Reflection & Workflow Diagram

Reflection

What is expected to be the most challenging part of the workflow? Why?

The most anticipated challenge in the workflow is likely to be the deployment and integration phase, particularly embedding the AI model within the hospital's Electronic Health Record (EHR) system (e.g., Epic). This step will require both technical setup—such as exposing the model via a REST API using FastAPI—and strict adherence to healthcare regulations like HIPAA. Ensuring data security, managing user access, and achieving real-time prediction triggers will require careful coordination between IT teams, data engineers, and clinical stakeholders.

Another potentially complex area is ensuring interpretability and trust. Clinicians must be able to understand and validate the model's predictions using tools like SHAP. This step is crucial in a healthcare setting, where transparency is non-negotiable.

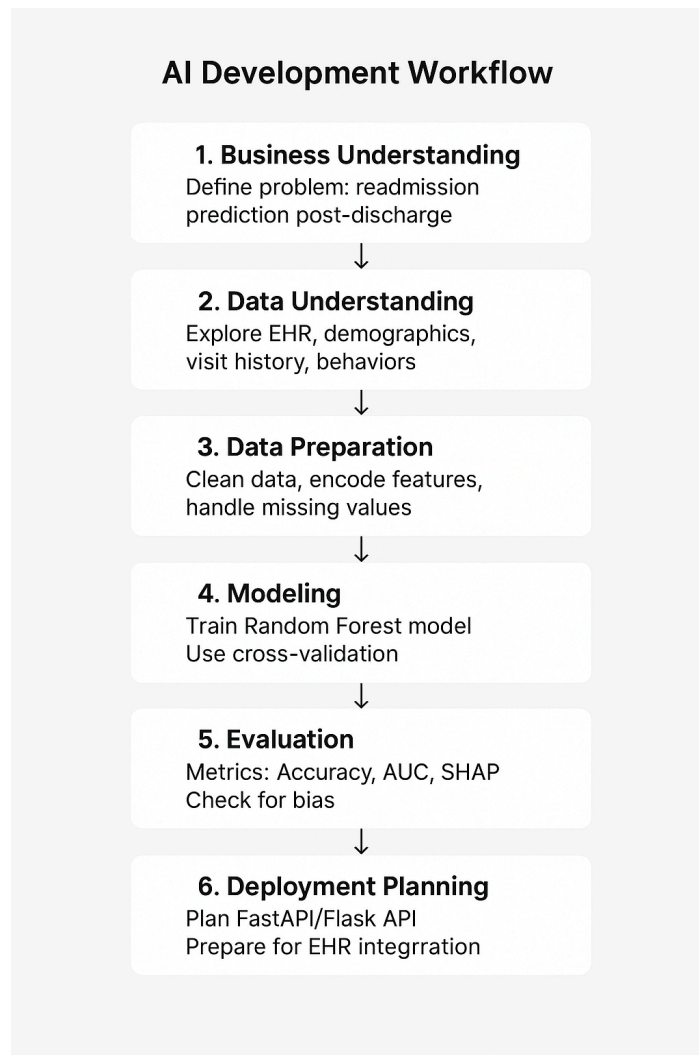**How could the approach be improved with more time or resources?**

With additional time and resources, the following enhancements could improve the project:

- **Stakeholder collaboration workshops** before integration begins, involving clinicians, hospital IT staff, and compliance teams to align goals and identify risks early.

- **Prototype dashboards and model explainability tools** could be tested in a sandbox environment before full deployment.

- Setting up **automated monitoring systems** in advance (e.g., logging, alerting for drift or bias) would reduce manual effort post-deployment.

- If feasible, creating a **phased implementation plan**, starting with a pilot in one department or unit, could help validate the model in a lower-risk environment before

hospital-wide rollout.

Diagram

The AI development process will follow a modified **CRISP-DM (Cross-Industry Standard Process for Data Mining)** framework, adapted for healthcare applications. Below is a proposed flowchart representing the planned workflow:

AI Development Workflow

1. Business Understanding
Define problem: readmission
prediction post-discharge

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2. Data Understanding
Explore EHR, demographics,
visit history, behaviors

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3. Data Preparation
Clean data, encode features,
handle missing values

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4. Modeling
Train Random Forest model
Use cross-validation

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5. Evaluation
Metrics: Accuracy, AUC, SHAP
Check for bias

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6. Deployment Planning
Plan FastAPI/Flask API
Prepare for EHR integrration

- This diagram represents the **intended workflow**, not a record of what has been completed.

- Each phase will require both technical and stakeholder engagement efforts.

- Monitoring, fairness, and ethics are integrated as ongoing concerns starting from evaluation and continuing post-deployment.