

Verification Report

Report Period : August 21, 2024 to September 12, 2024

Project Title: AIKO (AI-powered Knowledge Organizer)

Project Manager: Dr. P. B. Jawade

In-house Guide: Dr. D. J. Chaudhari

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Executive Summary: The AIKO project has successfully completed its verification phase, demonstrating that the system meets its specified requirements and design specifications. The verification process included code reviews, static analysis, unit testing, and integration testing. Results show high test coverage and successful implementation of core functionalities across both backend and frontend components.

Current Task Progress:

Task Description	Verification
Scheduled Completion	October 21, 2024
Actual Completion	September 19, 2024
Status	Completed
Remarks	Scope adjusted due to timeline reduction

Accomplishments:

- Implemented comprehensive unit tests for backend and frontend
- Conducted thorough integration testing using Playwright
- Achieved high test coverage: 85% for backend, 80% for frontend
- Successfully verified core functionalities and user flows

Challenges & Mitigations:

- The project deadline was unexpectedly shortened by one month, with notification received only one week into the final month of development. This significant reduction in available time posed a substantial risk to the planned scope and quality assurance processes.
 - We made judicious decisions regarding feature implementation and testing depth, focusing on essential elements to ensure timely delivery. We implemented a revised project scope that prioritized core deliverables while regrettably limiting our capacity for extensive feature development and thorough testing
- Initial lower test coverage in some areas
 - Implemented additional unit tests to increase coverage
- Complexity in testing real-time synchronization
 - Developed custom test scenarios to verify WebSocket functionality

Verification Results:

- 1. Backend Unit Testing (Pytest):
 - Test coverage: 85%
 - All 7 test cases passed successfully
 - Critical paths and edge cases covered
- 2. Frontend Unit Testing (Vitest):
 - Test coverage: 80%
 - 15 tests passed successfully
 - Focus on UI elements and interactions
- 3. Integration Testing (Playwright):
 - 30 end-to-end tests conducted
 - All tests passed successfully
 - Covered user flows, cross-browser compatibility, and responsive design

Detailed info about the test results can be found in the V&V Document.

Planned Activities for Next Phase:

- Finalize the codebase for deployment
- Provision cloud platforms, setup infrastructure, and deploy AIKO.
- Setup CI/CD pipelines for automated testing and deployment

Financial Summary:

Description	Budgeted Amount	Amount Spent This Phase	Total Expenditure
Hosting	₹1,300	₹0	₹1,072
Machine Learning	₹21,000	₹0	₹20,000

Risk Assessment:

The AIKO project faces several key risks that require ongoing attention. Data privacy compliance remains a critical concern as the system handles potentially sensitive information, necessitating rigorous adherence to evolving data protection regulations. While current tests show promising results, the system's scalability under extreme load conditions needs continued monitoring to ensure consistent performance as user base grows. There's also a risk of AI model drift, where accuracy may decrease over time if the model isn't periodically retrained to accommodate the expanding knowledge base. Lastly, despite positive initial feedback, widespread adoption may face challenges due to varying levels of AI familiarity among potential users, requiring targeted training and change management strategies.

Conclusions & Recommendations:

The AIKO project has successfully met its verification objectives, demonstrating robust implementation of required functionalities. The high test coverage and successful integration tests indicate a well-structured and reliable system.

The project guide recommends:

1. Continuing to increase test coverage, aiming for 90% or higher
2. Implementing automated performance testing as part of the CI/CD pipeline
3. Regular security audits and penetration testing
4. Continuous monitoring and updating of test cases as new features are added

Approval:

Dr. D. J. Chaudhari

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