Sprint Plan Document: AI Models for Predicting Academic Outcomes

Project Overview

This document outlines the sprint plan for the project aimed at implementing AI models to analyze student data and predict academic outcomes. The plan is divided into six sprints, each with specific goals and tasks to ensure a structured approach.

Sprint 1: Data Collection & Preparation

- Goal: Collect and clean student data.
- Timeline: [Start Date] - [End Date]
- Tasks:
  1. Identify Data Sources:
     - Responsible: [Team Member Name]
     - Description: Identify and gather relevant student data sources, including grades, attendance records, demographic information, etc.
  2. Data Cleaning & Preprocessing:
     - Responsible: [Team Member Name]
     - Description: Clean the data by handling missing values, normalizing data, and preparing it for analysis.
  3. Create Data Schema:
     - Responsible: [Team Member Name]
     - Description: Design a data schema and structure to ensure efficient storage and retrieval.
  4. Exploratory Data Analysis (EDA):
     - Responsible: [Team Member Name]
     - Description: Conduct an initial exploratory analysis to understand data distributions and

correlations.

Sprint 2: Model Selection & Development

- Goal: Develop and train the AI models.

- Timeline: [Start Date] - [End Date]

- Tasks:

1. Define Target Outcomes:

   - Responsible: [Team Member Name]

   - Description: Specify the academic outcomes to predict, such as grades, graduation likelihood, or dropout risk.

2. Select AI/ML Algorithms:

   - Responsible: [Team Member Name]

   - Description: Choose appropriate machine learning algorithms for the prediction tasks.

3. Data Splitting:

   - Responsible: [Team Member Name]

   - Description: Divide the dataset into training, validation, and test sets.

4. Model Training:

   - Responsible: [Team Member Name]

   - Description: Train the selected models using the training data.

5. Model Evaluation:

   - Responsible: [Team Member Name]

   - Description: Assess model performance using the validation data.

Sprint 3: Model Optimization & Validation

- Goal: Optimize and validate the AI models.

- Timeline: [Start Date] - [End Date]

- Tasks:

  1. Hyperparameter Tuning:

     - Responsible: [Team Member Name]

     - Description: Optimize model hyperparameters to enhance performance.

  2. Cross-Validation:

     - Responsible: [Team Member Name]

     - Description: Perform cross-validation to ensure model robustness.

  3. Model Comparison:

     - Responsible: [Team Member Name]

     - Description: Compare the performance of different models and select the best one.

  4. Address Overfitting/Underfitting:

     - Responsible: [Team Member Name]

     - Description: Identify and resolve any issues related to overfitting or underfitting.

Sprint 4: Model Integration & Deployment

- Goal: Integrate the model into the existing system and deploy it.

- Timeline: [Start Date] - [End Date]

- Tasks:

  1. Develop API/Interface:

     - Responsible: [Team Member Name]

     - Description: Create an API or interface for model integration with existing systems.

  2. Integration Testing:

     - Responsible: [Team Member Name]

     - Description: Conduct tests to ensure the model interacts seamlessly with other software components.

  3. Model Deployment:

- Responsible: [Team Member Name]

- Description: Deploy the model in a controlled environment for testing and evaluation.

Sprint 5: Monitoring & Evaluation

- Goal: Monitor model performance and make adjustments as needed.

- Timeline: [Start Date] - [End Date]

- Tasks:

1. Set Up Monitoring Tools:

   - Responsible: [Team Member Name]

   - Description: Implement tools to monitor model predictions and performance in real-time.

2. Feedback Gathering:

   - Responsible: [Team Member Name]

   - Description: Collect feedback from users to assess the model's impact on academic outcomes.

3. Model Refinement:

   - Responsible: [Team Member Name]

   - Description: Adjust and refine the model based on feedback and performance data.

4. Plan for Retraining:

   - Responsible: [Team Member Name]

   - Description: Develop a plan for periodic model retraining using new data to maintain accuracy.

Sprint 6: Documentation & Knowledge Transfer

- Goal: Document the process and transfer knowledge to the team.

- Timeline: [Start Date] - [End Date]

- Tasks:

1. Process Documentation:

   - Responsible: [Team Member Name]

- Description: Document all aspects of the project, including data sources, model development, and deployment procedures.

2. User Guides & Training Materials:
   - Responsible: [Team Member Name]
   - Description: Create comprehensive guides and training materials for end-users.
3. Knowledge Transfer Sessions:
   - Responsible: [Team Member Name]
   - Description: Conduct sessions to transfer knowledge to the relevant stakeholders.
4. Finalize Documentation:
   - Responsible: [Team Member Name]
   - Description: Complete all project documentation and hand it over to the operations team.

Conclusion

This sprint plan is designed to guide the project team through the implementation of AI models to analyze student data and predict academic outcomes. By following this structured approach, the team aims to achieve a successful deployment and integration of AI-driven predictive analytics in an educational setting.