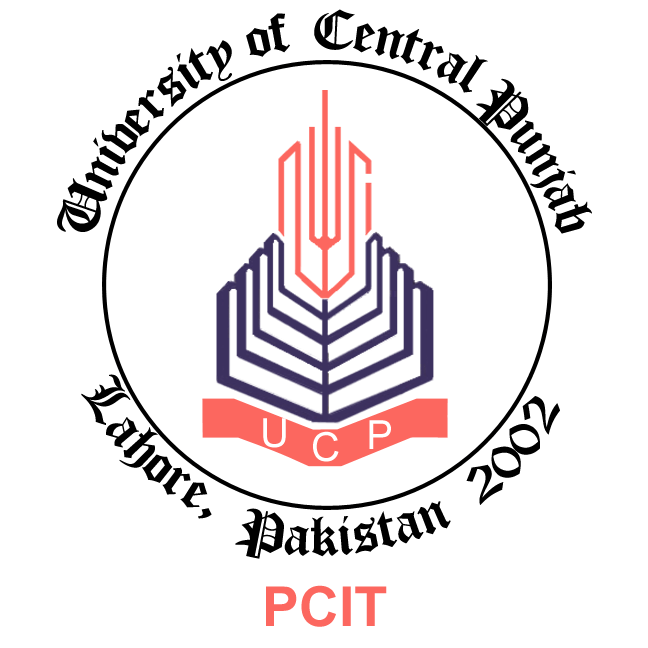
**BSSE FINAL PROJECT PROPOSAL**

AI DRIVEN INTERNSHIP PLATFORM

*Term of Registration: Fall 2023*



Presented by:

|  |  |
| --- | --- |
| **Registration No:** | **Name:** |
| L1F20BSSE0558 | Ahmed Khawar |
| L1F20BSSE0594 | Hunain Murtaza |
| L1F20BSSE0352 | Yasir Ansar |

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| --- |
| Faculty of Information Technology |

University of Central Punjab

**Project Title**

AI Driven Internship Platform

**Project Advisor**

Muhammad Bilal Khan

**Particulars of the students:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S.No** | **Registration#** | **Name in Full** | **CGPA** | **Signatures** |
| 1 | L1F20BSSE0558 | AHMED KHAWAR | 3.50 |  |
| 2 | L1F20BSSE0594 | HUNAIN MURTAZA | 3.76 |  |
| 3 | L1F20BSSE0352 | YASIR ANSAR | 3.03 |  |

**Advisor’s Consent**

I Prof./Dr./Mr./Ms. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ am willing to guide these students in all phases of above-mentioned project as advisor. I have carefully seen the Title and description of the project and believe that it is of an appropriate difficulty level for the number of students named above.

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| --- | --- | --- |
| **Note:**  Advisor can’t be changed without prior permission of the Manager Projects and the duration for completion of the Project is 2 regular semesters (approx.) from the date of Registration of Research Project. | Signatures and Date  |  | | --- | |  |   **Advisor** |

**EVALUATOR/REFEREE 1**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| I have carefully read the project proposal and feel that the proposed project is a useful one and of a sufficient difficulty level to justify 2 regular semesters workload for above mentioned students. I have made recommendations in the evaluation form to improve the scope and quality of the project. | | | | | |
|  | | | | Signatures and Date | |
|  |  |  |  |  |  |
|  | | | |  |

**EVALUATOR/REFEREE 2**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| I have carefully read the project proposal and feel that the proposed project is a useful one and of a sufficient difficulty level to justify 2 regular semesters workload for above mentioned students. I have made recommendations in the evaluation form to improve the scope and quality of the project. | | | | | |
|  | | | | Signatures and Date | |
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|  | | | |  |

**Abstract / Executive Summary:**

The "AI-Driven Internship Platform" uses artificial intelligence to connect IT students with relevant internships, helping them gain practical skills. It assesses students' skills, offers internship options from organizations or AI-generated projects, and provides AI-guided support throughout the internship. Internships last 3 to 12 months and end with certificates to enhance career prospects. This platform bridges the gap between students and industry, transforming internship opportunities for promising careers.

**Introduction and Background:**

In the ever-evolving field of Computer Science and Software Engineering, securing internships can be a formidable challenge for students, primarily due to their limited prior industry exposure. Many aspiring professionals find it challenging to identify internships that align with their skills and interests, resulting in a lack of practical experience that can significantly impede their professional growth. Furthermore, with the rapid growth of the IT industry, organizations face the daunting task of offering internships to an ever-expanding pool of students.

**Statement of the Problem:**

The problem our project is addressing is the difficulty faced by Computer Science and Software Engineering students in securing internships due to their limited prior industry experience. The question our project is seeking to answer is:

How can we effectively facilitate the connection between these students and internship opportunities that align with their skills and interests, allowing them to gain practical experience and boost their professional development? Additionally, how can we assist organizations in providing meaningful internship opportunities in the rapidly evolving IT industry?

**Objectives / Aims / Targets:**

1. **Connect Students with Relevant Internship Opportunities**: The primary objective of our project is to develop an AI-driven internship platform that effectively connects Computer Science and Software Engineering students with internship opportunities that match their skills, interests, and career aspirations. This platform aims to facilitate at least 80% of registered students in finding suitable internships within their program duration.
2. **Enhance Practical Skills**: Our project aims to empower students with practical skills through these internships. We aim to ensure that at least 90% of participating students report an improvement in their technical and soft skills during their internship period.
3. **Support Organizations in Talent Acquisition**: We intend to assist organizations in identifying and selecting suitable interns efficiently. Our goal is to have at least 70% of organizations report that the platform helped them in recruiting interns who met their specific skill and project requirements.
4. **AI-Driven Internship**: By leveraging the strengths of AI technology, it bridges the gap between academia and industry, fostering skill development, personal growth, and academic-to-industry alignment. Our commitment to modern AI practices, exemplified using fine-tuned ChatGPT and prompt engineering, positions this project as a forward-looking and highly effective solution.
5. **Increase Employability**: Our project aims to enhance students' employability by providing them with industry-relevant experience. We target that at least 60% of students who complete internships through our platform secure job offers or gainful employment within six months of graduation.
6. **Certification and Recognition**: Offer certificates to students upon successful completion of their internships, adding value to their resumes. Strive for recognition of these certificates by at least 50% of potential employers.
7. **Seamless Mentorship**: Integrate AI-based mentoring to support students throughout their internship experiences. Aim for a satisfaction rate of 80% or higher among students who receive mentoring through the platform.
8. **Efficient Program Operation**: Ensure the platform operates smoothly, with a minimum of 95% uptime and timely response to student and organization inquiries. Resolve any technical issues within 24 hours of notification.

**Completeness Criteria:**

These completeness criteria provide a comprehensive breakdown of the project's components and their respective weightages. They will serve as the basis for evaluating the project's completeness and determining the terminal grade. Each criterion represents a crucial aspect of the "AI-Driven Internship Platform," contributing to its overall functionality and effectiveness.

|  |  |  |
| --- | --- | --- |
| **Sr.No.** | **Criteria** | **Weightage %** |
| 1 | User Profile and Registration System | 10 |
| 2 | User Skills Assessment | 15 |
| 3 | AI-Generated Real-World Projects | 15 |
| 4 | AI-Driven Manager | 10 |
| 5 | AI-Based Matching Algorithm for Organizations | 10 |
| 6 | Internship Progress Tracking | 10 |
| 7 | Certification System | 5 |
| 8 | Admin Dashboard | 5 |
| 9 | Data Analytics and Insights | 10 |
| 10 | System Integration and Testing | 10 |

**Challenges:**

Challenges that this project may encounter include:

1. **Establishing Trust**: Building trust among both the industry and students may be challenging initially, as they might be skeptical about the platform's effectiveness and reliability.
2. **Performance Concerns**: Ensuring that the platform performs up to industry standards is crucial, and any shortcomings in its functionality could hinder its acceptance and success.
3. **Algorithmic Accuracy:** The accuracy and reliability of the AI algorithms for skills assessment, matching, and problem generation are critical. Ensuring that the AI consistently delivers meaningful results can be challenging.
4. **AI Model Fine-Tuning:** Continuously fine-tuning the ChatGPT model to produce accurate and contextually relevant responses for skills assessment and problem generation can be a complex and ongoing task.
5. **Project Diversity:** Generating a diverse range of AI-generated projects that cover various domains and technologies to cater to the different interests and skills of users presents a challenge.
6. **AI Manager Effectiveness:** Ensuring that the AI-based Manager effectively guides and supports users throughout their internships, providing relevant and helpful insights, can be challenging.
7. **User Experience:** Creating an intuitive and user-friendly interface that accommodates users of varying technical backgrounds is a challenge. Balancing functionality with ease of use is essential.

**Knowledge Areas Required:**

The knowledge area that combines backend development, AI (Artificial Intelligence) and ML (Machine Learning), and frontend development is often referred to as "Full-Stack AI Development" or "AI/ML Full-Stack Development." Practitioners in this field are required to have expertise in various domains, including:

1. **Backend Development**: This encompasses knowledge of server-side programming languages, frameworks, and databases. Common technologies include Python, Java, Node.js, Flask, Django, and database systems like MySQL, PostgreSQL, or NoSQL databases. Proficiency in designing and developing APIs is also essential.
2. **AI and ML**: Understanding AI and ML principles, algorithms, and libraries is crucial. Knowledge of machine learning frameworks like TensorFlow, PyTorch, scikit-learn, and AI concepts such as neural networks, deep learning, and natural language processing (NLP) is required. Data preprocessing, model training, and evaluation are key components.
3. **Frontend Development**: Proficiency in frontend technologies like HTML, CSS, JavaScript, and popular frontend libraries and frameworks such as React, Angular, or Vue.js is necessary. Skills in creating responsive and user-friendly web interfaces are vital.
4. **Web Development**: Knowledge of web development concepts, including HTTP protocols, RESTful API design, and web security practices, is important to ensure seamless communication between the frontend and backend components.
5. **Database Management**: Understanding how to manage and interact with databases is crucial for storing and retrieving data for AI and ML applications.
6. **Deployment and DevOps**: Familiarity with deploying AI models and web applications to servers or cloud platforms like AWS, Azure, or Google Cloud is essential. Knowledge of containerization (e.g., Docker) and orchestration tools (e.g., Kubernetes) can be beneficial.
7. **Version Control**: Proficiency in using version control systems like Git for collaborative development and code management is essential.
8. **Testing and Quality Assurance**: Implementing testing strategies and ensuring the reliability and performance of both frontend and backend components is important.
9. **UI/UX Design**: Understanding user interface (UI) and user experience (UX) design principles can help create user-friendly AI-driven applications.
10. **Security**: Awareness of security best practices, especially when dealing with sensitive data, is critical to protect AI and ML systems and user information.
11. **Continuous Learning**: Given the rapidly evolving nature of AI and web technologies, a commitment to continuous learning and staying updated with the latest developments is essential.

**Learning Outcomes:**

Learning outcomes for a program or course may include:

1. **Project Management**: Students will gain the ability to effectively plan, execute, and complete a project from conception to completion, starting with minimal or no existing infrastructure or resources.
2. **Advanced AI Integration:** Students will gain a deep understanding of integrating advanced AI models like ChatGPT into practical applications. They will learn the intricacies of fine-tuning and customizing AI algorithms to meet specific project requirements.
3. **User-Centric Design:** The project emphasizes user experience and usability. Students will learn the principles of user-centric design, ensuring that the platform is intuitive and accessible to a wide range of users.
4. **Documentation and Communication:** Effective documentation and communication with users and stakeholders are essential for project success. Students will learn how to create comprehensive user guides and support materials.
5. **Technology Framework Proficiency**: Students will develop expertise in a specific technology framework, enabling them to design and develop software applications or solutions using that framework.
6. **Team Collaboration**: Students will cultivate strong teamwork and collaboration skills, allowing them to work effectively in diverse teams and contribute positively to group dynamics.
7. **Market Analysis and Evaluation**: Students will acquire the skills to analyze market trends, assess consumer needs, and evaluate the competitive landscape to make informed business decisions.
8. **Privacy and Security:** Students will become well-versed in implementing robust data privacy and security measures, a critical skill in today's technology landscape.

These outcomes reflect a comprehensive set of skills and knowledge that prepare students for real-world projects and employment in various fields, particularly in technology and business.

**Nature of the End Product / Research Outcomes:**

The nature of the end product for the "AI-Driven Internship Platform" project is a comprehensive and user-friendly software application. This software platform will apply advanced AI algorithms, including a fine-tuned ChatGPT model, to provide a range of functionalities:

1. **Skills Assessment Tool:** The platform will include a skills assessment system that evaluates users' programming and technical abilities, generating comprehensive skills profiles.
2. **Internship Matching Engine:** An AI-based matching algorithm will connect students with relevant internship opportunities, aligning their skills and interests with organizational requirements.
3. **AI-Generated Real-World Projects:** The platform will offer a diverse array of AI-generated real-world projects, allowing users to gain practical experience across various domains and technologies.
4. **AI-Based Manager:** An AI-driven Manager will guide and support users throughout their internships, offering solutions to challenges, debugging assistance, and valuable insights.
5. **Progress Tracking and Certification:** Users and organizations can monitor internship progress, milestones, and achievements. Successful participants receive certificates, enhancing their resumes.
6. **Admin Dashboard and Analytics:** An admin dashboard will facilitate the management of user data, internship postings, and system performance. Data analytics tools will provide insights into user behavior and platform usage.

The end product, this AI-Driven Internship Platform, serves as a software package that is highly useful in the context of internship acquisition, skills development, and bridging the gap between academic knowledge and industry demands. It embodies the culmination of research and development efforts, offering a tangible and practical solution to a pressing problem faced by students pursuing careers in computer science and software engineering.

**Related Work / Literature Survey / Literature Review:**

Several avenues and resources exist to address this challenge:

**Internship Portals:** Various internship portals are available to connect students with potential internship opportunities. These platforms enable students to search for internships based on their skills and interests. However, they often lack personalized matching and AI-driven assessments.

**Online Learning Platforms:** E-learning platforms provide courses and projects aimed at enhancing students' skills. While these platforms are valuable for skill development, they may not directly facilitate internship placements.

**Industry-Academia Collaborations:** Some universities collaborate with industries to offer internships to their students. While beneficial, these collaborations are limited in scope and may not cater to all students.

Career Development Centers: Educational institutions typically maintain career development centers to assist students with job placements and internships, offering valuable guidance in navigating the job market.

**AI-Driven Hiring Platforms:** Certain platforms leverage artificial intelligence to match job seekers with suitable positions. These AI systems could serve as a foundation for the proposed project's internship matching component, enhancing the precision of student-employer connections.

**Mentoring Programs:** Organizations and universities offer mentoring programs to support students during internships. Integrating AI-based mentoring into the proposed platform would enhance its uniqueness and provide invaluable support to students throughout their internships.

**Deliverables / Work Breakdown Structure:**

Certainly, here are the deliverables and a Work Breakdown Structure (WBS) for the "AI-Driven Internship Platform" project:

**Deliverables:**

1. **User Registration and Profiling System:**

* Description: Users can register, create profiles, and provide information about their skills.
* Reused Work: 40% (Basic registration system components may be reused).

1. **Skills Assessment Tool:**

* Description: An AI-driven system that assesses users' programming and technical skills.
* Reused Work: 20% (Based on AI algorithms and fine-tuning).

1. **AI-Generated Real-World Projects:**

* Description: The platform generates real-world projects for users to work on.
* Reused Work: 10% (AI algorithms for project generation may be reused).

1. **AI-Based Manager:**

* Description: An AI-driven Manager assists users during their internships.
* Reused Work: 30% (AI algorithms for user guidance may be reused).

1. **Progress Tracking and Certification System:**

* Description: Users and organizations can track internship progress and issue certificates.
* Reused Work: 40% (Basic components of tracking and certification systems may be reused).

1. **Internship Matching Engine:**

* Description: The "Internship Matching Engine" facilitates students in finding and connecting with suitable external internship opportunities.
* Reused Work: 40% (Matching engine components may be reused).

1. **Admin Dashboard and Analytics Tools:**

* Description: An administrative dashboard and analytics tools for platform management.
* Reused Work: 20% (Basic dashboard components may be reused).

1. **User Documentation and Support Resources:**

* Description: Comprehensive user guides and support resources for effective platform usage.
* Reused Work: 50% (Documentation templates and support structures may be reused).

**Work Breakdown Structure (WBS):**

1. **Project Initiation**

* Define project scope and objectives.
* Identify stakeholders and establish communication channels.
* Create a project plan and schedule.

1. **User Registration and Profiling System**

* Develop user registration functionality.
* Create user profile management features/dashboard.

1. **Skills Assessment Tool**

* Design the skills assessment system.
* Integrate AI algorithms for assessment.
* Implement skills profiling.

1. **AI-Driven Internship**

* Develop AI-generated real-world problems.
* Implement project assignment features.
* Design and implement the AI-Based Manager.
* Develop user guidance and support features.

1. **Progress Tracking and Certification System**

* Implement progress tracking functionality.
* Develop the certification system.

1. **Internship Matching Engine**

* Develop the matching algorithm.
* Design the user interface for internship matching.
* Implement the matching engine.

1. **Admin Dashboard and Analytics Tools**

* Create the admin dashboard.
* Integrate analytics tools for user data analysis.

1. **User Documentation and Support Resources**

* Develop comprehensive user guides.
* Create support resources and FAQs.

1. **Testing and Quality Assurance**

* Conduct thorough testing of all system components.
* Ensure data privacy and security measures are in place.

1. **Deployment and User Training**

* Deploy the platform to production servers.
* Provide user training and support during the initial rollout.

This Work Breakdown Structure (WBS) outlines the project's components and their interdependencies, helping to track progress and allocate resources effectively. It also highlights the reuse of existing work and the focus on original development efforts by students.

**Project Plan / Project Schedule / Project Timetable / Project Calendar**

**Project Timetable:**

**Week 1-2: Project Initiation**

* Define project objectives and scope.
* Identify stakeholders.
* Develop a project plan.
* Allocate project team roles and responsibilities.

**Week 3-5: Requirement Specification**

* Functional Requirements
* Non-Functional Requirements
* Requirements Analysis

**Week 6-8: User Registration and Profiling System**

* Develop user registration functionality.
* Create user profile management features.

**Week 9-12: Skills Assessment Tool**

* Design the skills assessment system.
* Integrate AI algorithms for assessment.
* Implement skills profiling.

**Week 13-17: AI-Driven Internship Option**

* Develop AI-generated real-world problems.
* Design and implement the AI-Based Manager.

**Week 18-22: Progress Tracking and Certification System**

* Implement progress tracking functionality.
* Develop the certification system.

**Week 23-26: Internship Matching Engine**

* Enhance the "Internship Matching Engine" for external opportunities.

**Week 27-30: Admin Dashboard and Analytics Tools**

* Create the admin dashboard.
* Integrate analytics tools for user data analysis.

**Week 31-33: User Documentation and Support Resources**

* Develop comprehensive user guides.
* Create support resources and FAQs.

**Week 34-37: Testing and Quality Assurance**

* Conduct thorough testing of all system components.
* Ensure data privacy and security measures are in place.

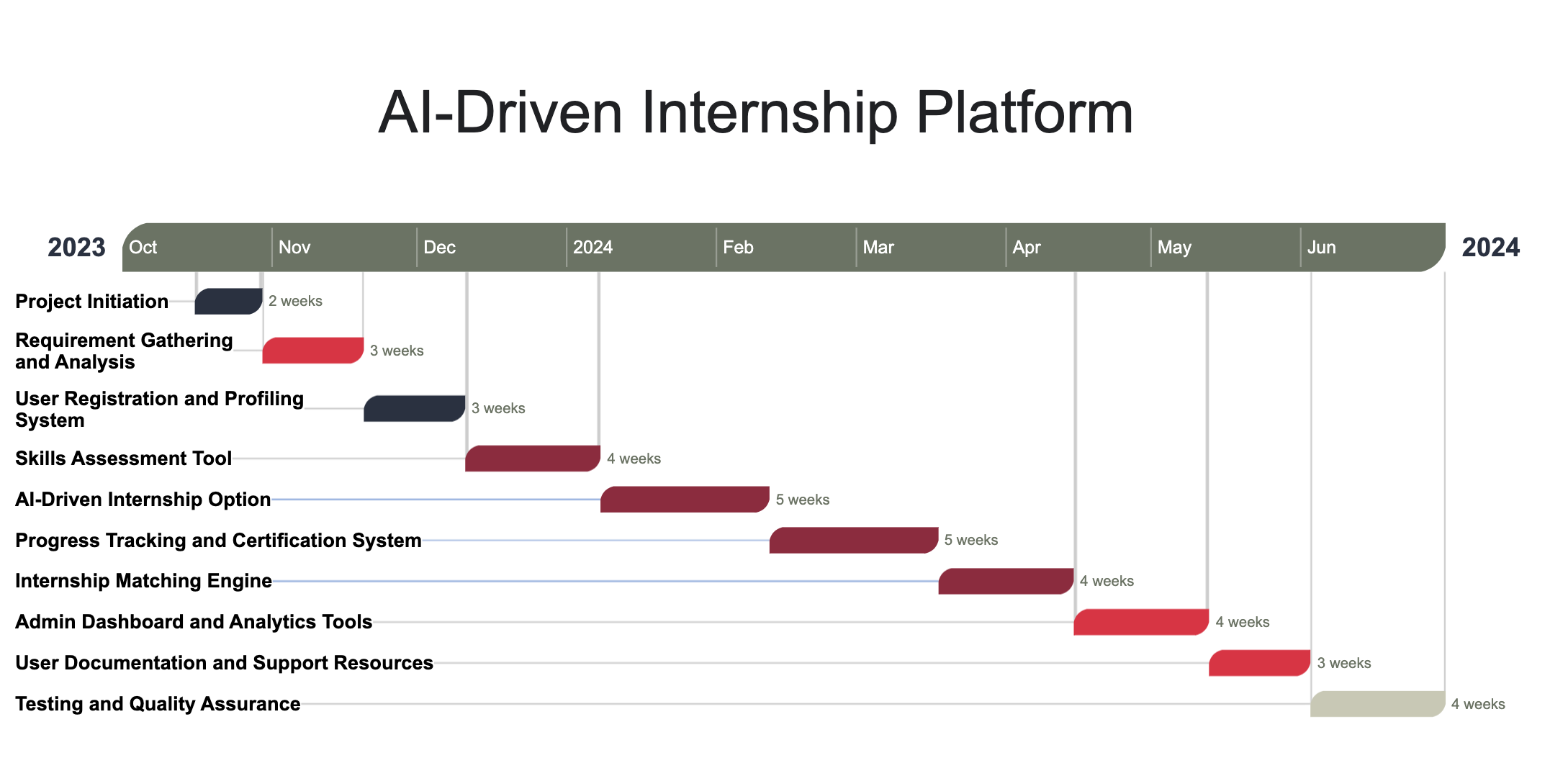
**Week 38-40: Deployment and User Training**

* Deploy the platform to production servers.
* Provide user training and support during the initial rollout.

**Monitoring Progress:**

* Weekly team meetings to review progress and address issues.
* Regular communication with the advisor to seek guidance and updates.
* Monitoring task completion against the Gantt chart schedule.
* Frequent testing and quality assurance checks to ensure system functionality.

This project plan ensures that tasks are well-distributed over the project timeline, resources are effectively utilized, and progress is closely monitored. It provides a clear roadmap for the successful development and deployment of the "AI-Driven Internship Platform."



**Resources Required**

**Software Resources:**

1. **Programming Environments:**

* Availability: Commonly used programming environments like Python, JavaScript, and AI libraries (e.g., TensorFlow, PyTorch) are readily available.
* Cost Estimate: No additional costs for standard programming environments.

1. **Database Management Systems:**

* Availability: Database management systems such as PostgreSQL, MySQL, and MongoDB are available.
* Cost Estimate: No additional costs for standard database systems.

1. **AI Model Fine-Tuning:**

* Availability: AI fine-tuning resources and tools may be sourced from open-source libraries and frameworks.
* Cost Estimate: No additional costs are expected for AI fine-tuning resources.

**Material Supplies:**

1. **User Documentation Materials:**

* Availability: Materials for creating user guides and support resources will be sourced digitally.
* Cost Estimate: Minimal to no cost for digital documentation materials.

**Miscellaneous:**

* Regular project meetings and progress tracking with the advisor.
* Continuous communication and collaboration among team members.
* Periodic review and adjustment of the project plan as needed.
* Backups and data recovery procedures for project data.
* Security measures to protect user data and privacy.