# Project Proposal 1: Flag Identifier

Flag Identifier: Country Recognition and Educational Explanation Using a Custom Generation System

## Objective

The goal of this project is to build an ML model capable of recognizing national flags and generating informative descriptions of the corresponding countries. Using image classification and a custom-built knowledge-based generation system, the solution will provide users with both identification and educational content.

## Dataset

- Source: Public flag image datasets (approximately 200 countries)  
- Format: High-quality images of flags (PNG/JPEG)  
- Data Augmentation: Rotation, flipping, brightness adjustment to increase dataset size and robustness.

## ML Tasks

1. Image Classification:  
 - Model: CNN architecture  
 - Output: Predicted country name from the input flag image.  
  
2. Language Generation:  
 - Model: Custom-built generation system based on a manually created knowledge base  
 - Output: Generate a concise educational description of the identified country, including capital city, language, geographic facts, and cultural highlights.

## Steps

1. User uploads a flag image.  
2. The image classification model predicts the country.  
3. The predicted country name is used to retrieve a description from the custom-built knowledge base.  
4. The system generates a descriptive paragraph about the country.

## Evaluation

- Classification Model: Accuracy, Precision, Recall.  
- Description Output: Human evaluation of text relevance and accuracy.

## Improvement Plan

- Hyperparameter tuning to optimize classification model performance.  
- Dataset augmentation for better generalization.  
- Expanding and refining the knowledge base for improved descriptive outputs.

## Deliverables

- Fully trained classification model.  
- Custom generation system based on knowledge base.  
- Image-to-description pipeline.  
- Final report and presentation.