like **Negative Sentiment Indicators**, which relied on manual review of chat logs. The team addressed this by implementing severity tiers (None/Mild/Moderate/Severe) and flagging specific phrases (e.g., "No, no, no" in Barry's log). Backend performance bottlenecks during large-scale data aggregation were mitigated by optimizing database queries.

Planned for the Remainder of the Term

In terms of final developments, the team plans to finalize the dashboard's auto-reporting feature, expand sentiment analysis with NLP tools, and conduct a beta test with instructors using real assignment data. The faculty presentation highlighted interest in **Independent Input** metrics, which will be prioritized for further refinement.

However, the team has met required project requirement goals so the team will prepare for presenting the project and wrapping things up, and preparing to pass off the project before the end of the term.

2. Individual Contributions

Ethan Lu (Developer - AI Integration)

- **Technical Work:**
 - Implemented URL linking between assignments and chatbot interactions.
 - Improved the chatbot's ability to retain and apply assignment-specific context.
 - Integrated dashboard metrics (e.g., **Aggregate Response Length**) to analyze student engagement.
- **Impact:** Strengthened AI-user interactions, making the tool more intuitive and data-driven.

Trent Matsumura (Developer - Backend)

- **Technical Work:**
 - Created advanced filters for chat logs to improve searchability and reporting.
 - Enhanced database interactions for efficient query processing.
 - Resolved backend scalability issues to handle large datasets.
- **Impact:** Enabled robust data analysis for the **Happy Startup Canvas Dashboard** and optimized system performance.

Collin Kimball (Developer - Web UI)

- **Technical Work:**
 - Developed frontend features and improved assignment management functionalities.

- Designed the dashboard UI, including visualizations for **Avg. Response Length** and **Total Active Time**.
- **Administrative Work:**
 - Collaborated with the project mentor to align features with objectives.
- **Impact:** Streamlined instructor workflows and enhanced data visibility through intuitive interfaces.

Sai Meenakshisundaram (Documentation)

- **Technical Work:**
 - Organized backend files and maintained structured documentation.
 - Updated course and assignment-related documentation.
- **Research Support:**
 - Documented metric definitions (e.g., **Task Completion** = completed elements/8) and compiled faculty feedback.
- **Impact:** Improved team efficiency and ensured clarity for future development.

Oliver Zhou (Project Manager)

- **Administrative Work:**
 - Managed project coordination, task assignments, and code reviews.
 - Communicated with the mentor to refine project goals.
 - Coordinated the faculty demo to showcase the dashboard's capabilities.
- **Impact:** Maintained team cohesion and ensured alignment with stakeholder expectation

Contribution Notes

Administrative roles can be linked to email exchanges and chat exchanges between the team and the project mentor. Bi-weekly scheduled meetings also contribute to the team organization throughout the sprint.

Developmental changes from team members can all be found on the repository for their contributions

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