

CSCI 409 - Final Report

Internship Portal for Students

Group 38 Spring 2025

Title of the project:	Internship Portal for Students
Team Members:	3 students Aibar Askergazyyev, Argyn Kereibay, Zhangir Khalimarden
Project Advisor/Co-Advisors	Michael Lewis
Executive Summary	
<p>Through the web-based Student Internship Portal students can solve their internship search problems which appear when using various personalized professional development websites. Students experience protracted problems when hand-picking inappropriate job listings that fail to match their qualifications and preferred location and skills.</p> <p>The primary function of this project establishes an integrated service platform that utilizes databases to conduct placement between students and internships based on academic training and professional competencies with location choices. Students gain access to all-in-one tools for resume creation as well as interview preparation through this platform which serves them with an easy-to-use solution.</p> <p>The methodology requires building a full-stack web application through the use of current industry technologies. A dynamic user interface emerged from using React.js for the frontend development. Node.js together with Express.js operates the backend system to process server requests and MongoDB maintains all user profile information as well as job postings and application records.</p> <p>Through thorough testing the system underwent evaluation which checked its functionality alongside usability and security performance. The platform proved its reliability during various testing scenarios by delivering an efficient and secure interface to its end users.</p> <p>The solution implementation combines Artificial Intelligence with web development and database management to create a real-world computing-based solution which was designed and evaluated for real-world problem solving. This system produces an efficient internship portal that combines intelligence with lightweight operation to</p>	

enhance student participation in work experience acquisition.

Introduction

The process of internship search becomes both tedious and confusing for college students. Job seekers face difficulties when they need to use multiple job sites to find relevant positions and create personalized applications because they lack proper mentorship. The existing job search platforms LinkedIn and HeadHunter present problems because they serve a wide range of users including students and their services are either fee-based or do not deliver personalized assistance. The job market-entry process becomes more confusing and students end up missing employment opportunities while remaining unsure about their job market entry methods.

The motivation behind this project emerged because students need better access to a solution focused on internship search while providing both application guidance and career preparation support. The academic and professional development of students heavily depends on internships but uncustomized intelligent tools create disadvantages for students who do not understand skill marketing or competitive applications.

The proposed Internship Portal functions as a simple web-based system which operates through a local server (localhost) to resolve current educational obstacles. The platform features capabilities for building resumes intelligently while providing data about internships that are obtained from external platforms. Furthermore, the platform provides students with the interview preparation tool which assists them to understand what the interview process looks like, what questions to prepare for, and in general, help reduce anxiety due to not understanding what to expect. The portal operates as a free platform which provides easy access to fulfill the specific requirements of student users.

This report contains the following organizational structure:

- **Executive Summary:** A concise overview of the project, key goals, methodology, and outcomes.
- **Background and Related Work:** Review of existing platforms and justification for the proposed approach.
- **Project Approach:** Detailed information about system design together with architecture specifications, development tools and methodology.
- **Project Execution:** Timeframes for development, descriptions of team collaboration and encountered obstacles.
- **Evaluation:** The testing procedures and performance evaluation of the system.
- **Conclusion and Future Work:** Summary of contributions and potential directions for improvement.
- **References and Appendices:** Proper citations and supplementary materials.

This project delivers an intelligent computing solution which simplifies internship searches and applications to enable students to manage their career development.

Background and Related Work

“Development of a Web-Based Student Internship Portal for Students of Health Colleges”

This paper aims at presenting an efficient online system suitable for managing student internships in health colleges. It has functionality for administrators, coordinators and students, with features such as program registration and tracking, as well as evaluation. Developed as the PHP, MySQL, and Bootstrap, the system has the modular structure, such as the database management, training plans, and the student’s guidance. It enhances the way education institutions and internship organizations work together because it can help overcome various issues if, for instance, evaluating student performance, or dealing with multiple stakeholders at once. The study discusses the need for good interfaces, the creation of a safe, and efficient system to store the data. This work is particularly relevant to our Internship Portal as it emphasizes the need for a centralized approach to internship management. In program and progress registration, tracking and real-time responsiveness features, some important considerations include the use of integrative user interfaces and efficient tracking methods.

"Design and Implementation of Web-Based Internship Information Systems at Vocational Schools"

This work describes a Web-based system designed for improving the organization of internships and their assessment in vocational schools. The activities that have been used in the project are: The project uses the Unified Modeling Language (UML) for accurate system modeling and PHP and CSS for implementation to provide the best and stable platform. These include a student portal for viewing and managing the internship information, and tools for building internship schedules and for internship assessment. The research concentrates on the elements of system design and on the significance of usability and reliability to accomplish the required objectives of the multiple users. In the context of our project, such study is used as reference while constructing specific and secure tools that meet the user’s needs, like dynamic panels and updates. Using structured evaluation and tracking tools corresponds to the objective of improving user experience due to evident functionality and clarity of the layout.

"Internship Monitoring and Supervising Web-Based System"

This project seeks to solve some of the major problems that relate to supervision and evaluation of Internship students such as the following: The main problem is lack of room communication and feedback among the Internship students, their supervisors and Coordinators. Stakeholders are also able to update, track and manage all internship related activities through an easy to use interface. It includes the alerts and notification system to respond promptly to the students' requests, and keep the process of communication running efficiently. The study also explains the role of live feedbacking processes and integration of the users of the system. For our AI-based Internship Portal, this research provides ideas of how to employ real-time notifications, personal feedback, and better communication channels. As we adopt these elements, our goal is to build structures that optimally engage the identified user types and respond to their needs during their internship.

These studies collectively help our project by establishing specific solutions and presenting important design concepts for the development of a successful and convenient internship portal. They emphasize modularity, real-time interaction, and user experience because that is how we would like to see our system developed, with strong roots in AI technology.

Project Approach

System Architecture and Solution Description

The Students Internship Portal operates through three distinct architectural levels that include **client layer** and **application layer** as well as **data layer**.

Client Layer: Client Layer delivers an easy-to-use web interface made with React.js through which students execute job searches, build resumes and practice interviews.

Application Layer: Back-end operations in Application Layer depend on Node.js programming language to function. The system functions through processing user requests that let it access databases along with interfacing with external platforms.

Data Layer: The Data Layer utilizes MongoDB as its database solution to store structured information that includes user profiles and resumes and job listings and interview records. The database architecture enables reliable performance.

Resume Optimization:

The system uses user-submitted resumes to evaluate document format, detect keywords and verify skills against the job requirements.

Interview Preparation Module:

The system uses role-based question sets for evaluation while both rule-based and AI feedback mechanisms determine answer assessment. Google's Gemini AI model serves as the core component by producing adaptable interview questions along with response evaluation that depends on the targeted job roles.

Workflow:

- Start the Interview:
 - The user inputs a job position via a web interface.
 - This system input helps to produce interview prompts which match the requirements of specific job roles.
- Generate Interview Questions:
 - Through a job-specific position the AI system creates an interview question to which the user provides their answer.

Third-Party Components and Integration

Through the Google Gemini API the system dynamically produces suitable interview questions which correspond to the user-supplied job position. Python genai package allows users to invoke this functionality.

Through External Job APIs the system establishes connections to platforms including HeadHunter to perform automatic job acquisition and filtering operations.

The application needs local deployment at first but future scaling possibilities will evaluate Google Colab and AWS as cloud service choices.

The software system uses Jira for handling tasks while managing sprints and monitoring deliverables.

Git: For version control and team collaboration.

Real-time communication and weekly progress discussions happened through Zoom combined with Discord.

Team Roles and Collaboration

Under the agile development approach the team implemented specific hierarchical roles for their responsibilities.

- Argyn Kereibay dedicated his efforts to building the resume tool while designing the interview feature and creating the database structure.
- Job matching algorithms together with backend development and API integration were Aibar Askergazyev's main areas of responsibility.
- Zhangir Khalimarden handled frontend testing for design while leading testing of the system and managing the user management module.

The members maintained collaborative connections by holding daily checks on Discord along with weekly Zoom video meetings. Both task management and

documentation sharing occurred through the use of Jira and Google Drive platforms.

A well-organized team collaboration led to the development of an operating system which provided scalable career development support for students following design principles that centered on user needs.

Project Execution

Through two semesters our team built the Internship Portal for Students which evolved from basic development into advanced feature implementation. The development process of the project included strategic planning steps followed by technology assessments together with developmental iteration and sustained teamwork.

Semester 1: Foundation and MVP Development

The first semester was focused on developing an MVP, which consisted of creating an operational Resume Builder. Users can create resumes with access to formatting options and profile picture uploading in addition to A4 or Letter format export possibilities.

Our team chose MongoDB as its database platform because this system offers flexibility to store unstructured data while we populated our database. The backend development operations followed Node.js framework execution while Vue.js framework built the initial frontend codebase to accelerate interface development. Docker was used at the project's early development phase to provide stable server linkages and test deployment solutions.

The research involved both student questionnaires and surveys to understand their difficulties in resume creation and job searching so we could identify main features to develop. The project encountered a major problem because we adopted too many AI components in the first stages. We managed to deliver a reliable MVP once our team shifted work focus to core points that helped with ongoing development plans from exceeding limits.

Semester 2: Strategic Improvements and Expansion

During the second semester we moved on from developing basic foundations to focusing on strategic improvements and optimization as well as execution of plans. We evaluated our technology stack extensively before continuing because it needed to fulfill the requirements for long-term scalability, maintainability and integration. The Appendix A includes additional information regarding this point.

We conducted thorough analysis and selected React.js as the advanced frontend technology after Vue.js. The combination of Vue.js's ease of use and rapid prototyping abilities could not compete against React's architecture which delivered better middleware support along with modular design and an extensive developer community. The active community support along with various libraries compatibility

in React made it possible to complete development quickly and produce exceptional UI/UX solutions. The Node.js and Express.js development of the backend persisted while MongoDB served as the selected database.

Teamwork and Collaboration

Teamwork served as the key factor behind achieving project success together with its expansion. The three-member team implemented efficient coordination through division of tasks according to member strengths and fields of interest. The team members divided responsibilities for platform development areas yet supported team-wide objectives as the platform evolved.

- Argyn managed database operations by designing MongoDB collections while maintaining smooth data flow and he provided cross-functional help through debugging and integration assistance. His work included leadership in the enhancement of the Resume Builder features.
- The development team entrusted Aibar with the task of making the user interface using React.js while he took charge of interactive features. He created the Job Matching Algorithm as one of his responsibilities. The student-internship pairings were handled by him based on candidate profiles while he optimized the search system and filtering function.
- Zhangir led both the implementation of RESTful APIs and server-side logic development as well as backend programming tasks. He conducted System Testing through group-based testing of system-level and integration and unit operations to validate usability and performance standards. He conducted security vulnerability fixes and enhanced system stability while resolving all issues.

The project team conducted weekly planning sessions across both semesters for coordinating work activities and solving problems which allowed us to set new objectives when needed. The team members adopted leadership positions based on their current responsibilities so each person naturally controlled their specific task. Our team successfully delivered an advanced and refined product by maintaining an environment based on continuous dialogue and joint responsibility with creative thinking to handle technological problems.

Challenges and Resolutions

The increasing complexity of the system made regular frontend-backend-database integration problems common. The synchronization of new features with existing components needed both schema modification and logic refactoring work. The team convened for code reviews simultaneously with agile updates and coordinated debugging sessions to deal with these issues. Security problems during testing were handled through enhanced access authorization structures and regulatory data input procedures.

Conclusion

The platform developed into a complete internship platform throughout both semesters of development. Effective team structures combined with steady

development cycles and change-oriented planning enabled our group to solve obstacles which led to platform construction. The system provides dependable functionalities along with extendability features which incorporate student requirements and positions itself for upcoming advancements.

Evaluation

The evaluation process assessed whether the Internship Portal achieved its intended objectives for internship search and resume building and interview preparation. The assessment consisted of internal testing performed by a small ensemble of students together with extensive quality checks to validate each significant platform function.

User Testing and Feedback Collection

A team of five participants who combined both technical and non-technical skills tested the essential features of the platform including job recommendation tools and a resume builder along with interview preparation capabilities. The platform testers evaluated its functionality by testing how each feature functioned while studying the user interface navigation flow.

The testers evaluated the system through feedback which included their observations after completing their tasks.

- Ease of use and navigation
- The job matching system together with the resume builder functioned properly
- Realism and usefulness of the interview preparation tools

Internal Testing

User feedback received additional support from multiple internal tests which confirmed the system components operated flawlessly. These tests included:

- The test unified singular systems components like resume builder and job recommendations to verify they operated as intended with no deviations from specifications.
- The testing focused on integration to verify the smooth operation of the front and back systems specifically in critical user processes which include resume submission and job application.
- Testing confirmed both the platform's functional ease and user accessibility of the platform while evaluating design elements which would influence user experience.

Key Evaluation Results

- Job Matching: The job recommendation system delivered suitable job matches to users based on their defined preferences.

- Resume Builder: Users construct and generate their resumes without encountering any issues from the template selection through format customization options.
- Interview Preparation: The tool delivered authentic questions which matched job roles and specific industries.
- Usability: The system showed easy use according to internal testers as it had straightforward navigation and an interface which users found friendly.

Conclusion of Evaluation

Internal testers along with user feedback validated that the Internship Portal successfully resolves all the major problems explained in the introduction section. Students can successfully navigate the platform which performs as designed to search and prepare for their internships. The system's positive performance indicators indicate it can support additional development and acceptance from wider user groups.

Conclusion and possible future work

The developed student-focused internship portal suggests relevant opportunities to students through their preferred skills and personal preferences. Students can use the built-in resume creation tool to prepare for their applications through the system. Through its platform the application makes internship search easier and offers more personalized results than conventional methods.

Future improvements could include:

- Deploying the platform online for broader access.
- Adding user accounts and saved applications.
- Building an employer dashboard for listing and managing internships.
- Enhancing the recommendation algorithm.
- Implementing user feedback and stronger data security.
- Better tariff for AI API keys

The future implementation of these enhancements will convert the portal into an advanced multi-purpose platform for both career and internship discovery services. The established foundation creates an intelligent platform that helps students advance their careers while gaining professional self-assurance.

References

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Appendices

Appendix A – Tech Stack Comparison Table

Layer	Options Considered	Final Choice	Reason for Choice
Frontend	Angular, Vue.js, React.js	React.js	Component-based , fast rendering, large community support, smooth integration with JS backend.
Backend	Django (Python), Spring Boot, Node.js + Express.js	Node.js + Express.js	Lightweight, JavaScript consistency across stack, fast API development.
Database	PostgreSQL, MySQL, MongoDB	MongoDB	Supports unstructured/semi-structured data, flexible schema design.