

**SOEN 6841- Software Project Management (Winter 2024)**  
**Prof. Joumana Dargham**

**Project Group 28**

**Topic: AI-Based Academic Advisor**

**Phase II: Feasibility Study, Solution Proposal, Project Plan, Risk Assessment and Budgeting.**

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**Title: Feasibility Study Report**

**1. Executive Summary:**

The AI-Based Academic Advisor project aims to transform academic advising through artificial intelligence, addressing shortcomings in traditional advising methods. It plans to offer personalized guidance to students, advisors, and institutions, helping students make informed decisions and access career opportunities. The proposed system will provide tailored course recommendations, career coaching, and skill development programs based on individual interests and goals. Key features include integration with existing systems, progress tracking, and data security measures. The research underscores the need for personalized guidance and the potential of AI to enhance academic advising, ultimately aiming to improve student performance and educational outcomes.

**2. Description of Product/Service:**

The AI-based Academic Advisor is a cutting-edge software solution designed to revolutionize the academic advising process by providing personalized guidance to students. This innovative product addresses the shortcomings of traditional advising methods by leveraging artificial intelligence to offer tailored recommendations on course selection, career paths, and skill development. Key features of the AI Academic Advisor include:

- Personalized Course Suggestions: The advisor utilizes advanced algorithms to analyze student interests, career aspirations, and learning styles, providing customized course recommendations that align with their individual goals and academic needs. The advisor helps students optimize their course selections by offering personalized guidance, leading to enhanced learning outcomes and improved academic performance.
- Career Coaching: The advisor offers comprehensive career coaching services, providing insights into industry trends, job market demands, and skill development opportunities. Through personalized career guidance, students gain valuable insights into potential career paths, enabling them to make informed decisions about their future professional endeavours.
- Seamless Integration: The advisor seamlessly integrates with existing academic systems, ensuring access to relevant data for holistic advising. This integration facilitates communication between students and human advisors, enabling effective collaboration and support throughout the academic journey.
- Progress Tracking and Report Generation: The advisor tracks student progress, generates comprehensive reports, and provides insights into academic performance. By monitoring

- student development, the advisor empowers students and advisors to identify areas for improvement and implement strategies for success.
- Scalability and Agility: The advisor is designed to be scalable and agile, allowing it to adapt to the diverse needs of educational institutions. Continuous improvement through user feedback and advancements in AI technology ensures that the advisor remains responsive to evolving student needs and preferences.



(FIG 1)

### **3. Technical Considerations:**

- Software Development: The AI-Based Academic Advisor will primarily be a software solution developed using various programming languages and frameworks suitable for artificial intelligence and machine learning applications. Technologies such as Python, TensorFlow, PyTorch, and sci-kit-learn may be utilized for building machine learning models and algorithms.
- Data Integration: The advisor will require integration with existing academic systems and databases to access relevant student data. APIs (Application Programming Interfaces) and data integration tools will be employed to establish connections with these systems securely.
- Artificial Intelligence: The core of the AI Academic Advisor lies in its artificial intelligence capabilities. Techniques such as natural language processing (NLP), knowledge representation, and expert systems will be utilized to analyze student data, generate personalized recommendations, and provide insights into academic and career paths.
- User Interface (UI) and User Experience (UX): The advisor will feature a user-friendly interface designed to enhance the user experience for both students and academic advisors. Technologies such as HTML, CSS, JavaScript, and frameworks like React or Angular may be employed for front-end development.
- Security Measures: Strong security measures will be implemented to protect sensitive student data and ensure compliance with data privacy regulations. Encryption protocols, access controls, and secure authentication mechanisms will be incorporated into the system to safeguard against unauthorized access and data breaches.
- Cloud Infrastructure: Hosting the AI Academic Advisor on a cloud infrastructure such as Amazon Web Services (AWS), Microsoft Azure, or Google Cloud Platform (GCP) provides scalability, reliability, and flexibility. Cloud services will be utilized for storage, computing resources, and software solution deployment.

- Continuous Integration and Deployment (CI/CD): CI/CD pipelines will be established to automate the process of building, testing, and deploying updates to the AI Academic Advisor. Tools such as Jenkins, Travis CI, or GitLab CI/CD will facilitate seamless integration and deployment of new features and enhancements.
- Monitoring and Analytics: Monitoring tools and analytics platforms will be integrated into the system to track performance metrics, user engagement, and system health. Technologies like Elasticsearch, Kibana, Prometheus, and Grafana may be used for monitoring, logging, and analyzing data.

#### **4. Product/Service Marketplace:**

The target market for the AI-Based Academic Advisor consists primarily of higher education institutions, including colleges and universities, as well as their students and academic advisors. This market is characterized by a growing demand for personalized academic guidance and support, driven by the increasing complexity of academic programs and the evolving job market landscape. Additionally, there is a rising interest in leveraging artificial intelligence and machine learning technologies to enhance the quality and effectiveness of academic advising services.

##### **Depth and Condition of the Market:**

**Depth:** The market for academic advising solutions is substantial, with a wide range of institutions seeking innovative tools to improve student outcomes and satisfaction. **Condition:** The market condition is favourable for innovative solutions like the AI Academic Advisor, given the increasing emphasis on student success and retention in higher education.

##### **Demand for the Product/Service:**

**Demand:** There is a strong demand for personalized academic guidance and support among students, who often struggle to navigate their academic paths effectively. Academic advisors also seek tools that can streamline the advising process and provide actionable insights to help students succeed. **Viability:** Given the substantial demand for personalized academic advising solutions and the growing interest in AI technologies in higher education, the project is viable.

##### **Key Competitors:**

- Starfish by Hobsons
- Navigate by EAB
- Graduway

#### **5. Marketing Strategy:**

##### **5.1.Digital Marketing:**

- Website Optimization: Develop a user-friendly website that showcases the features and benefits of the AI Academic Advisor. Implement search engine optimization (SEO) strategies to improve visibility on search engines and drive organic traffic.
- Social Media Marketing: Utilize social media platforms like LinkedIn, Twitter, and Facebook to engage with students, academic advisors, and educational institutions. Share relevant content, participate in discussions, and leverage targeted advertising campaigns to reach specific demographics.
- Email Marketing: Develop targeted email campaigns to nurture leads and maintain ongoing communication with prospects. Segment email lists based on user preferences and engagement levels to deliver personalized messages and promotions.

##### **5.2.Partnerships and Collaborations:**

- Educational Institutions: Forge partnerships with colleges, universities, and academic departments to pilot the AI Academic Advisor and gather feedback from students and advisors. Offer exclusive access and discounts to early adopters to incentivize participation and generate buzz within the academic community.

### **5.3.Traditional Marketing:**

- Print Collateral: Design brochures, flyers, and informational materials to distribute at academic conferences, career fairs, and campus events. Highlight key features and success stories to capture attention and generate interest in the AI Academic Advisor.
- Direct Mail: Implement targeted direct mail campaigns to reach prospective users who may not be active online. Personalize mailers based on demographics and interests to increase response rates and drive engagement with the platform.
- Industry Publications: Advertise in industry publications and academic journals to raise awareness of the AI Academic Advisor among key stakeholders. Place advertorials and sponsored content to provide in-depth insights into the platform's capabilities and benefits.

### **5.4.Word-of-Mouth and Referral Programs:**

- Encourage satisfied users to share their experiences with the AI Academic Advisor through word-of-mouth and social media. Incentivize referrals with rewards or discounts for both referrers and new users to stimulate growth and increase user acquisition.
- Leverage testimonials and case studies from early adopters to build credibility and trust among prospective users. Highlight success stories and positive outcomes to demonstrate the value of the platform in improving student outcomes and enhancing academic advising.

## **6. Organization/Staffing:**

### **6.1.Evaluation of Staffing Options:**

- Software Development: Evaluate the current team's capacity to handle the software development requirements of the AI Academic Advisor. Consider factors such as expertise in relevant programming languages and frameworks, experience with AI technologies, and scalability of the development team.
- Data Science and Analytics: Assess the proficiency of the data science team in developing machine learning models and algorithms for personalized academic advising. Determine if additional expertise or resources are needed to enhance data analysis capabilities and improve recommendation accuracy.
- UX/UI Design: Review the UX/UI design team's ability to create an intuitive and user-friendly interface for the AI Academic Advisor. Ensure that the team has the necessary skills and resources to conduct user research, prototyping, and usability testing to optimize the user experience.
- Project Management: Evaluate the effectiveness of the project management team in overseeing the execution of the project, coordinating tasks, and ensuring timely delivery. Consider if additional project management resources are required to manage the complexity and scope of the project effectively.
- Domain Expertise: Determine if the organization has sufficient domain expertise in academic advising and higher education to inform the development of the AI Academic Advisor. Identify gaps in knowledge and consider hiring additional domain experts or consultants to provide insights and guidance.

### **6.2.Restructuring and Additional Hiring:**

- Based on the evaluation of staffing options, consider restructuring the team to optimize resource allocation and address any skill gaps or capacity constraints.
- Determine if additional hiring is necessary to bolster specific areas of the project, such as software development, data science, UX/UI design, or project management.
- Define clear roles and responsibilities for new hires and ensure alignment with project objectives and timelines.

### **6.3.Training and Development:**

- Invest in training and professional development opportunities for existing staff to enhance their skills and expertise in relevant areas.
- Provide access to courses, workshops, and certifications to keep team members abreast of emerging technologies and best practices in AI, machine learning, software development, and academic advising.

## **7. Schedule:**

7.1.Project Planning and Requirements Gathering (4 weeks): Define project objectives, gather requirements from stakeholders, and create a detailed project plan.

7.2.Technical Architecture and Design (6 weeks): Design the technical architecture, define data models and algorithms, and create wireframes and prototypes for the user interface.

7.3.Software Development (20 weeks): Develop the backend infrastructure, implement machine learning algorithms, and build the frontend interface based on user feedback.

7.4.Data Integration and Testing (8 weeks): Integrate the advisor with existing systems, conduct comprehensive testing, and address any identified issues or bugs.

7.5.Deployment and Rollout (4 weeks): Deploy the platform, train users on its usage, and monitor performance during the initial rollout phase.

7.6.Monitoring and Optimization (Ongoing): Continuously monitor system performance, gather user feedback, and iterate on features to ensure the platform remains effective and relevant.

## **8. Financial Projections:**

### **8.1.Market Analysis and Revenue Potential:**

Conducting market research to estimate the academic advising market's size and growth potential. Analyzing historical data and industry trends to forecast demand for personalized academic guidance. Assessing revenue potential through expert opinions and industry reports.

### **8.2.Revenue Streams:**

Generating revenue through subscription fees based on the number of users, licensing fees for integration with existing systems, and offering training and consultation services to support implementation.

### **8.3.Cost Structure:**

Estimating development and operational costs, including salaries, licenses, infrastructure, hosting, maintenance, customer support, and administrative expenses.

### **8.4.Investment Requirements:**

Determining initial investment needs for development, integration, marketing, and operations. Identifying potential funding sources and calculating ROI to assess financial viability.

#### **8.5.Financial Projections:**

Forecasting revenue based on subscription, licensing, and service fees. Projecting expenses for development, marketing, and operations. Conducting cash flow and profitability analyses to ensure sustainability and growth.

### **9. Findings and Recommendations:**

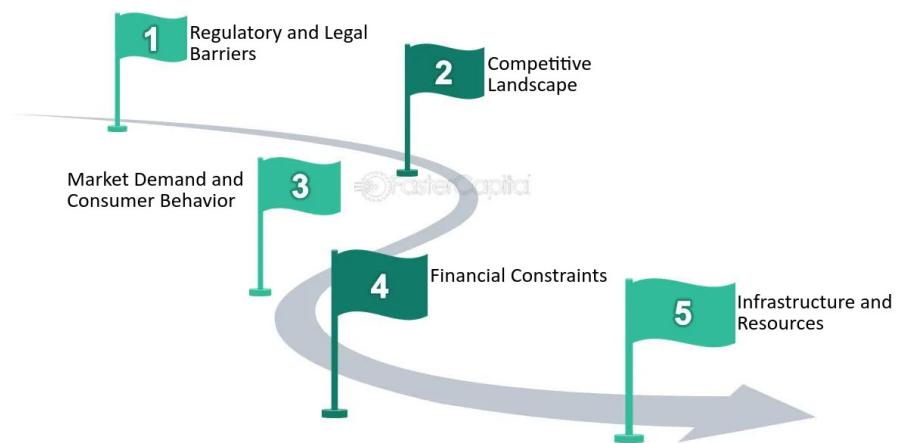
#### **9.1.Findings:**

- The academic advising market demonstrates a growing demand for personalized support due to complex academic programs and evolving job market needs.
- Traditional advising methods often fail to meet individual student needs, causing inefficiencies in course selection and graduation delays.
- The AI-Based Academic Advisor offers a solution by leveraging AI for personalized recommendations in courses, career coaching, and skill development.
- Market analysis indicates significant revenue potential, with revenue streams including subscription fees, licensing fees, and training services.

#### **9.2.Recommendations:**

- Further Market Validation: Conduct additional research and gather feedback to refine financial projections and validate assumptions.
- Investment Strategy: Develop a comprehensive plan to secure funding from various sources like venture capital, grants, etc.
- Execution Plan: Create a detailed plan with milestones, tasks, and timelines for development, deployment, and rollout.
- Partnerships and Collaborations: Forge strategic alliances with educational institutions, industry partners, and technology vendors to enhance the platform's value proposition.
- Continuous Improvement: Foster a culture of innovation, monitor performance indicators, and iterate on features based on user feedback.
- Regulatory Compliance: Ensure compliance with data privacy regulations and security standards to protect student information and maintain credibility.

### **Common Challenges Faced in Feasibility Studies**



**(FIG 2)**

## **10. Technical Feasibility:**

### **10.1. AI Algorithms and Techniques:**

- Requirement: NLP, ML, and knowledge representation for personalized guidance.
- Feasibility: Established algorithms with support from libraries like TensorFlow, and PyTorch. Feasibility depends on data availability and AI expertise.

### **10.2. Data Integration and Analysis:**

- Requirement: Integration with academic systems for data access and analysis.
- Feasibility: Feasible with collaboration with IT departments, APIs, and data analysis tools.

### **10.3. Privacy and Data Security Measures:**

- Requirement: Strong measures for data protection and compliance.
- Feasibility: Feasible with encryption, access controls, and adherence to regulations like GDPR.

### **10.4. Scalability and Performance:**

- Requirement: Scalable architecture for handling peak loads.
- Feasibility: Cloud-based infrastructure, microservices architecture for scalability. Performance testing and optimization are necessary.

### **10.5. User Interface (UI) and User Experience (UX):**

- Requirement: Intuitive UI/UX for seamless interaction.
- Feasibility: Achievable with collaboration between UX designers and developers, prototyping, and user testing.

### **10.6. Continuous Improvement and Feedback Mechanisms:**

- Requirement: Mechanisms for collecting user feedback and iterative improvement.
- Feasibility: Feasible using surveys, ratings, user analytics, and Agile development methodologies.

## **11. Operational Feasibility:**

### **11.1. Impact on Existing Processes:**

- Student Advising Process: The AI Academic Advisor will streamline the advising process by providing personalized recommendations, reducing the time spent on manual course selection.
- Advisor Workload: Advisors can focus on more complex mentoring aspects as routine tasks are automated, potentially improving advisor efficiency.
- Institutional Integration: Integration with existing academic systems may pose challenges, requiring collaboration with IT departments and potential changes to existing processes.

### **11.2. Challenges:**

- Resistance to Change: Some stakeholders, including advisors and students, may resist adopting AI-driven solutions due to fear of job displacement or skepticism about AI's effectiveness.

- Data Quality and Availability: Ensuring the quality and availability of data for AI analysis may be challenging, requiring data cleaning and collaboration with institutions to access relevant data.
- Technical Support: Providing technical support and training for users unfamiliar with AI systems could pose challenges, requiring comprehensive onboarding processes.

### **11.3.Benefits:**

- Personalized Guidance: Students receive tailored recommendations aligned with their interests and career goals, enhancing their academic experience.
- Efficiency: Automation of routine tasks reduces administrative burden, allowing advisors to focus on higher-value activities, potentially increasing student success rates.
- Scalability: The solution can scale to accommodate growing student populations and evolving academic programs, enhancing institutional flexibility.

### **11.4.Operational Processes Enhancement:**

- Feedback Mechanisms: Incorporating feedback mechanisms enables continuous improvement, ensuring the solution remains relevant and effective over time.
- Data-Driven Decision Making: Access to analytics and insights derived from AI analysis can inform strategic decision-making within educational institutions, optimizing resource allocation and program offerings.
- Enhanced Communication: Improved communication between students, advisors, and institutions fosters collaboration and transparency, leading to better outcomes for all stakeholders.

## **12. Economic Feasibility:**

### **12.1.Resource Availability:**

- Financial Resources: Adequate funding is necessary for the development, implementation, and maintenance of the AI Academic Advisor.
- Human Resources: Skilled professionals in AI development, data science, software engineering, and project management are required.

### **12.2.Potential Return on Investment (ROI):**

- Cost Savings: Automating advising tasks can reduce administrative costs and improve advisor efficiency, potentially resulting in cost savings for educational institutions.
- Improved Student Retention: Enhanced academic guidance may lead to improved student outcomes, including higher retention rates, which can translate into increased revenue for institutions.
- Competitive Advantage: Offering a cutting-edge AI-driven advising solution can enhance the institution's reputation and attractiveness to prospective students.

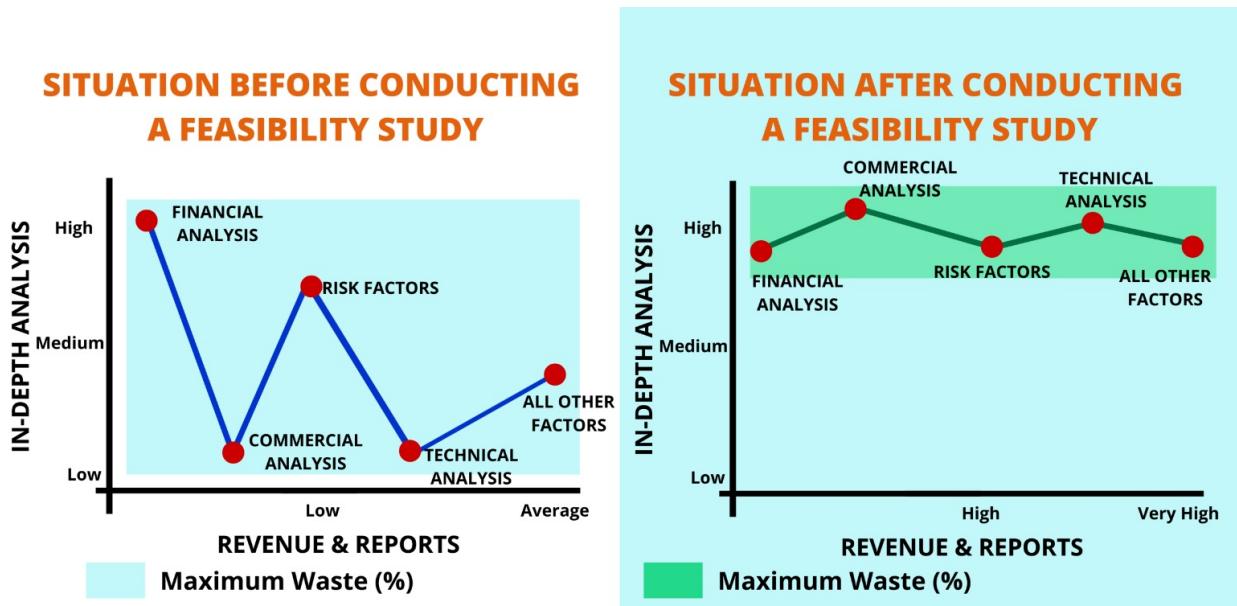
### **12.3.Cost-Benefit Analysis:**

- Costs: Development costs, including software development, data acquisition, and integration efforts, maintenance costs, ongoing support, and training expenses.
- Benefits: Improved student outcomes, increased efficiency in advising processes, potential cost savings, enhanced institutional reputation, and competitive advantage.

### **12.4.Overall Viability:**

- Positive ROI: If the benefits outweigh the costs, the project is economically viable.

- Long-term Sustainability: Continuous monitoring of costs and benefits, along with adaptation to changing market conditions, ensures long-term economic viability.
- Market Demand: Assessing market demand and competition is crucial for determining the project's economic feasibility and potential return on investment.



(FIG 3)

## **Title: Software Solution Proposal**

**Objective:** Propose a distinctive software solution, Guidance Guru-GG, to revolutionize academic advising. By embedding advanced AI technologies, personalized engagement strategies, and unique features, this solution aims to stand out among competitors and set a new standard for academic guidance.

**Problem Identification:** Modern educational institutions often leave students overwhelmed by the abundance of academic and career options, resulting in confusion, indecision, and less-than-optimal academic paths. Traditional advising methods often fail to consider individual interests and career aspirations, leading to uninformed course selections and potential delays in graduation. Even if students select a path they often get lost in the myriad of university choices and navigating through the university. Additionally, the evolving job market complicates staying informed about field requirements. This lack of personalized guidance and current information hampers students' academic success and career prospects. An AI-driven academic advisor system is essential to provide personalized guidance, recommend relevant courses, and optimize academic paths, thereby improving students' educational and professional outcomes.

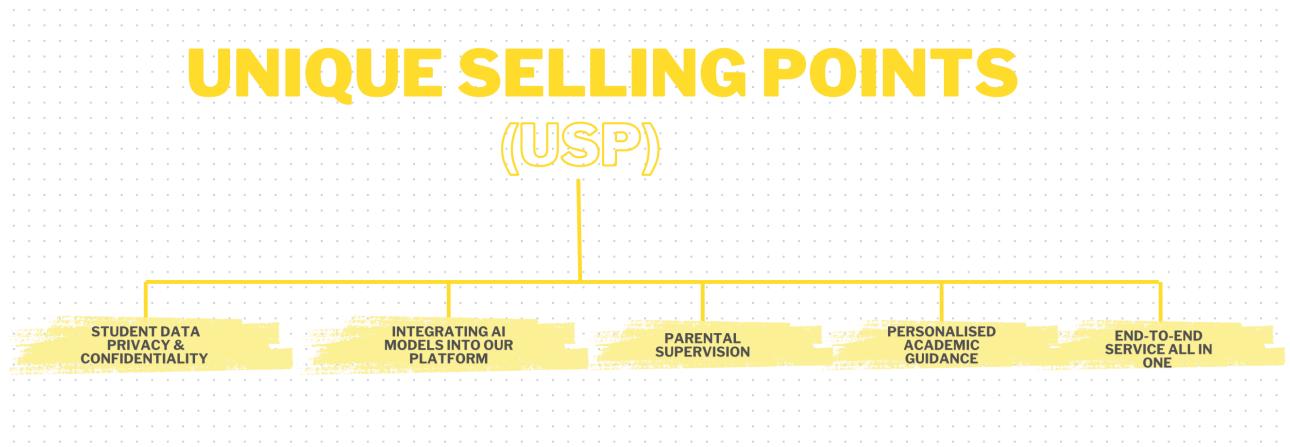
**Why it Matters:** The uniqueness of Guidance Guru-GG lies in its ability to not only address the identified problems but also provide an engaging, personalized, and real-world-relevant advising experience. By doing so, it ensures that students are not just guided but empowered to make informed decisions for their academic and professional journeys.

**Solution Overview:** Guidance Guru is an innovative software solution designed to revolutionize the academic advising experience for students by providing personalized guidance and support tailored to their individual needs and aspirations. Developed upon advanced artificial intelligence (AI) algorithms, Guidance Guru addresses the common problem of students receiving generalized academic help and guidance, which often leads to suboptimal learning outcomes.

Our proposed software solution offers a comprehensive answer to all academic concerns. From personalized academic and career guidance to assistance with university entrance exams and selections, our platform covers it all. We also facilitate navigation through universities and aid students in identifying their next career steps, whether pursuing master's degrees or job opportunities. Furthermore, we provide internship placements and access to an alumni network to keep students updated on the latest job market requirements. Our unique parent portal allows parents to track their child's academic progress while safeguarding the privacy of students' data—an aspect often overlooked by other academic advisors. We ensure that only information essential for the child's success is shared with parents, such as guidance on academic matters or career counselling sessions. All of these features are integrated into a simple, intuitive, and user-friendly system.

Guidance Guru serves as a comprehensive virtual academic advisor, offering a wide range of features and functionalities to assist students in navigating their academic journeys. At its core, the platform employs sophisticated AI algorithms that analyze vast amounts of student data to generate personalized recommendations across various facets of the academic experience. Through an intuitive user interface, students can input their preferences, goals, academic history, and career aspirations into the platform. Guidance Guru then utilizes this information to deliver tailored advice on course selection, major exploration, career paths, internship opportunities, and skill development programs. These recommendations are dynamically updated based on student feedback and academic performance, ensuring ongoing relevance and accuracy. Furthermore, Guidance Guru seamlessly integrates with existing academic systems, such as student information systems (SIS), learning management systems (LMS), and career services platforms. This integration enables the platform to access relevant student data, academic records, and institutional resources, enhancing the accuracy and effectiveness of its recommendations.

Moreover, Guidance Guru incorporates a continuous improvement mechanism that collects feedback from students, advisors, and administrators to refine its AI algorithms and enhance the quality of its recommendations. This iterative process ensures that the platform remains responsive to evolving student needs and preferences. By offering personalized guidance and support tailored to each student's unique needs and aspirations, Guidance Guru empowers students to make well-informed educational decisions, optimize their academic paths, and ultimately achieve their full potential. Through its advanced AI-driven capabilities and user-friendly interface, Guidance Guru revolutionizes the academic advising experience, contributing to improved learning outcomes for students and institutions alike.



(FIG 4)

#### **Explanation of How it Addresses the Identified Problem or Opportunity:**

Guidance Guru addresses the identified problem of students receiving generalized academic help and guidance by offering personalized support tailored to each student's unique needs and aspirations. Traditional academic advising methods often fail to consider individual student interests, career goals, and learning styles, leading to confusion, indecision, and suboptimal academic paths.

By leveraging advanced AI algorithms, Guidance Guru analyzes vast amounts of student data to provide customized recommendations that align with each student's long-term objectives. Whether a student is exploring potential career paths, selecting courses for the upcoming semester, or seeking internship opportunities, Guidance Guru offers personalized guidance and support every step of the way.

Moreover, Guidance Guru streamlines the advising process by automating routine tasks and workload distribution, allowing advisors to focus on delivering personalized guidance and support. This efficiency enhances the student experience and reduces advising time, setting Guidance Guru apart from traditional advising methods.

Overall, Guidance Guru empowers students to make well-informed educational decisions, optimize their academic paths, and ultimately achieve their full potential. By providing personalized guidance, streamlining advising processes, and leveraging advanced AI technology, Guidance Guru revolutionizes the academic advising experience, enhancing learning outcomes for students and institutions alike.

## **Key Features and Functionalities:**

### **1. Personalized Student Success Coaches:**

- AI-driven coaches monitor student progress and provide tailored guidance and support, ensuring personalized attention and intervention.
- Integration with academic and career data enables coaches to offer recommendations and advice based on individual needs and aspirations.
- Continuous monitoring allows for proactive intervention to address challenges and optimize learning experiences, enhancing student success and satisfaction.

#### Dynamic AI-Driven Personality Matching:

- Advanced AI algorithms assess students' personalities and learning styles, generating personalized recommendations for courses, activities, and career paths.
- Recommendations are continuously refined based on user feedback and performance data, ensuring relevance and effectiveness.
- Matching algorithms evolve to optimize personalization and alignment with individual preferences and goals.

### **2. Personalized Guidance Engine:**

- Utilizes advanced AI algorithms to analyze student data and generate customized recommendations for course selection, career paths, and skill development.
- Adapts recommendations based on individual interests, strengths, weaknesses, and career aspirations, ensuring personalized guidance and support.
- Enhances user engagement and satisfaction by providing relevant and actionable insights tailored to individual needs and preferences.

### **3. Personalized Career Pathway Blueprints:**

- Career pathway plans are generated based on individual aspirations and academic achievements, providing step-by-step guidance for career progression.
- Integration with industry insights and job market data informs decision-making and planning, ensuring alignment with current opportunities and trends.
- Continuous updates and adjustments accommodate changes in goals, interests, and market conditions, empowering users to make informed career decisions.

### **4. Streamlined Advising Process:**

- Automates routine tasks for advisors, such as scheduling appointments and distributing workload, enhancing efficiency and productivity.
- Allows advisors to focus on delivering personalized guidance and support to students, promoting student success and satisfaction.
- Enhances user experience by providing seamless access to advising services and support, facilitating timely and effective communication and collaboration.

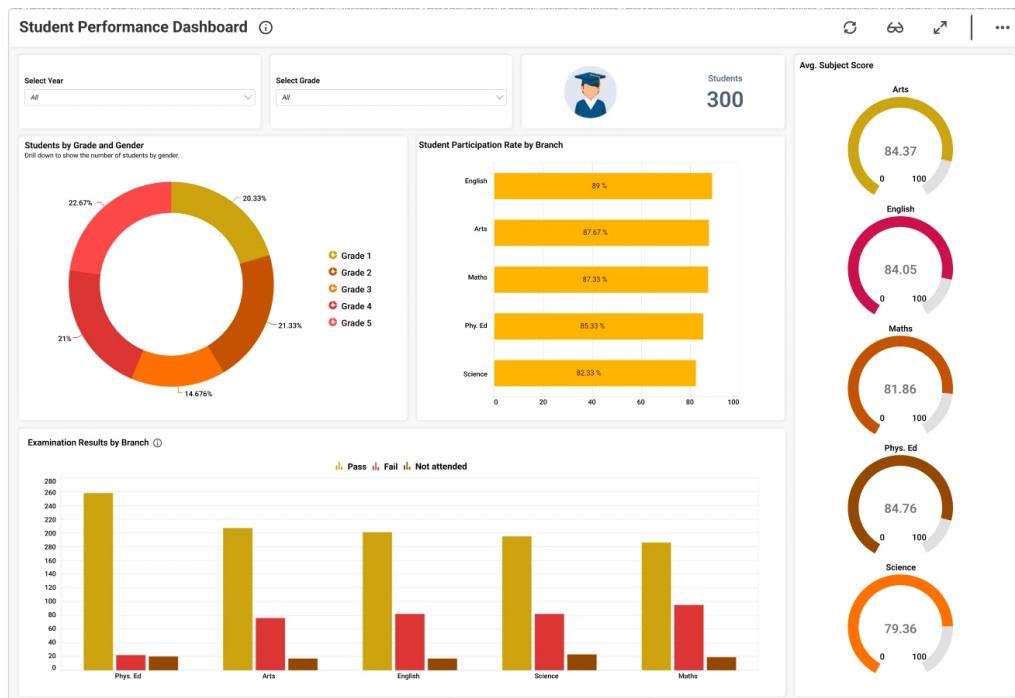
### **5. Comprehensive Toolkit Integration:**

- Offers a diverse range of tools and resources to support students' academic and career pursuits.
- Includes features such as resume builders, scholarship finders, internship databases, and skill development programs.

- Provides a centralized platform for students to access various resources and services, streamlining their educational journey.

## **6. Visual Dashboard Representation:**

- Presents visual insights and data representations to facilitate informed decision-making and monitoring of progress.
- Offers interactive dashboards that display key information such as education status, progress, and recommended actions.
- Enables users to track their academic and career journey at a glance, enhancing visibility and accountability.



**(FIG 5)**

## **7. Ongoing Learning Opportunities:**

- Cultivates a culture of continuous learning by offering workshops, classes, and certification programs.
- Recommends relevant learning opportunities based on individual interests and career goals, fostering professional development.
- Encourages lifelong learning and skill development beyond traditional academic settings, promoting personal and career growth.

## **8. Post-Enrollment Support:**

- Provides continued support for academic advising and guidance even after students enroll in courses or programs.
- Assists students with degree or course switches, ensuring smooth academic transitions and minimizing disruptions.
- Helps increase graduation rates and decrease time to degree completion by offering ongoing support and assistance throughout students' educational journey.

## **9. Career-Centric Focus:**

- Delivers personalized data and insights to help students make informed career decisions aligned with their interests and aspirations.
- Guides students on job market trends and professional development opportunities, equipping them with the skills and knowledge needed to succeed in their chosen fields.
- Supports students in aligning their academic choices with their long-term career goals, maximizing their potential for success and fulfillment.

## **10. Continuous Improvement through Feedback:**

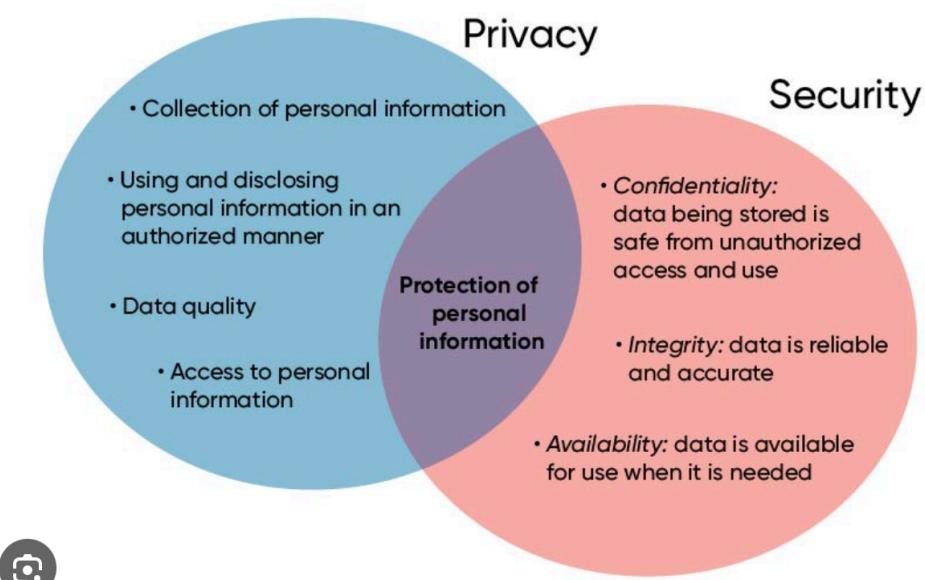
- Prioritizes user feedback to identify areas for improvement and enhancement of the platform's features and functionalities.
- Incorporates user suggestions and preferences into updates and feature enhancements, ensuring that the platform meets the evolving needs of its users.
- Drives ongoing innovation and excellence in academic advising and personalized guidance, fostering a culture of continuous improvement and learning.

## **11. Parents Login:**

- Provides parents with access to their child's academic progress and performance data, fostering transparency and communication.
- Allows parents to monitor key information such as grades, attendance records, and advisor communications, enabling them to support their child's educational journey effectively.
- Enhances parental involvement in their child's education and decision-making process, contributing to improved student outcomes and satisfaction.

## **12. Privacy System:**

- Implements robust data privacy and security measures to safeguard user information and comply with relevant regulations.
- Ensures transparency and control over personal data sharing and usage within the platform, empowering users to manage their privacy preferences effectively.
- Prioritizes user trust and confidence by maintaining the highest standards of data protection and privacy, fostering a secure and reliable educational environment.



**(FIG 6)**

### **13. Integration with Academic Systems:**

- Seamlessly integrates with existing academic platforms, such as student information systems and learning management systems.
- Accesses relevant student data and academic records to provide personalized recommendations and support.
- Ensures compatibility and interoperability with other educational tools and systems, minimizing disruptions and maximizing efficiency.

### **14. User-Friendly Interface:**

- Designed with an intuitive layout and navigation structure to facilitate ease of use for all users.
- Personalization features are prominently displayed and easily accessible, allowing users to tailor their experience to their preferences.
- Ensures compatibility and consistency across different devices and platforms for a seamless user experience.

### **15. Recommendation System:**

- Dynamically updates recommendations based on user interactions, performance data, and feedback.
- Takes into account factors such as course progress, academic achievements, and career goals to provide personalized suggestions.
- Offers recommendations for various aspects of the educational journey, including courses, majors, extracurricular activities, and career opportunities.

### **16. Predictive Analytics for Skill Gap Analysis:**

- Predictive analytics identify skill gaps based on current trends and future projections, providing actionable insights for skill development.
- Proactive suggestions for skill development activities and courses are offered to address identified gaps, maximizing learning outcomes and employability.
- Continuous monitoring and adjustment of skill development plans ensure alignment with evolving industry needs and individual aspirations.

### **17. Gamified Decision-Making:**

- Virtual challenges, quizzes, and interactive scenarios provide users with simulated real-world decision-making experiences.
- Incorporating game elements such as points, levels, and rewards enhances user engagement and motivation.
- Feedback mechanisms analyze user decisions, providing insights into outcomes and encouraging learning from successes and failures.

### **18. Personalized Skill Development Roadmaps:**

- Customized plans are created based on individual career goals, incorporating relevant skills and competencies.
- Roadmaps dynamically adjust to changes in industry trends and individual progress, ensuring alignment with evolving objectives.
- Integration with learning resources and assessments facilitates tracking of skill acquisition and mastery over time.

# ROAD MAP TO SUCCESS



(FIG 7)

## 19. Virtual Campus Exploration Tours:

- Immersive VR experiences offer prospective students an interactive tour of campus facilities, culture, and academic resources.
- Interactive features allow users to explore different areas of the campus and engage with relevant information about events, programs, and student life.
- Integration with campus data enhances the authenticity and usefulness of virtual tours, providing a comprehensive preview of the campus experience.

## 20. Interactive Chatbot Learning Modules:

- Conversational AI chatbots deliver interactive learning modules on courses, career trends, and industry insights.
- Bite-sized content delivery facilitates easy consumption and understanding, catering to diverse learning preferences.
- Real-time doubt-solving and assistance are available 24/7, providing immediate support and enhancing the learning experience.

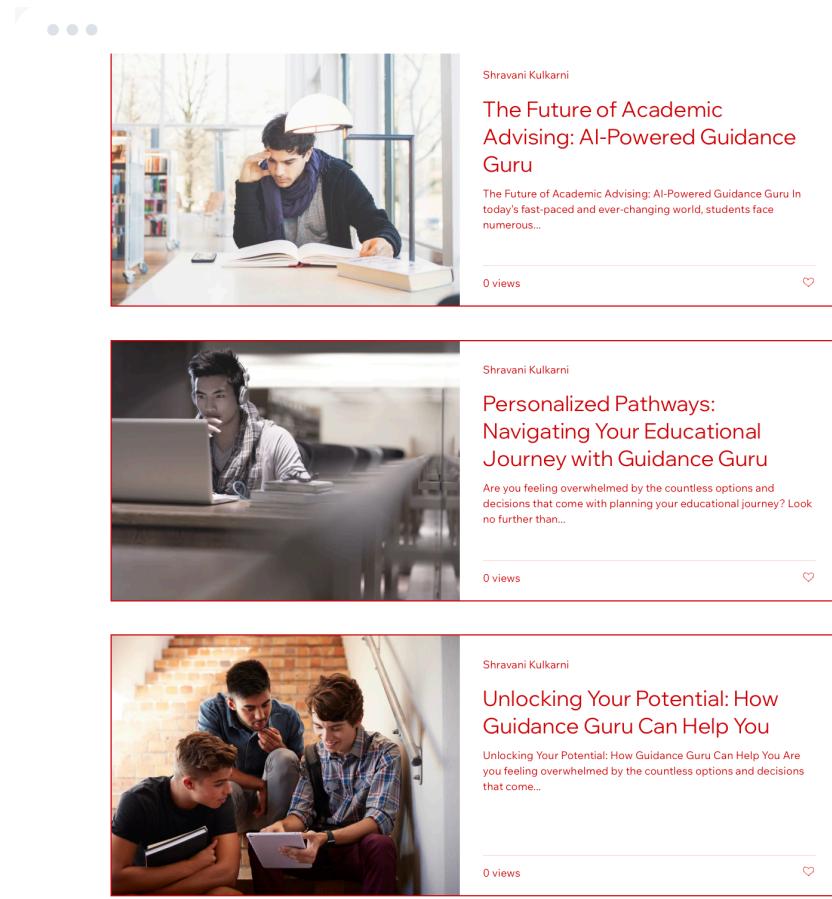
## 21. Alumni Mentorship Integration:

- Alumni and current students are connected through a platform that facilitates mentorship relationships.
- Personalized matching algorithms pair students with alumni who share similar interests and backgrounds, enhancing the relevance and effectiveness of mentorship.

- Real-time insights and guidance from alumni provide valuable support in navigating academic and career paths.

## **22. Tailored Internship Opportunities Feed:**

- A curated feed of internship opportunities is personalized based on academic achievements, interests, and career goals.
- Direct integration with industry partners streamlines the internship placement process, increasing accessibility and relevance.
- Personalized recommendations and guidance on internship applications and preparation enhance students' chances of securing valuable experiential learning opportunities.

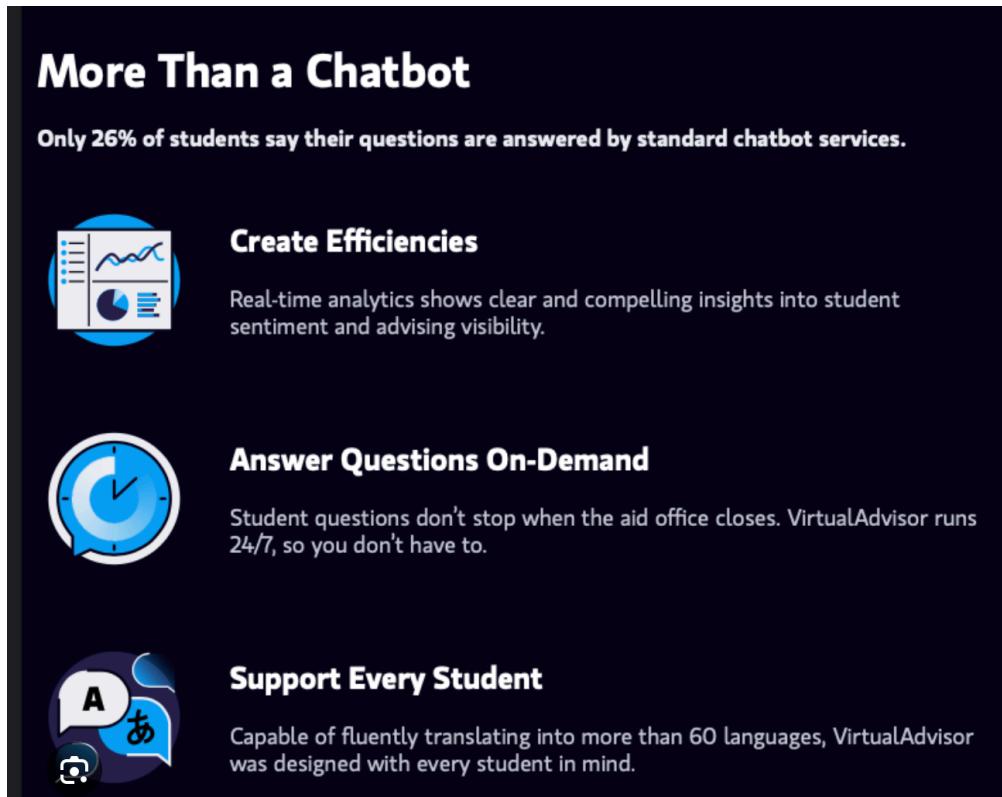


**(FIG 8)**

**Here are some use cases or scenarios illustrating how users might interact with our platform:**

### **1. Academic Advising Session:**

- **User:** Student
- **Scenario:** A student schedules an academic advising session through the platform's smart scheduling feature. During the session, the student discusses their academic progress, career goals, and concerns with their personalized student success coach. The coach provides tailored recommendations for course selection, skill development opportunities, and extracurricular involvement based on the student's interests and aspirations. The student leaves the session with a clear roadmap for their academic and professional development.



(FIG 9)

## 2. Exploring Career Pathways:

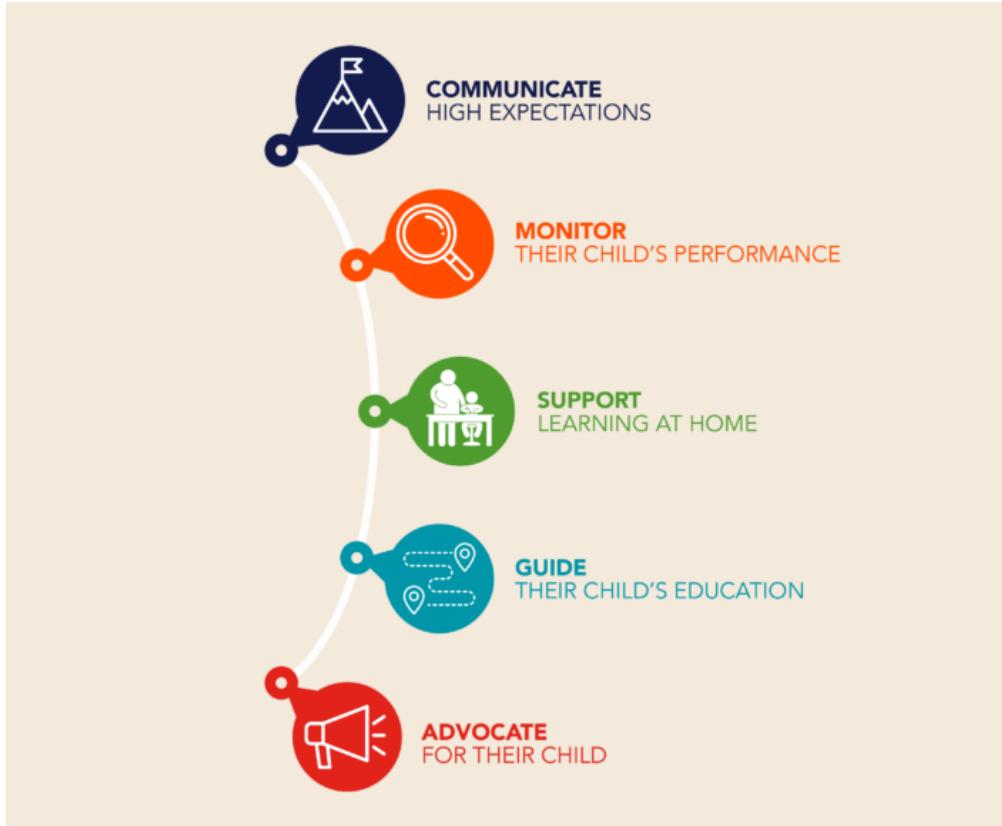
- **User:** Prospective Student
- **Scenario:** A prospective student explores various career pathways using the platform's dynamic AI-driven personality-matching feature. After completing an assessment of their interests, strengths, and learning styles, the platform generates personalized recommendations for potential career paths and related academic programs. The student explores detailed insights, including job market trends, salary projections, and required skills for each recommended career path, helping them make informed decisions about their educational journey.

## 3. Internship Search and Application:

- **User:** Current Student
- **Scenario:** A current student uses the platform's tailored internship opportunities feed to search for relevant internships aligned with their academic major and career goals. They filter the internships based on location, industry, and desired skills. After finding suitable opportunities, the student receives personalized guidance on crafting their resume, preparing for interviews, and submitting applications. With support from their student success coach, the student successfully secures an internship that aligns with their interests and professional aspirations.

## 4. Parental Engagement and Monitoring:

- **User:** Parent
- **Scenario:** A parent logs into the platform's parent portal to monitor their child's academic progress and engagement. They view their child's grades, attendance records, and advisor communications to stay informed about their educational journey. The parent also accesses resources and recommendations provided by the platform to support their child's academic and career development. They communicate with their child's student success coach to discuss any concerns or questions they may have, fostering collaboration between home and school.



(FIG 10)

#### 5. Skill Development and Training:

- **User:** Recent Graduate
- **Scenario:** A recent graduate utilizes the platform's ongoing learning opportunities to enhance their skills and stay competitive in the job market. They access workshops, certification programs, and online courses recommended by the platform based on their career interests and industry trends. The graduate receives personalized support and guidance from their alumni mentor, who shares insights and experiences related to their field of interest. With continuous learning and mentorship, the graduate successfully transitions into a fulfilling career path.

#### 6. Personalized Advising Sessions:

- **User:** Academic Advisor
- **Scenario:** An academic advisor uses the platform to schedule advising sessions with students. They review students' academic records, career goals, and interests stored in the platform. During the session, the advisor provides personalized guidance on course selection, internship opportunities, and skill development based on each student's individual needs and aspirations. The advisor documents session notes and action plans within the platform for future reference and follow-up.

#### 7. Alumni Mentorship Program Management:

- **User:** Alumni Relations Coordinator
- **Scenario:** An alumni relations coordinator manages the institute's alumni mentorship program using the platform. They match current students with alumni mentors based on shared interests, career paths, and industry connections. The coordinator monitors mentorship engagements, tracks progress, and collects feedback from participants through the platform. They use this data to evaluate the effectiveness of the program, identify areas for improvement, and facilitate meaningful connections between students and alumni.

#### 8. Curriculum Planning and Management:

- **Institute:** Academic Department

- **Scenario:** An academic department uses the platform to plan and manage curriculum offerings. Faculty members collaborate within the platform to develop course schedules, syllabi, and learning materials. They integrate industry-specific simulations, interactive modules, and gamified learning experiences into their courses to enhance student engagement and practical skill development. The department monitors student feedback and performance data to continuously improve course offerings and meet academic standards.

## **9. Admissions and Enrollment Management:**

- **Institute:** Admissions Office
- **Scenario:** The admissions office utilizes the platform to streamline the admissions and enrollment process. Prospective students submit their applications online through the platform, which integrates with the institute's student information system (SIS) for seamless data transfer. Admissions staff access applicant profiles, review application materials and communicate with applicants through the platform. They track application statuses, generate acceptance letters, and manage enrollment logistics to ensure a smooth transition for admitted students.

These use cases demonstrate how users interact with our platform to receive personalized guidance, explore career opportunities, access resources, and achieve their academic and professional goals.

### **Benefits and Impact:**

#### **1. Personalized Guidance and Support:**

- Users receive tailored recommendations and support based on their individual needs, interests, and career aspirations.
- Personalized coaching and advising sessions help users navigate academic and career decisions with confidence.

#### **2. Enhanced Learning Experience:**

- Gamified decision-making, interactive simulations, and chatbot learning modules make learning engaging and effective.
- Bite-sized content delivery and real-time doubt-solving facilitate easy understanding and mastery of concepts.

#### **3. Streamlined Access to Resources:**

- Users have access to a comprehensive toolkit of resources, including internship databases, career workshops, and academic materials.
- Integration with academic systems and calendar scheduling optimizes access to support services and events.

#### **4. Improved Career Readiness:**

- Tailored internship opportunities, career pathway blueprints, and alumni mentorship connections prepare users for successful transitions into the workforce.
- Predictive analytics for skill gap analysis identify areas for improvement, guiding users towards relevant skill development activities.

### ***Impact:***

#### **1. Enhanced Student Success:**

- Personalized guidance and support contribute to improved academic performance, graduation rates, and post-graduation outcomes.
- Alumni mentorship connections and career services support facilitate smoother transitions into meaningful careers.

#### **2. Increased Engagement and Satisfaction:**

- Interactive features and personalized recommendations enhance user engagement and satisfaction with the educational experience.
- Access to relevant resources and support services increases user confidence in their academic and career pursuits.

### **3. Efficiency and Effectiveness in Advising:**

- Streamlined advising processes and data-driven decision-making tools enable advisors to provide more targeted and impactful guidance.
- Improved efficiency in scheduling and communication leads to better advisor-student interactions and outcomes.

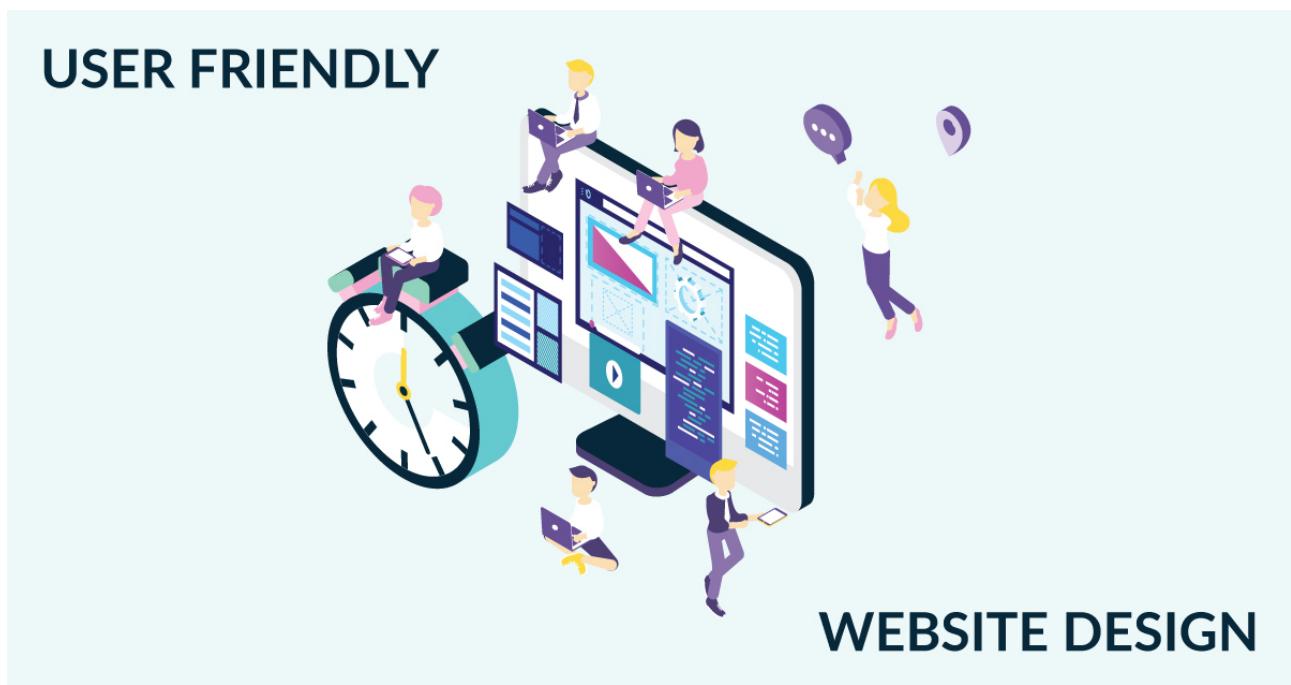
### **4. Alignment with Industry Needs:**

- Integration of industry-specific simulations, real-time job market data, and alumni insights ensure educational programs remain relevant and responsive to industry demands.
- Increased collaboration between educational institutions and industry partners strengthens workforce development and talent pipelines.

### **5. Broader Societal Impact:**

- Empowering individuals with personalized education and career support contributes to a more skilled and adaptable workforce.
- Facilitating smoother transitions from education to employment enhances economic mobility and fosters long-term prosperity within communities.

Overall, the platform aims to empower users with personalized guidance, resources, and support to achieve their academic and career goals, while also benefiting stakeholders by promoting student success, workforce readiness, and societal advancement.



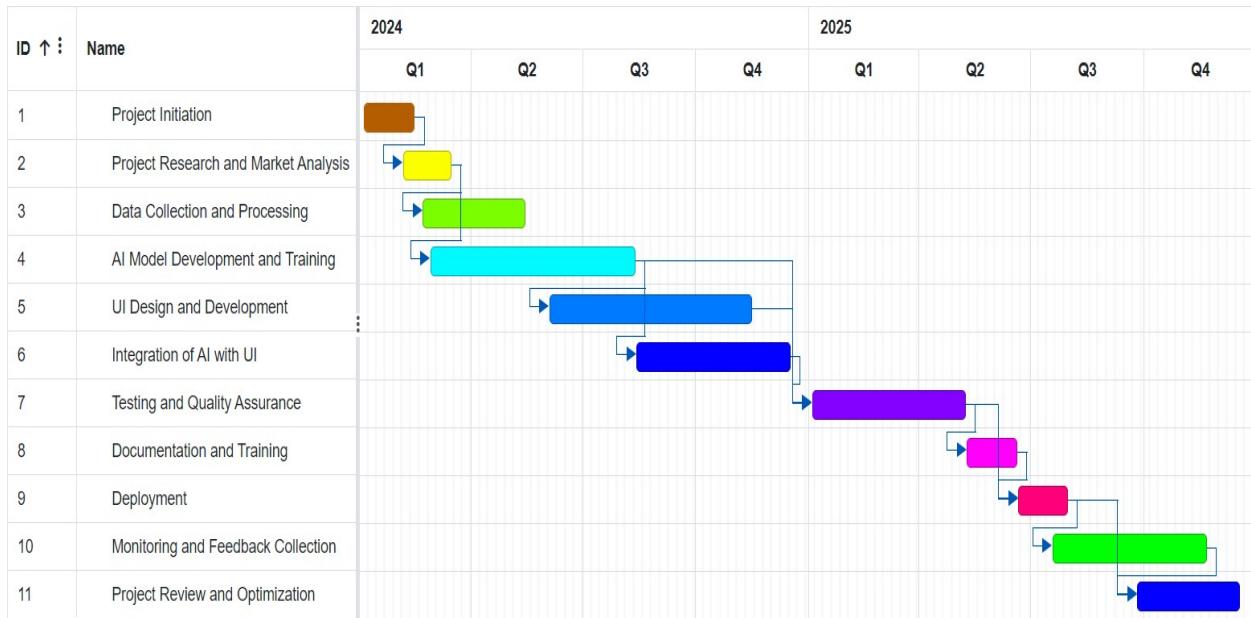
**(FIG 11)**

## Title: Software Solution Project Plan

### **Project Plan (Work Breakdown Structure)**

**Introduction:** In response to insights gleaned from our market analysis, this project plan charts a course to elevate our AI-driven academic advisor system. Our primary focus is on mitigating biases, ensuring equitable outcomes, and streamlining the complexities in implementation and maintenance. This project plan serves as a blueprint for our journey, highlighting our dedication to fostering fairness, privacy, and user-centric design.

### **Project Timeline:**



**(Fig 12)**

As per the above Gantt Chart prepared for our project, the project is to be prepared in 11 small phases or deliverables through the project timeline which will be for 24 months.

The timeline is as follows:

#### **1. Project Initiation (1 month):**

- Define project scope and objectives.
- Identify key stakeholders.
- Develop a project plan, including timeline and resource requirements.

#### **2. Research and Requirement Analysis (1 month):**

- Conduct a thorough review of existing academic advisory systems.
- Gather requirements from students, academic advisors, and educational institutions.
- Define features, functionalities, and technical specifications for the AI advisor.

#### **3. Data Collection and Preprocessing (2 months):**

- Identify relevant datasets for training the AI model.

- Obtain necessary permissions and access to educational data.
- Preprocess and clean the data to ensure quality and relevance.

#### **4. AI Model Development (4 months):**

- Choose an appropriate machine learning framework.
- Develop the recommendation algorithm based on interests, career goals, and academic performance.
- Train the model using the preprocessed data.
- Optimize the model for accuracy and efficiency.

#### **5. User Interface Design (4 months):**

- Design an intuitive and user-friendly interface for both students and academic advisors.
- Incorporate features for goal setting, course exploration, and academic planning.
- Ensure compatibility with different devices and platforms.

#### **6. Integration of AI Model with UI (3 months):**

- Integrate the developed AI model with the user interface.
- Conduct thorough testing to ensure seamless interaction and accurate recommendations.
- Address any issues or bugs that arise during integration.

#### **7. Testing and Quality Assurance (3 months):**

- Perform comprehensive testing of the entire system.
- Conduct user acceptance testing (UAT) with students and academic advisors.
- Address and resolve any issues identified during testing.

#### **8. Documentation and Training (1 month):**

- Prepare user manuals and documentation for both students and academic advisors.
- Conduct training sessions for academic advisors on using the AI advisor system effectively.

#### **9. Deployment (1 month):**

- Implement the AI advisor system in a controlled environment.
- Monitor system performance and address any issues during the initial rollout.

#### **10. Monitoring and Feedback Collection (3 months):**

- Establish a system for monitoring user feedback and system performance.
- Make continuous improvements based on user feedback and emerging needs.

#### **Project Review and Optimization (2 months):**

- Conduct a post-implementation review to evaluate the success of the project.

- Identify areas for further optimization and enhancement.

## **Project Milestones and Deliverables:**

### **1. Initiation Phase:**

- *Milestone*: Project Kickoff
- *Deliverables*: Project charter, defined scope and objectives, identified stakeholders.

### **2. Research and Requirement Analysis:**

- *Milestone*: Completion of Requirement Analysis
- *Deliverables*: Comprehensive requirements document, insights from existing systems.

### **3. Data Collection and Preprocessing:**

- *Milestone*: Data Acquisition and Preprocessing
- *Deliverables*: Identified datasets, and cleaned and preprocessed data.

### **4. AI Model Development:**

- *Milestone*: AI Model Implementation
- *Deliverables*: Developed recommendation algorithm trained and optimized AI model.

### **5. User Interface Design:**

- *Milestone*: UI Design Completion
- *Deliverables*: User-friendly interface design, and compatibility specifications.

### **6. Integration of AI Model with UI:**

- *Milestone*: AI-UI Integration
- *Deliverables*: Integrated AI model with the user interface, and initial testing.

### **7. Testing and Quality Assurance:**

- *Milestone*: Completion of Testing Phase
- *Deliverables*: Comprehensive testing results resolved issues and bugs.

### **8. Documentation and Training:**

- *Milestone*: Completion of Documentation
- *Deliverables*: User manuals, training materials, and documentation for academic advisors.

### **9. Deployment:**

- *Milestone*: System Deployment
- *Deliverables*: Implemented AI advisor system in a controlled environment.

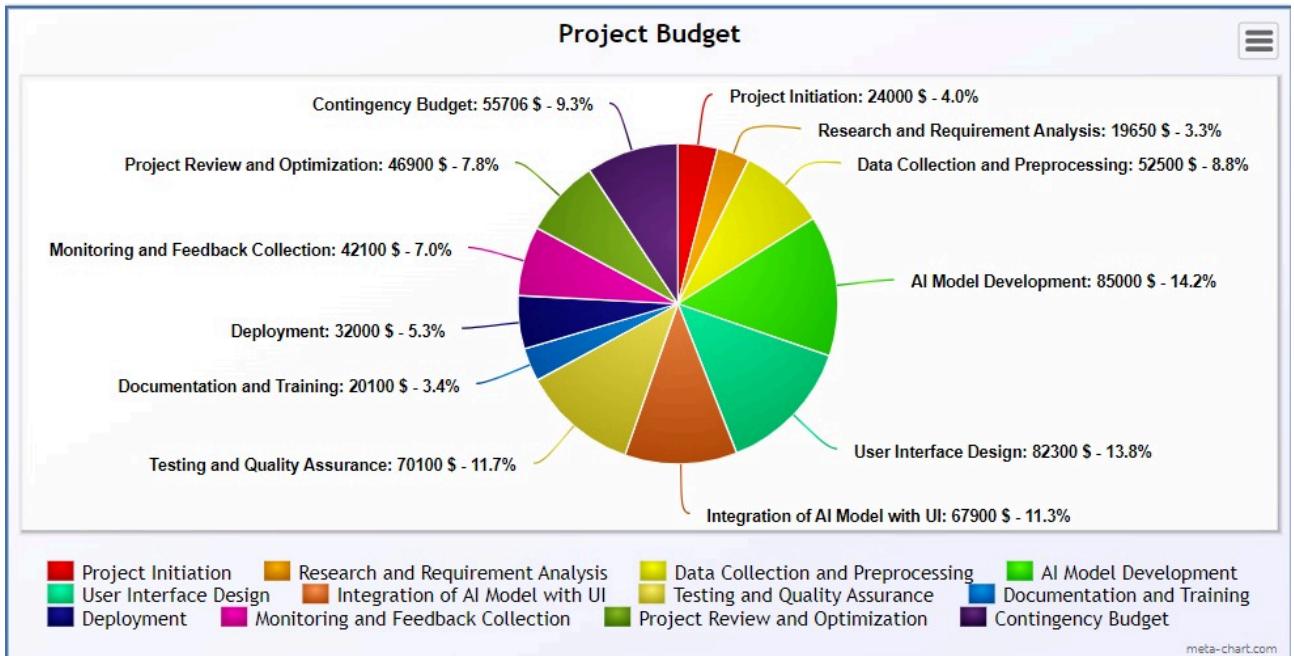
### **10. Monitoring and Feedback Collection:**

- *Milestone*: Ongoing Monitoring

- *Deliverables*: Established a monitoring system and collected initial user feedback.

## 11. Project Review and Optimization:

- *Milestone*: Post-Implementation Review
- *Deliverables*: The evaluation report identified areas for optimization and enhancement.



(FIG 13)

### Resource Allocation:

If the project is at an organizational level then based on the following human and technical resources would be required for each mentioned phase:

#### 1. Initiation Phase:

- Project Manager: 1
- Stakeholder Analyst: 1
- Technical Resources: Basic office equipment, and collaboration tools.

#### 2. Research and Requirement Analysis:

- Business Analysts: 2
- Data Analyst: 1
- Technical Resources: Data analysis tools, and collaboration platforms.

#### 3. Data Collection and Preprocessing:

- Data Scientists: 2
- Data Engineers: 1
- Technical Resources: Data preprocessing tools, cloud storage.

#### **4. AI Model Development:**

- Machine Learning Engineers: 2
- Data Scientists: 1
- Technical Resources: ML frameworks, powerful computing resources.

#### **5. User Interface Design:**

- UI/UX Designers: 2
- Front-end Developers: 1
- Technical Resources: Design software, and development tools.

#### **6. Integration of AI Model with UI:**

- Integration Specialists: 2
- Front-end Developers: 1
- Technical Resources: Integration tools, and version control systems.

#### **7. Testing and Quality Assurance:**

- QA Engineers: 2
- Testers: 1
- Technical Resources: Testing tools, and bug tracking systems.

#### **8. Documentation and Training:**

- Technical Writers: 2
- Training Facilitators: 1
- Technical Resources: Documentation tools, training platforms.

#### **9. Deployment:**

- System Administrators: 2
- Deployment Specialists: 1
- Technical Resources: Deployment tools, server infrastructure.

#### **10. Monitoring and Feedback Collection:**

- System Administrators: 1
- Customer Support: 1
- **Technical Resources: Monitoring tools, and feedback collection platforms.**

#### **11. Project Review and Optimization:**

- Project Manager: 1
- Optimization Specialists: 1
- Technical Resources: Evaluation tools, optimization frameworks.

## **Title: Risk Assessment and Mitigation Plan**

### **Objective:**

The primary aim of conducting a thorough risk assessment and formulating a risk mitigation plan is to proactively identify, evaluate, and address potential hurdles and uncertainties associated with the implementation of the AI Academic Advisor project. This comprehensive approach to Risk Management is designed to ensure the successful development, implementation, and sustained functionality of the AI-driven academic advising system.

### **Content:**

#### **Risk Identification:**

The initial step is to identify the comprehensive list of potential risks associated with the project. This comprises technical, operational, economic, and other potential challenges that could impact the project's success. By carefully identifying risks, the team acquires a comprehensive awareness of the potential dangers that may emerge during the project's various phases.

#### **1. Technical Risks:**

- A. Algorithmic Bias -> There is a concern that the AI Academic Advisor may be biased in its recommendations, perhaps leading to unequal treatment based on criteria such as gender, ethnicity, or socioeconomic position. This bias may add injustice and hurt some groups of students, jeopardizing the general integrity of the advisory system.
- B. Integration Challenges -> The smooth operation of the AI system may be hampered due to difficulties in seamlessly integrating it with existing academic platforms and databases. These integration problems may cause disruptions to the workflow and effectiveness of the academic advisor, making it less effective and potentially frustrating for both students and administrators.
- C. Data Security: A significant concern is potential breaches in data security, which could result in unauthorized access or manipulation of critical student information. A breach of data security could have serious implications, including privacy violations and the abuse of personal information. To prevent these dangers and maintain the confidentiality of academic data, strong security measures must be implemented.

#### **2. Operational Risks:**

- A. User Adoption: The successful implementation of the AI Academic Advisor relies heavily on widespread acceptance and adoption by students, academic advisors, and institutions. Resistance from any of these stakeholders may stem from concerns about the AI's reliability, trustworthiness, or a reluctance to embrace technological changes in the academic advising process. Addressing these issues and marketing the AI system's benefits is critical to ensuring its widespread adoption and efficacy.
- B. System Downtime: Technical difficulties, maintenance concerns, and server failures all have the potential to disrupt the AI Academic Advisor's operations. Such instances of system outages could jeopardize the timely transmission of advice to pupils, potentially leading to irritation and discontent. To reduce the impact of downtime and provide a smooth user experience, solid backup systems, regular maintenance schedules, and contingency plans must be implemented.
- C. Training Requirements: The successful use of the AI system requires users to have a comprehensive understanding of its capabilities and functionalities. Inadequate training for students, academic advisers, or other stakeholders may result in an

underutilized AI Academic Advisor, limiting its potential benefits. Comprehensive training programs, clear documentation, and continuous support are critical for equipping users with the knowledge and skills required for effective engagement with the AI system. This guarantees that the AI Academic Advisor is used to its maximum potential to improve the academic advising process.

### 3. Economic Risks:

- A. Implementation expenses: The development, implementation, and maintenance of the AI Academic Advisor carry economic risks, particularly the possibility of expenses exceeding early estimates. Unexpected technical issues, greater development time, or the requirement for more resources are all factors that might contribute to higher-than-expected costs. These increased expenditures might put a strain on budgets, affecting the financial soundness of the institution or organization that is installing the AI system. Thorough financial planning, regular cost evaluations, and contingency plans are required to manage and mitigate these economic risks.
- B. Return on Investment (ROI): The economic sustainability of the AI Academic Advisor project is determined by its capacity to deliver predicted benefits. If the system fails to improve academic achievements or does not reach the specified targets, the return on investment may suffer. Poor ROI can raise worries about the project's long-term viability, potentially leading to budgetary limits or re-evaluation of the system's ongoing implementation. Regular performance evaluations and a clear knowledge of the expected advantages are critical to ensuring that the economic investment in the AI Academic Advisor is in line with the institution's overall aims and objectives.



(FIG 14)

## **Risk Impact Analysis:**

The Risk Impact Analysis is an important step in the risk management process that entails a thorough assessment of the potential ramifications and implications of each identified risk for the AI Academic Advisor project. This analysis uses a variety of indicators to determine the severity and significance of the risks, assisting the project team in prioritizing their response efforts.

The main components of the risk impact analysis are:

1. Severity Assessment: This process entails determining the severity or seriousness of a risk's possible impact on the project. Risks are classified according to their ability to cause considerable harm, which ranges from minor disruptions to major setbacks. For example, a technical flaw in AI algorithms may be classified as moderate severity, whereas a data breach endangering user privacy may be classified as high severity.
2. Financial Implications: The analysis includes a review of the possible financial consequences of each risk. This includes assessing the expenses associated with risk mitigation, as well as potential losses or budget overruns. Financial consequences may potentially extend to the larger institution, influencing funding, awards, or future investment in comparable ventures.
3. Timeline and Schedule Impact: Risks can affect project timelines and schedules, thereby creating delays. The analysis determines the amount to which each risk may impact the project's overall timeframe. Delays in the development, testing, or deployment phases can have cascading implications on the project's success, stakeholder satisfaction, and ultimate goals.

By thoroughly assessing the impact of each identified risk across these dimensions, the project team acquires a more nuanced picture of the various obstacles they may face. This analysis helps to prioritize risks and drive the development of tailored mitigation strategies to address the most serious threats to the AI Academic Advisor project's success.

## **Risk Mitigation Strategies:**

After conducting a comprehensive Risk Impact Analysis, the next crucial step is to develop effective Risk Mitigation Strategies. These strategies are proactive measures designed to minimize the likelihood and impact of identified risks. Each strategy is tailored to address specific risks and contribute to the overall success of the AI Academic Advisor project.

Key components of the Risk Mitigation Strategies include:

1. Technical Risks:  
Strategy: Regular Testing and Quality Assurance.  
Implement a strong testing and quality assurance approach to identify and resolve technical issues with AI algorithms. This involves continuous testing during development, simulated real-world scenarios, and rigorous validation before release.
2. Operational Risks:  
Strategy: Comprehensive User Training  
To reduce operational risks, provide substantial training to end-users, such as students and academic advisers. Ensure that users are familiar with the AI Academic Advisor system, understand its features, and can effectively manage any problems.
3. Financial Risks:  
Strategy: Budget Contingency Planning  
Create a contingency plan within the project budget to allow for unexpected financial consequences. This could involve setting up a reserve fund to cover unforeseen expenses due to technical changes, additional resources, or external factors affecting the budget.

4. Timeline and Schedule Risks:  
Strategy: Agile Project Management  
Use agile project management to increase flexibility and adaptability. Divide the project into reasonable sprints, reassess timeframes regularly, and make any schedule adjustments. This method allows the team to adapt quickly to delays and uncertainties.
5. Collaboration with Educational Institutions:  
Strategy: Engage in Pilot Programs  
Pilot programs can help mitigate the risks associated with integrating the AI Academic Advisor system with educational institutions. Before full-scale implementation, collaborate closely with a small set of institutions to test the system in real-world circumstances, receive feedback, and address any integration difficulties.

#### **Contingency Plans:**

In addition to core mitigation techniques, contingency plans outlining alternative courses of action if identified risks occur are required. These plans provide a blueprint for the team to respond quickly and efficiently, mitigating the impact of unforeseen occurrences and assuring the project's resilience. Contingency plans may include predetermined protocols, alternate technical solutions, or fast-reaction teams prepared to meet unexpected difficulties.

By employing these proactive risk mitigation measures and contingency plans, the project team hopes to improve overall project resilience, minimize disruptions, and ensure the successful development, implementation, and operation of the AI Academic Advisor system.

#### **Title: Software Deployment Budget**

**The calculations of hours are based on the average working hours of a working professional in a software company.**

#### **Software Development Budget**

##### **1. Project Initiation (1 month)**

- **Project Manager:** 1
  - Allocation: \$75/hour \* 160 hours = \$12,000
- **Stakeholder Analyst:** 1
  - Allocation: \$60/hour \* 120 hours = \$7,200
- **Technical Resources:**
  - Basic office equipment: \$5,000
  - Collaboration tools subscription: \$200 per month = \$200

**Total Initiation Phase Cost: \$12,000 + \$7,200 + \$5,000 + \$200 = \$24,400**

##### **2. Research and Requirement Analysis (1 month)**

- **Business Analysts:** 1
  - Allocation: \$65/hour \* 160 hours = \$10,400
- **Data Analyst:** 1
  - Allocation: \$55/hour \* 160 hours = \$8,800

- **Technical Resources:**

- Data analysis tools subscription: \$300 per month = \$300
- Collaboration platforms subscription: \$150 per month = \$150

**Total Research and Requirement Analysis Cost:  $\$10,400 + \$8,800 + \$300 + \$150 = \$19,650$**

3. Data Collection and Preprocessing (2 months)

- **Data Scientists: 2**

- Allocation: \$80/hour \* 320 hours = \$25,500
- Allocation: \$40/hour \* 320 hours (Intern) = \$12,800

- **Data Engineers: 1**

- Allocation: \$70/hour \* 160 hours = \$11,200

- **Technical Resources:**

- Data preprocessing tools licenses: \$2,000
- Cloud storage subscription: \$500 per month \* 2 months = \$1,000

**Total Data Collection and Preprocessing Cost:  $\$25,500 + \$12,800 + \$11,200 + \$2,000 + \$1,000 = \$52,500$**

4. AI Model Development (4 months)

- **Machine Learning Engineers: 1**

- Allocation: \$90/hour \* 640 hours = \$57,600

- **Data Scientists: 1**

- Allocation: \$40/hour \* 480 hours (Intern) = \$19,200

- **Technical Resources:**

- ML frameworks licenses: \$5,000
- Powerful computing resources subscription: \$800 per month \* 4 months = \$3,200

**Total AI Model Development Cost:  $\$57,600 + \$19,200 + \$5,000 + \$3,200 = \$85,000$**

5. User Interface Design

- **UI/UX Designers: 2**

- Allocation: \$70/hour \* 640 hours = \$44,800
- Allocation: \$25/hour \* 320 hours (Intern) = \$8,000

- **Front-end Developers: 1**

- Allocation: \$75/hour \* 320 hours = \$24,000

- **Technical Resources:**

- Design software licenses: \$3,000
- Development tools licenses: \$2,500

**Total User Interface Design Cost: \$44,800 + \$8,000 + \$24,000 + \$3,000+2,500 = \$82,300**

6. Integration of AI Model with UI

- **Integration Specialists:** 1
  - Allocation: \$80/hour \* 480 hours = \$38,400
- **Front-end Developers:** 1
  - Allocation: \$75/hour \* 320 hours = \$24,000
- **Technical Resources:**
  - Integration tools licenses: \$4,000
  - Version control systems licenses: \$1,500

**Total Integration Cost: \$38,400 + \$24,000+ \$4,000 + \$1,500 = \$67,900**

7. Testing and Quality Assurance (3 months)

- **QA Engineers:** 1
  - Allocation: \$85/hour \* 480 hours = \$40,800
- **Testers:** 1
  - Allocation: \$80/hour \* 320 hours = \$25,600
- **Technical Resources:**
  - Testing tools licenses: \$2,500
  - Bug tracking systems licenses: \$1,200

**Total Testing and QA Cost: \$40,800+25,600+2,500+1,200=70,100**

8. Documentation and Training (1 month)

- **Technical Writers:** 2
  - Allocation: \$65/hour \* 160 hours = \$10,400
- **Training Facilitators:** 1
  - Allocation: \$60/hour \* 120 hours = \$7,200
- **Technical Resources:**
  - Documentation tools licenses: \$1,500
  - Training platform licenses: \$1,000

**Total Documentation and Training Cost: \$10,400 + \$7,200 + \$1,500 + \$1,000 = \$20,100**

9. Deployment (1 month)

- **System Administrators:** 1
  - Allocation: \$70/hour \* 160 hours = \$11,200
- **Deployment Specialists:** 1
  - Allocation: \$75/hour \* 120 hours = \$9,000

- **Technical Resources:**

- Deployment tools licenses: \$2,000
- Server infrastructure setup cost: \$10,000

**Total Deployment Cost: \$11,200+\$9,000+\$2,000+\$10,000=\$32,000**

10. Monitoring and Feedback Collection (3 months)

- **System Administrators: 1**

- Allocation: \$70/hour \* 240 hours = \$16,800

- **Customer Support: 1**

- Allocation: \$65/hour \* 320 hours = \$20,800

- **Technical Resources:**

- Monitoring tools licenses: \$3,000
- Feedback collection platform licenses: \$1,500

**Total Monitoring and Feedback Collection Cost: \$16,800 + \$20,800 + \$3,000 + \$1,500 = \$42,100**

11. Project Review and Optimization (2 months)

- **Project Manager: 1**

- Allocation: \$75/hour \* 320hours = \$24,000

- **Optimization Specialists: 1**

- Allocation: \$80/hour \* 240 hours = \$19,200

- **Technical Resources:**

- Evaluation tools licenses: \$2,500
- Optimization frameworks licenses: \$1,200

**Total Project Review and Optimization Cost: \$24,000 + \$19,200 + \$2,500 + \$1,200 = \$46,900**

## **1. Initiation Phase Contingency Budget:**

**Contingency Budget: 10% of Initiation Phase Cost**

Explanation:

- The initiation phase involves project planning and stakeholder analysis, where unforeseen requirements or changes may arise.
- Contingency is allocated to accommodate any additional meetings or adjustments needed during the project kick-off.

## **2. Research and Requirement Analysis Contingency Budget:**

**Contingency Budget: 8% of Research and Requirement Analysis Cost**

Explanation:

- Research and requirement analysis are susceptible to changes in project scope or stakeholder needs.
- Contingency is allocated to account for additional data analysis requirements or unexpected changes in business needs.

### **3. Data Collection and Preprocessing Contingency Budget:**

#### **Contingency Budget: 10% of Data Collection and Preprocessing Cost**

Explanation:

- Data collection and preprocessing may encounter challenges such as unexpected data format variations or additional data sources.
- Contingency is allocated to address unforeseen complexities in data processing.

### **4. AI Model Development Contingency Budget:**

#### **Contingency Budget: 12% of AI Model Development Cost**

Explanation:

- AI model development involves complexities in algorithm design and testing, which may require additional efforts.
- Contingency is allocated to handle unexpected challenges in achieving the desired model accuracy.

### **5. User Interface Design Contingency Budget:**

#### **Contingency Budget: 8% of User Interface Design Cost**

Explanation:

- UI/UX design may encounter changes in user requirements or design preferences.
- Contingency is allocated to adapt to unexpected design revisions or additional user feedback.

### **6. Integration of AI Model with UI Contingency Budget:**

#### **Contingency Budget: 10% of Integration Cost**

Explanation:

- Integration may face challenges in aligning AI models with the user interface seamlessly.
- Contingency is allocated to address unexpected issues in integrating different components.

### **7. Testing and Quality Assurance Contingency Budget:**

#### **Contingency Budget: 12% of Testing and QA Cost**

Explanation:

- Testing and QA may reveal unexpected bugs or compatibility issues.
- Contingency is allocated to cover additional testing efforts or unexpected quality assurance requirements.

### **8. Documentation and Training Contingency Budget:**

## **Contingency Budget: 8% of Documentation and Training Cost**

Explanation:

- Documentation and training may require additional efforts if there are changes in system functionalities or user training needs.
- Contingency is allocated to address unforeseen adjustments in documentation and training materials.

## **9. Deployment Contingency Budget:**

### **Contingency Budget: 15% of Deployment Cost**

Explanation:

- Deployment involves setting up server infrastructure, which might face unforeseen challenges or hardware/software compatibility issues.
- Contingency is allocated to address unexpected hurdles during the deployment phase.

## **10. Monitoring and Feedback Collection Contingency Budget:**

### **Contingency Budget: 8% of Monitoring and Feedback Collection Cost**

Explanation:

- Monitoring and feedback collection may require adjustments based on unexpected changes in the operational environment or user feedback.
- Contingency is allocated to address unforeseen requirements in the monitoring and feedback collection processes.

## **11. Project Review and Optimization Contingency Budget:**

### **Contingency Budget: 10% of Project Review and Optimization Cost**

Explanation:

- Project review and optimization may reveal unexpected areas that require further improvement.
- Contingency is allocated to handle additional optimization efforts or unexpected findings during the review.

#### **1. Initiation Phase:**

- Cost: \$24,400
- Contingency Budget:  $10\% * \$24,400 = \$2,440$

#### **2. Research and Requirement Analysis:**

- Cost: \$19,650
- Contingency Budget:  $8\% * \$19,650 = \$1572$

#### **3. Data Collection and Preprocessing:**

- Cost: \$52,500
- Contingency Budget:  $10\% * \$52,500 = \$5,250$

#### **4. AI Model Development:**

- Cost: \$85,000
- Contingency Budget:  $12\% * \$85,000 = \$10,200$

#### **5. User Interface Design:**

- Cost: \$82,300
- Contingency Budget:  $8\% * \$82,300 = \$6,584$

#### **6. Integration of AI Model with UI:**

- Cost: \$67,900
- Contingency Budget:  $10\% * \$67,900 = \$6,790$

#### **7. Testing and Quality Assurance:**

- Cost: \$70,100
- Contingency Budget:  $12\% * \$70,100 = \$8,412$

#### **8. Documentation and Training:**

- Cost: \$20,100
- Contingency Budget:  $8\% * \$20,100 = \$1,608$

#### **9. Deployment:**

- Cost: \$32,000
- Contingency Budget:  $15\% * \$32,000 = \$4,800$

#### **10. Monitoring and Feedback Collection:**

- Cost: \$42,000
- Contingency Budget:  $8\% * \$42,000 = \$3,360$

#### **11. Project Review and Optimization:**

- Cost: \$46,900
- Contingency Budget:  $10\% * \$9,100 = \$4,690$

This Total Estimation is calculated for 2 years (24 months from the project initiation)

**Grand Total Estimate:** Sum of Costs + Sum of Contingency Budgets

Grand Total Estimate=\$542,950+\$55,706

Grand Total Estimate=**\$598,656~\$600,000**(Six Hundred Thousand Dollars)

Therefore, the rough estimate of the project, including contingency, is approximately \$600,000.

No.	Phases	Staff required	Technical Resources	Cost	Hours/Month	Total	Contingency Budget
1	Project Initiation	1.Project Manager(1)		\$75/hour	160	\$12,000	
		2.Stakeholder Analyst(1)		\$60/hour	120	\$7,200	
			3.Basic office equipment			\$5000	
			4.Collaboration Tools	\$200/month	1 month	\$200	10%
	<b>Total Initiation Phase Cost(A)</b>					\$24,400	
2	Research and Requirement Analysis	1.Business Analysts(1)		\$65/hour	160	\$10,400	
		2.Data Analyst(1)		\$55/hour	160	\$8,800	
			3.Data Analysis Tools	\$300/month	1 month	\$300	
			4.Collaboration Platforms	\$150/month	1 month	\$150	
	<b>Total Research and Requirement Analysis Cost(B)</b>					\$19,650	8% \$1,572
3	Data Collection and Preprocessing	1.Data Scientists(1)		\$80/hour	320	\$25,500	
		1.Data Scientists (Intern)(1)		\$40/hour	320	\$12,800	
		2.Data Engineers(1)		\$70/hour	160	\$11,200	
			3. Data preprocessing tools			\$2000	
			4.Cloud storage	\$500/month	2 months	\$1000	
	<b>Total Data Collection and Preprocessing Cost(C)</b>					\$52,500	10% \$5,250
4	AI Model Development	1.Machine Learning Engineers(1)		\$90/hour	640	\$57,600	
		2.Data Scientists (1)(Intern)		\$40/hour	480	19,200	
			3.ML frameworks licenses			\$5,000	
			4.Powerful computing resources	\$800/month	4 months	\$3,200	
	<b>Total AI Model Development Cost (D)</b>					\$85000	12% \$10,200
5	User Interface Design	1.UI/UX Designers(1)		\$70/hour	640	\$44,800	
		1.UI/UX Designer(1)(Intern)		\$25/hour	320	\$8000	
		2.Front-end Developer(1)		\$75/hour	320	\$24,000	
			3.Design software licenses			\$3000	
			4.Development tools licenses			\$2,500	
	<b>Total User Interface Design Cost(E)</b>					\$82,300	8% 6,584

6	Integration of AI Model with UI	1.Integration Specialists(1)		\$80/hour	480	\$38,400	
		2.Front-end Developers(1)		\$75/hour	320	\$24,000	
			3.Integration tools licenses			\$4,000	
			4.Version control systems licenses			\$1,500	
	<b>Total Integration Cost(F)</b>					\$67,900	10% \$6,790
7	Testing and Quality Assurance	1.QA Engineers(1)		\$85/hour	480	\$40,800	
		2.Software Testers(1)		\$80/hour	320	\$25,600	
			3.Testing tools licenses			\$2,500	
			4.Bug tracking systems licenses			\$1,200	
	<b>Total Testing and QA Cost(G)</b>					\$70,100	12% \$8,412
8	Documentation and Training	1.Technical Writers(2)		\$65/hour	160	\$10,400	
		2.Training Facilitators(1)		\$60/hour	120	\$7,200	
			3.Documentation tools licenses			\$1,500	
			4.Training Platforms licenses			\$1,000	
	<b>Total Documentation and Training Cost(H)</b>					\$20,100	8% \$1,608
9	Deployment	1.System Administrators(1)		\$70/hour	160	11,200	
		2.Deployment Specialists(1)		\$75/hour	120	\$9000	
			3.Deployment tools licenses			\$2,000	
			4.Server infrastructure setup			\$10,000	
	<b>Total Deployment Cost(I)</b>					\$32,000	15% \$4,800
10	Monitoring and Feedback Collection	1.System Administrators(1)		\$70/hour	240	\$16,800	
		2.Customer Support(1)		\$65/hour	320	\$20,800	
			3.Monitoring tools licenses			\$3000	
			4.Feedback collection platform licenses			\$1,500	
	<b>Total Monitoring and Feedback Collection Cost(J)</b>					\$42,100	8% \$3,360
11	Project Review and Optimization						

**(FIG 15 & 16)**

11	Project Review and Optimization						
	1.Project Manger(1)		\$75/hour	320	\$24,000		
	2.Optimization Specialist(1)		\$80/hour	240	\$19,200		
		3.Evaluation tools licenses			\$2,500		
		4.Optimization frameworks licenses			\$1,200		
	<b>Total Project Review and Optimization(K)</b>				\$46,900	\$4,690	10% L=\$55,706
	<b>Grand Total Estimate</b> =(Sum of Costs)+(Sum of Contingency Budgets) (A+B+C+D+E+F+G+H+I+J+K+L)						
	<b>Grand Total Estimate</b> =\$542,950+\$55,706						
	<b>Grand Total Estimate</b> =\$598,656-\$600,000						

**(FIG 17)**

**Note: We have also submitted the Excel report file along with this document.**

### **References:**

- 1) <https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.bolddbi.com%2Fdashboard-examples%2Feducation%2Fstudent-performance-dashboard&psig=AOvVaw03-1GFOWONhicpebl-lwYY7&ust=1710640914238000&source=images&cd=vfe&opi=89978449&ved=0CBYQjRxqFwoTCPC0i5LY94QDFQAAAAAdAAAAABAE>
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