**Title:** AI for Automated Educational Feedback and Low-Resource Learning Environments

**Abstract:**This proposal explores developing AI frameworks to deliver real-time, personalized educational feedback and address low-resource learning contexts. Leveraging large language models (LLMs) and advanced machine learning techniques, the research aims to enhance adaptive learning systems and address challenges in data scarcity and imbalance. The results will contribute to creating scalable, equitable AI solutions for diverse learners. **Background:** AI in education has shown promise for personalized learning, but existing solutions struggle in low-resource contexts. Automated feedback systems need better adaptability and generalization to support diverse learners effectively.  
**Problem:** Current methods lack robustness in imbalanced datasets and low-resource environments, limiting their application and equity in education.

**Objectives:**

1. Develop adaptive AI models for personalized, automated feedback.
2. Address data scarcity through innovative resampling techniques.

**Hypotheses:**

H0: LLMs can provide feedback on par with human educators.

H1: Data augmentation improves performance in low-resource contexts.

**Methods:  
Design:** Mixed-methods combining model evaluation and user feedback.  
**Data Collection:** Use public educational datasets and generate synthetic low-resource datasets.  
**Analysis:** Train AI models using resampling, evaluate via accuracy and F1-score, and validate qualitatively with educators.

**Expected Results:** AI systems deliver accurate, real-time feedback. Enhanced robustness in low-resource scenarios.

**Timeline:**1-2 months: Literature review, data collection.  
3-6 months: Model development and testing.  
7-9 months: Implementation of data augmentation.  
10 months: Final validation and reporting.