Capstone Project Proposal

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Business Goals

Project Overview and Goal What is the industry problem you are trying to solve? Why use ML/AI in solving this task? Be as specific as you can when describing how ML/AI can provide value. For example, if you're labeling images, how will this help the business?	Project name is: **PlanWise** AI The industry AI system for construction project management enhances efficiency and risk prediction by analyzing historical data, forecasting potential risks based on factors and on previous projects like material types and providing resource allocation recommendations. It also monitors real-time project performance to identify issues quickly, aiming to improve management effectiveness, reduce costs, and increase success rates for more sustainable and secure projects.
Business Case Why is this an important problem to solve? Make a case for building this product in terms of its impact on recurring revenue, market share, customer happiness and/or other drivers of business success.	Improving construction project management is crucial for boosting profits and ensuring safety. This AI system can cut down on delays and extra costs, resulting in more repeat contracts and referrals. By enhancing resource allocation and predicting risks, it can attract clients who prioritize efficiency. Satisfied customers will strengthen relationships and loyalty, helping the company establish itself as a leader in innovative construction solutions.
Application of ML/AI What precise task will you use ML/AI to accomplish? What business outcome or objective	I will use machine learning and AI to analyze historical project data and identify patterns for predicting risks like delays and cost overruns. The system will consider factors such as material types and project timelines to forecast potential issues. This enables project managers to make informed decisions on resource allocation and

will you achieve?	scheduling, ensuring efficient use of labor and equipment. The main goal is to improve operational efficiency by enhancing project completion times and reducing costs, which will increase profitability and customer satisfaction. By delivering projects on time and within budget, the system aims to strengthen client relationships and boost the company’s reputation in innovative construction solutions.

Success Metrics

Success Metrics What business metrics will you apply to determine the success of your product? Good metrics are clearly defined and easily measurable. Specify how you will establish a baseline value to provide a point of comparison.	To measure the success of our AI system for construction project management, i will focus on key metrics such as project completion time, cost variance, and customer satisfaction. i will track project duration from start to finish and calculate cost variance by comparing actual expenses to the budget. Customer satisfaction will be assessed through post-project surveys. To establish baseline values, i will analyze historical project data before implementing the AI system, allowing for clear comparisons of improvements over time. Monitoring these metrics will help us evaluate the system's impact on efficiency and profitability.

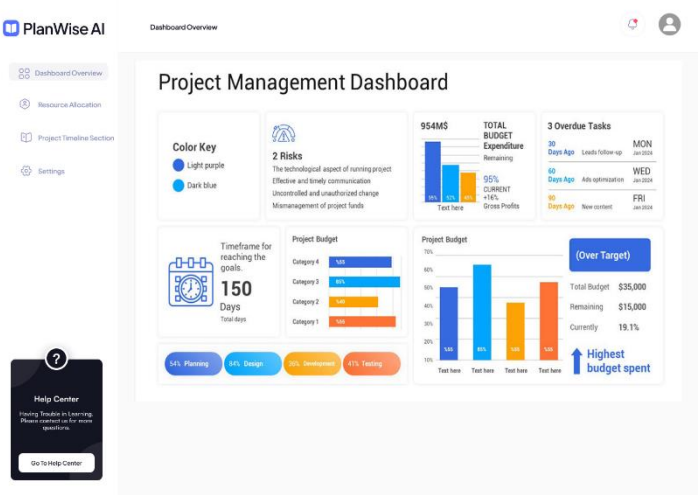
Data

Data Acquisition Where will you source your data from? What is the cost to acquire these data? Are there any personally identifying information (PII) or data sensitivity issues you will need to overcome? Will data become available on an ongoing basis, or will you acquire a large batch of data that will need to be refreshed?	Data acquisition refers to the process of collecting and measuring data from various sources to inform decision-making and analysis.so data acquisition involves gathering project data, such as timelines, costs, resource utilization, and performance metrics. This data can come from multiple sources, including project management software, and material specifications. By systematically collecting and organizing this data, we can analyze trends and patterns, which will enable us to improve risk prediction, enhance resource allocation, and ultimately drive better project outcomes. And I can use data from Kaggle for my project, as it provides various datasets related to construction and project management that can help train your AI system. Just make sure the datasets align with my project goals.
Data Source Consider the size and source of your data; what biases are built into the data and how might the data be improved?	When considering the size and source of the data for my AI system in construction project management, it's important to identify potential biases. Datasets may come from specific regions or project types, leading to skewed predictions. Additionally, outdated or incomplete historical data may not reflect current trends. To improve the data, i must incorporate diverse datasets from various sources and actively seek updated information, ensuring a more comprehensive analysis and enhancing the model's accuracy in real-world applications.
Choice of Data Labels What labels did you decide to add to your data? And why did you decide on these labels versus any other option?	I chose to include labels such as "project length," "budget deviation," "resource distribution," and "risk assessment." These labels were selected because they are essential for evaluating project performance and spotting potential issues. "Project length" and "budget deviation" measure efficiency and financial compliance, while "resource distribution" indicates how well labor and equipment are utilized. The "risk assessment" label is crucial for forecasting possible problems that may affect project success. By concentrating on these labels, i can conduct a more focused analysis that leads to actionable insights and better decision-making in managing projects.

Model

Model Building How will you resource building the model that you need? Will you outsource model training and/or hosting to an external platform, or will you build the model using an in-house team, and why?	To develop the model for my AI system in construction project management, i intend to use an in-house team instead of outsourcing the training and hosting to an external platform. This choice allows to have greater control over the development, ensuring the model is specifically designed to meet my project's needs while integrating our unique data and insights. By utilizing my internal team's expertise, i can collaborate effectively and make quick adjustments based on feedback and results. Moreover, keeping the team in-house help me protect sensitive project data and allows for greater flexibility in adapting the model as our requirements change.
Evaluating Results Which model performance metrics are appropriate to measure the success of your model? What level of performance is required?	To evaluate the effectiveness of my AI model for construction project management, i will use performance metrics such as accuracy, precision, recall, and F1 score. Accuracy will indicate the proportion of correct predictions made by the model, while precision and recall will assess its ability to accurately identify risks without generating excessive false positives. The F1 score will serve to balance both precision and recall, ensuring that the model performs well on both fronts. my target is to achieve a minimum accuracy of 85% and a strong F1 score, ensuring that the model is dependable and effective for predicting project risks and enhancing decision-making in practical applications.

Minimum Viable Product (MVP)

Design What does your minimum viable product look like? Include sketches of your product.	My minimum viable product (MVP) will include a user-friendly dashboard offering real-time insights into project metrics. The dashboard will feature visual elements like charts and graphs to display key information, such as project timelines, budget variances, resource distribution, and risk assessments. It will also incorporate predictive analytics tools to identify potential risks based on historical data. Users will interact with the system through an intuitive interface, allowing them to enter project details and receive actionable recommendations. The design will prioritize clarity and ease of use, ensuring project managers can quickly access and understand essential information for effective decision-making. 
Use Cases What persona are you designing for? Can you describe the major epic-level use cases your product addresses? How will users access this product?	Focusing on managing project outcomes and reducing risks, key use cases include real-time progress monitoring, risk prediction, resource optimization, and stakeholder reporting. Users will interact through a web-based dashboard with a user-friendly interface for data input and metric analysis, and an option for mobile access to facilitate on-site oversight and timely decisions.
Roll-out How will this be adopted? What does the go-to-market plan look like?	My adoption strategy focuses on targeted marketing, strategic partnerships, and training initiatives. To facilitate integration, we will provide training and onboarding support. By highlighting user-friendly features and clear ROI through case studies, the aim is to drive adoption among construction project managers and their teams.

Post-MVP-Deployment

Designing for Longevity How might you improve your product in the long-term? How might real-world data be different from the training data? How will your product learn from new data? How might you employ A/B testing to improve your product?	To enhance my product over the long term, i will create a continuous feedback system that incorporates real-world data to improve my AI model. Real-world data may differ from training data due to variations in project characteristics and industry trends. my product will adapt to new data using online learning techniques for ongoing refinement. i will also use A/B testing to assess different features, comparing user interactions to identify which changes are most effective. This iterative process will help ensure our system stays relevant to the evolving needs of construction project management.
Monitor Bias How do you plan to monitor or mitigate unwanted bias in your model?	To monitor and address bias in my model, i will implement a comprehensive strategy that includes regular evaluations of training data and model outputs. i will prioritize diverse datasets that reflect various project types and regions to minimize biases. Additionally, i will use performance metrics focused on fairness to identify inconsistencies in predictions across demographics. User feedback i also be vital for spotting potential biases, enabling timely adjustments. By emphasizing transparency and responsibility, i aim to create a fair and balanced AI system for construction project management.