

FREEDOM OF WORLD CLASSIFICATION

Milestone 1: Project Initialization and Planning Phase

During this phase, the project focuses on defining the scope, assembling a skilled team, identifying stakeholders, and assessing risks. Key activities include kickoff meetings, requirements gathering, data collection strategy formulation, and infrastructure setup planning. The phase concludes with the development of a detailed project plan outlining timelines, milestones, and communication protocols to ensure alignment with project objectives. This structured approach lays the groundwork for successful implementation of the Freedom of World Classification system.

Activity 1: Define Problem Statement

Problem Statement: The problem of classifying the freedom status of countries impacts various global organizations, policymakers, and researchers who rely on accurate assessments to inform their decisions. Traditional methods of evaluating freedom status can be subjective and inconsistent. There is a need for a robust, data-driven approach to classify countries' freedom status based on various indicators such as political rights, civil liberties, and governance quality.

Objective: The objective is to develop a predictive analytics solution that accurately classifies countries' freedom status based on historical and current data on political rights, civil liberties, and other relevant factors. By doing so, stakeholders can gain a more objective and comprehensive understanding of global freedom dynamics, aiding in the development of policies and interventions that promote freedom and human rights worldwide.

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Activity 2: Project Proposal (Proposed Solution)

This project aims to develop an advanced predictive analytics solution for classifying countries' freedom status. Leveraging historical and current data on political rights, civil liberties, governance quality, and other factors, the solution will employ machine learning models to accurately classify countries. By providing actionable insights through a user-friendly interface, stakeholders can make informed decisions to promote and protect freedom globally. The project will integrate seamlessly with existing data systems, ensuring continuous improvement and up-to-date classifications.

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Activity 3: Initial Project Planning

This phase involves defining project scope, assembling a skilled team, identifying key stakeholders, assessing risks, allocating resources, and outlining a detailed project plan. Activities include requirements gathering, data collection strategy formulation, model development planning, infrastructure setup, timeline establishment with milestones, and communication planning.

Deliverables include project scope documentation, risk management plans, project plans, communication strategies, and initial data collection and preprocessing. The next steps involve executing data collection and preprocessing phases followed by initial model development and evaluation.

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Milestone 2: Data Collection and Preprocessing Phase

During this phase, the project focuses on gathering comprehensive historical and current data on political rights, civil liberties, and other relevant variables. The data collection strategy is designed to ensure data quality and compliance with privacy regulations. Following collection, rigorous preprocessing steps are undertaken to clean the data, handle missing values, and transform variables for analysis. This phase sets the foundation for subsequent model development and ensures that the data is ready for training and evaluation of predictive models.

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

The data collection plan for the Freedom of World Classification project involves sourcing comprehensive data on political rights, civil liberties, and governance quality from internal and external data providers. This includes indicators such as electoral processes, political participation, civil rights, and freedom of the press. External variables such as economic indicators and demographic trends will also be incorporated to enhance classification accuracy. The plan ensures compliance with data privacy regulations and aims to maximize data quality through rigorous validation and cleaning processes.

Raw Data Sources Identified: Primary sources include:

- International databases for political rights and civil liberties indicators.
- External databases for economic indicators and demographic trends.

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Activity 2: Data Quality Report

Data Quality Report: Initial assessments indicate:

- High completeness and consistency in political rights and civil liberties data.
- External data sources show variability in data formats and quality, requiring standardization and validation.
- Ongoing data validation and cleaning processes are implemented to maintain data integrity throughout the project lifecycle.

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Activity 3: Data Exploration and Preprocessing

In this phase, the project conducts exploratory data analysis to understand the characteristics and patterns of the data. This includes identifying trends, distributions, and correlations among variables relevant to classifying countries' freedom status. Preprocessing activities involve cleaning the data to address missing values, outliers, and inconsistencies. Feature engineering techniques are applied to create new informative variables, ensuring data readiness for model development. This phase aims to optimize data quality and prepare a refined dataset that enhances the predictive capabilities of the models used for freedom classification.

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Milestone 3: Model Development Phase

The Model Development Phase involves selecting appropriate machine learning algorithms and training them on the preprocessed data. This phase includes evaluating and selecting models, hyperparameter tuning, cross-validation, and model evaluation to ensure high classification accuracy. The development process also involves feature selection and engineering to enhance model performance. Once the model is trained, it is validated using a separate test dataset to confirm its predictive capabilities.

Activity 1: Model Selection Report

The Model Selection Report details the rationale behind choosing specific models for classification. It considers each model's strengths in handling complex relationships, interpretability, accuracy, adaptability, and overall predictive performance, ensuring an informed choice aligned with project objectives.

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Activity 2: Initial Model Training Code, Model Validation and Evaluation Report

The initial model training code for the Freedom of World Classification project involves selecting appropriate machine learning algorithms such as logistic regression, decision trees, or ensemble methods. The code includes data preprocessing steps, feature selection, and model training using historical and current data. Hyperparameter tuning may be applied to optimize model performance.

The model validation and evaluation report assesses the predictive performance of trained models. Metrics such as accuracy, precision, recall, and area under the ROC curve (AUC-ROC) are used to evaluate model effectiveness in classifying countries' freedom status. Cross-validation techniques validate model robustness, and results are documented to inform model selection and further refinement. This process ensures that the predictive model meets the project's objectives for accuracy and reliability.

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Milestone 4: Model Optimization and Tuning Phase

During this phase of the Freedom of World Classification project, the focus is on enhancing the performance and accuracy of machine learning models. Techniques such as hyperparameter tuning, feature selection, and regularization are applied to optimize model parameters and improve predictive capabilities. Cross-validation methods are used to validate model robustness and ensure generalizability. The goal is to fine-tune the models to achieve optimal results in classifying countries' freedom status, thereby aiding in effective policy-making and intervention strategies.

Activity 1: Hyperparameter Tuning Documentation

Hyperparameter tuning for the Freedom of World Classification project involves documenting the process of optimizing model parameters to enhance predictive accuracy. Techniques such as grid search or random search are utilized to explore various combinations of hyperparameters for machine learning algorithms. The documentation includes a summary of the hyperparameters tested, their respective ranges, and the performance metrics (e.g., accuracy, AUC-ROC) achieved for each configuration. This ensures transparency and reproducibility in the tuning process, facilitating informed decisions on the final model selection for effective classification.

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Activity 2: Performance Metrics Comparison Report

The Performance Metrics Comparison Report for the Freedom of World Classification project evaluates and compares the effectiveness of different machine learning models in classifying countries' freedom status. It includes a summary of key metrics such as accuracy, precision, recall, and F1-score for each model tested. The report highlights the strengths and weaknesses of each approach, providing insights into the model's ability to accurately classify freedom status. This comparison aids in selecting the most suitable model for deployment, ensuring robust performance in real-world scenarios.

Activity 3: Final Model Selection Justification

The final model selection for the Freedom of World Classification project is justified based on comprehensive evaluation and comparison of various machine learning algorithms. The selected model demonstrates superior performance in terms of accuracy, precision, recall, and area under the ROC curve (AUC-ROC) during validation. Its ability to effectively classify freedom status and its scalability for integration into existing systems are key factors. The chosen model aligns with project goals of providing accurate classifications, supporting policy-making, and promoting global freedom and human rights.

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Milestone 5: Project Files Submission and Documentation

For project file submission in Github, kindly click the link and refer to the template [\[click here\]](#).

For the documentation, kindly refer to the template [\[click here\]](#).

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.