**Project Initialization and Planning Phase**

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| Date | 3 July 2025 |
| Team ID | SWTID1749727925 |
| Project Title | E-Adapt: Predicting Student Adaptability in Online Classes |
| Maximum Marks | 3 Marks |

**Project Proposal (Proposed Solution) template**

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| **Project Overview** |  |
| Objective | To develop an intelligent machine learning-based system that predicts the adaptability level of students in an online learning environment, helping educators identify students who need additional support and enabling personalized learning pathways. |
| Scope | This project covers the full pipeline from understanding the problem and preparing the dataset to building, evaluating, and deploying a predictive model through a simple web application. The system will help educators identify students’ adaptability levels and provide insights for better support, with potential for future integration into existing learning platforms. |
| **Problem Statement** |  |
| Description | Students’ adaptability to online learning varies widely due to differences in technological readiness, motivation, and learning styles. A lack of real-time insights into these adaptability levels hampers educators’ ability to intervene early, resulting in lower academic outcomes and engagement. |
| Impact | Accurately predicting adaptability levels will help institutions identify struggling students early, enabling timely support and personalized learning. This can improve student engagement, satisfaction, and success in online education. |
| **Proposed Solution** |  |
| Approach | We plan to build an intelligent machine learning model that predicts students’ adaptability levels in online learning environments. We will use the *Students Adaptability Level in Online Education* dataset from Kaggle, and apply data cleaning, exploratory analysis, and feature engineering techniques to prepare the data.  We will train and compare multiple classification algorithms, including Random Forest, XGBoost, CatBoost, and Logistic Regression, to identify the best-performing model. Once the model is finalized, we will deploy it using a user-friendly web application built with Streamlit. This tool will allow educators to input student details and receive instant predictions, along with insights into key factors influencing adaptability.  Our solution aims to make it easier for institutions to identify students who need support and design personalized interventions, with the flexibility to scale or integrate into existing systems in the future. |
| Key Features | Our solution will provide quick predictions of student adaptability levels through an easy-to-use web app. It will highlight important factors affecting adaptability, offer clear insights for educators, and be simple enough to scale or integrate with other learning systems in the future. |

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| **Resource Type** | **Description** | **Specification/Allocation** |
| **Hardware** |  |  |
| Computing Resources | CPU/GPU specifications, number of cores | 1 x CPU (8 cores), or GPU (optional for faster training) |
| Memory | RAM specifications | 8 GB |
| Storage | Disk space for data, models, and logs | 50 GB disk space for dataset, models, logs |

**Resource Requirements**

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| **Software** |  |  |
| Frameworks | Python frameworks | Python, Streamlit/Flask |
| Libraries | Additional libraries | scikit-learn, pandas, numpy, seaborn, catboost, xgboost |
| Development Environment | IDE, version control | Jupyter Notebook, VS Code, GitHub for version control |
| **Data** |  |  |
| Data | Source, size, format | Kaggle: Students Adaptability Level dataset (~1200 rows, CSV) |