

WORLD HAPPINESS REPORT

Milestone 1: Project Initialization and Planning Phase

The "Project Initialization and Planning Phase" marks the project's outset, defining goals, scope, and stakeholders. This crucial phase establishes project parameters, identifies key team members, allocates resources, and outlines a realistic timeline. It also involves risk assessment and mitigation planning. Successful initiation sets the foundation for a well-organized and efficiently executed machine learning project, ensuring clarity, alignment, and proactive measures for potential challenges.

Activity 1: Define Problem Statement

To evaluate global human well-being and happiness by analyzing factors such as economic stability, social support, life expectancy, freedom, generosity, and corruption perceptions. The aim is to identify disparities, measure happiness reliably, and provide actionable insights for policymakers to enhance the quality of life and happiness worldwide.

World happiness report Problem Statement Report: [Click Here](#)

Activity 2: Project Proposal (Proposed Solution)

1. **Data Collection:** Gather well-being data through surveys and existing global databases.
2. **Happiness Metrics:** Create a composite happiness index covering key factors like income, health, and social support.
3. **Analysis:** Use statistical methods to identify the impact of various factors on happiness.
4. **Policy Recommendations:** Develop data-driven recommendations for enhancing well-being.
5. **Reporting:** Publish an annual report with findings and insights.
6. **Monitoring:** Track changes in happiness and assess the impact of policies over time.

This approach aims to provide actionable insights to improve global happiness and well-being.

World happiness report Project Proposal Report: [Click Here](#)

Activity 3: Initial Project Planning

Establish the primary goals of the project, focusing on understanding and improving global happiness and well-being. • Develop a comprehensive survey instrument to collect subjective well-being data from diverse populations. Develop a detailed plan for gathering data, incorporating both primary data (surveys) and secondary data (existing databases).

- Conduct pilot testing to refine the survey.

Create a framework for the happiness index, defining the key dimensions (e.g., income, health, social support) and how they will be measured.

Outline the statistical methods and analytical techniques to be used in identifying the determinants of happiness.

Plan the structure and format of the annual World Happiness Report, including sections for findings, insights, and policy recommendations.

Develop a detailed project timeline, including key milestones and deadlines for each phase of the project.

World happiness report Project Planning Report: [Click Here](#)

Milestone 2: Data Collection and Preprocessing Phase

The Data Collection and Preprocessing Phase involves executing a plan to gather relevant loan

application data from Kaggle, ensuring data quality through verification and addressing missing values. Preprocessing tasks include cleaning, encoding, and organizing the dataset for subsequent exploratory analysis and machine learning model development.

Activity 1: Data Collection Plan, Raw Data Sources Identified, Data Quality Report

To gather comprehensive data on global happiness and well-being from both primary and secondary sources.

Methodology:

1. Primary Data Collection:

○ Surveys:

- Design and deploy standardized well-being surveys across a representative sample of countries.
- Include questions on income, social support, health, freedom, generosity, and corruption perceptions.

2. Secondary Data Collection:

○ Existing Global Databases:

- World Bank
- World Health Organization (WHO)
- United Nations Development Programme (UNDP)
- Gallup World Poll

Timeline:

- Month 1-2: Survey design and pilot testing.

- Month 3-6: Data collection through surveys.
- Month 7-8: Collection of secondary data.

Raw Data Sources Identified

1. **World Bank:**
 - Economic indicators (GDP per capita, unemployment rates)
 - Social indicators (education levels, social support networks)
2. **World Health Organization (WHO):**
 - Health statistics (life expectancy, prevalence of diseases)
 - Health infrastructure data (access to healthcare services)
3. **United Nations Development Programme (UNDP):**
 - Human Development Index (HDI) components
 - Inequality-adjusted HDI
4. **Gallup World Poll:**
 - Survey data on subjective well-being and life satisfaction
 - Data on social and economic perceptions
5. **National Statistical Agencies:**
 - Country-specific data on demographics and socio-economic factors

Data Quality Report

Objective: To ensure the collected data is accurate, consistent, and reliable for analysis.

Data Quality Dimensions:

1. **Accuracy:**
 - Verify data against multiple sources to ensure correctness.
 - Cross-check survey responses with known benchmarks.
2. **Completeness:**
 - Ensure all required data fields are populated.
 - Address missing values through imputation or exclusion.
3. **Consistency:**
 - Standardize data formats and units across different sources.
 - Resolve discrepancies between primary and secondary data.
4. **Timeliness:**
 - Use the most recent data available.
 - Regular updates to capture changes over time.
5. **Validity:**
 - Ensure survey questions are designed to capture relevant information.
 - Validate data through pilot testing and feedback loops.

Data Quality Process:

1. **Data Cleaning:**
 - Remove duplicates and erroneous entries.

- Standardize responses to ensure uniformity.
- 2. **Data Validation:**
 - Conduct logical checks to identify outliers and anomalies.
 - Use statistical methods to validate the integrity of the data.
- 3. **Documentation:**
 - Maintain detailed records of data sources, collection methods, and preprocessing steps.
 - Document any assumptions and limitations.

By following this data collection and preprocessing plan, we aim to ensure that the data used in the World Happiness Report is of the highest quality, enabling robust and meaningful analysis.

World happiness report Data Collection Report: [Click Here](#)

Activity 2: Data Quality Report

The dataset for " World happiness report " is sourced from Kaggle. It includes applicant details and financial metrics. Data quality is ensured through thorough verification, addressing missing values, and maintaining adherence to ethical guidelines, establishing a reliable foundation for predictive modeling.

World happiness report Data Quality Report: [Click Here](#)

Activity 3: Data Exploration and Preprocessing

Data Exploration involves analyzing the loan applicant dataset to understand patterns, distributions, and outliers. Preprocessing includes handling missing values, scaling, and encoding categorical variables. These crucial steps enhance data quality, ensuring the reliability and effectiveness of subsequent analyses in the loan approval project.

World happiness report Data Exploration and Preprocessing Report: [Click Here](#)

Milestone 3: Model Development Phase

The Model Development Phase entails crafting a predictive model for loan approval. It encompasses strategic feature selection, evaluating and selecting models (Random Forest, Decision Tree, KNN, XGB), initiating training with code, and rigorously validating and assessing model performance for informed decision-making in the lending process.

Activity 1: Feature Selection Report

The Feature Selection Report outlines the rationale behind choosing specific features (e.g., Gender, Married, Credit History) for the loan approval model. It evaluates relevance, importance, and impact on predictive accuracy, ensuring the inclusion of key factors influencing the model's ability to discern credible loan applicants.

World happiness report Feature Selection Report: [Click Here](#)

Activity 2: Model Selection Report

The Model Selection Report details the rationale behind choosing Random Forest, Decision Tree, KNN, and XGB models for world happiness report . It considers each model's strengths in handling complex relationships, interpretability, adaptability, and overall predictive performance, ensuring an informed choice aligned with project objectives.

World happiness report Model Selection Report: [Click Here](#)

Activity 3: Initial Model Training Code, Model Validation and Evaluation Report

The Initial Model Training Code employs selected algorithms on the loan approval dataset, setting the foundation for predictive modeling. The subsequent Model Validation and Evaluation Report rigorously assesses model performance, employing metrics like accuracy and precision to ensure reliability and effectiveness in predicting reports

World happiness report Model Development Phase Template: [Click Here](#)

Milestone 4: Model Optimization and Tuning Phase

The Model Optimization and Tuning Phase involves refining machine learning models for peak performance. It includes optimized model code, fine-tuning hyperparameters, comparing performance metrics, and justifying the final model selection for enhanced predictive accuracy and efficiency.

Activity 1: Hyperparameter Tuning Documentation

The Gradient Boosting model was selected for its superior performance, exhibiting high accuracy during hyperparameter tuning. Its ability to handle complex relationships, minimize overfitting, and optimize predictive accuracy aligns with project objectives, justifying its selection as the final model.

Activity 2: Performance Metrics Comparison Report

The Performance Metrics Comparison Report contrasts the baseline and optimized metrics for various models, specifically highlighting the enhanced performance of the Gradient Boosting model. This assessment provides a clear understanding of the refined predictive capabilities achieved through hyperparameter tuning.

Activity 3: Final Model Selection Justification

The Final Model Selection Justification articulates the rationale for choosing Gradient Boosting as the ultimate model. Its exceptional accuracy, ability to handle complexity, and successful hyperparameter tuning align with project objectives ,for world happiness report.

World happiness report Model Optimization and Tuning Phase Report: [Click Here](#)

Milestone 5: Project Files Submission and Documentation

For project file submission in Github , Kindly click the link and refer to the flow.

For the documentation, Kindly refer to the link. [Click Here](#)

Milestone 6: Project Demonstration

In the upcoming module called Project Demonstration, individuals will be required to record a video by sharing their screens. They will need to explain their project and demonstrate its execution during the presentation.