**Project Planning & Management**

**Project Proposal**

**Project Title:** Human Resources Dataset Analysis – Resignation Rate Analysis  
**Project Overview:** This project aims to analyze employee resignation trends and identify key factors influencing employee turnover. Using historical HR data, we will build predictive models to forecast resignation rates and provide insights for improving employee retention strategies.  
**Project Objectives:**

* Understand patterns and trends in resignation rates.
* Identify key factors affecting employee resignation.
* Develop predictive models to forecast resignation rates.
* Provide actionable recommendations to HR departments for reducing turnover.

**Project Scope:**

* Data Collection and Preprocessing
* Exploratory Data Analysis (EDA)
* Predictive Modeling
* Data Visualization and Reporting

**Project Plan:**

**Timeline (Gantt Chart Overview)**

|  |  |  |
| --- | --- | --- |
| Task | Start Date | End Date |
| Project Proposal & Planning | 01/01/2025 | 15/01/2025 |
| Data Collection & Cleaning | 16/01/2025 | 31/01/2025 |
| Exploratory Data Analysis (EDA) | 01/02/2025 | 14/02/2025 |
| Developing Predictive Models | 15/02/2025 | 29/02/2025 |
| Data Visualization & Insights | 01/03/2025 | 15/03/2025 |
| Report Writing & Documentation | 16/03/2025 | 31/03/2025 |
| Final Presentation | 01/04/2025 | 01/04/2025 |

**Task Assignment & Roles:**

|  |  |
| --- | --- |
| Task | Team Members Involved |
| Project Proposal & Planning | All members |
| Data Collection & Cleaning | All members |
| Exploratory Data Analysis (EDA) | All members |
| Developing Predictive Models | All members |
| Data Visualization & Insights | All members |
| Report Writing & Documentation | All members |
| Final Presentation | All members |

**Risk Assessment & Mitigation Plan:**

|  |  |  |  |
| --- | --- | --- | --- |
| Risk | Probability | Impact | Mitigation Strategy |
| Merging Tables | High | High | Conduct a thorough audit of table structures to verify key and format alignment before merging, and continuously explore optimal linking methods for seamless data integration. |
| Analysis Questions | Medium | High | Hold brainstorming sessions with stakeholders and domain experts to refine precise analysis questions, and regularly review and update these questions to ensure alignment with project objectives. |
| Forecasting Models | Medium | High | Experiment with various modeling approaches and perform hyperparameter tuning. Employ cross-validation techniques to ensure model accuracy and enhance performance. |
| Team Coordination Challenges | Low | Medium | Conduct regular progress meetings, utilize effective communication and collaboration tools, and clearly define roles and responsibilities to ensure smooth coordination among all team members. |

**KPIs (Key Performance Indicators)**

* **Data Quality Metrics:** Completeness, consistency, and accuracy of the dataset.
* **Model Performance Metrics:** Accuracy, precision, recall, and F1-score of predictive models.
* **Visualization Effectiveness:** Clarity, relevance, and usability of dashboards.
* **Project Timeliness:** Adherence to the project timeline and deadlines.

**Literature Review**

**Feedback & Evaluation:** This section will be updated based on the lecturer’s assessment.  
**Suggested Improvements:** Any identified areas for enhancement will be documented.  
**Final Grading Criteria:** Evaluation will be based on documentation quality, implementation effectiveness, testing accuracy, and presentation clarity.

**Requirements Gathering**

**Stakeholder Analysis:**

**Key Stakeholders:**

HR Department: Needs insights into resignation trends to develop retention strategies.

Management: Requires KPIs and predictive insights for decision-making.

Data Analysts & IT Team: Responsible for processing, analyzing, and integrating the data.

**Stakeholder Needs:**

Clear visualization of resignation trends.

Identification of factors contributing to high turnover.

Predictive analytics to forecast future resignation rates.

**User Stories & Use Cases**

**User Story Example 1:**

As an HR Manager, I want to view a dashboard showing resignation trends over time so that I can identify peak periods and adjust policies accordingly.

**User Story Example 2:**

As a Data Analyst, I need to access cleaned and integrated HR data to perform exploratory analysis and develop accurate forecasting models.

**Use Cases:**

Data Import and Preprocessing: A user uploads HR data, which is then cleaned and integrated.

Interactive Dashboard: The HR Manager interacts with a dashboard to filter data by department, role, and time period.

Model Training and Prediction: The Data Analyst runs predictive models to forecast resignation rates and validates the results using cross-validation techniques.

**Functional Requirements:**

Import and integrate HR data from multiple sources (e.g., employee records, resignation logs).

Data cleaning and preprocessing to handle inconsistencies and missing values.

Capability to perform exploratory data analysis (EDA) with visualizations such as trends, correlations, and distributions.

Development of predictive models for forecasting resignation rates.

An interactive dashboard (using Power BI) for real-time visualization and reporting.

**Non-functional Requirements:**

Security: Ensure that sensitive HR data is encrypted and access is restricted to authorized personnel.

Usability: The dashboard and reporting tools must be intuitive and accessible, catering to both technical and non-technical users.

Reliability: The system must be robust, with error handling to manage missing or inconsistent data gracefully.

**System Analysis & Design**

**Problem Statement & Objectives**

**Problem Statement:**

Many organizations struggle with high employee resignation rates, which lead to increased operational costs and disruption in business continuity. Despite having comprehensive HR data, organizations often face challenges in extracting actionable insights and forecasting resignation trends effectively.

**Project Objectives:**

Analyze historical HR data to identify patterns and factors influencing resignation rates.

Develop predictive models to forecast future resignation trends.

Provide actionable insights and visualizations to assist HR departments in reducing employee turnover.