

## **Project title: Lecture Companion**

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### **1. Project Idea:**

Our proposed project “Lecture Companion” aims to bridge the language gap faced by Burmese university students and lifelong learners who possess only intermediate English proficiency. Many of these learners rely on international online courses, such as Coursera or edX, which are predominantly delivered in English, making it difficult for them to fully grasp advanced STEM or technical contents. The project proposes the development of a voice to text translation and summarisation system that can process live or recorded lectures and automatically generate Burmese transcripts accompanied by simplified bullet-point summaries. By leveraging speech recognition, translation, and summarisation models, the system would transcribe the lecturer’s speech, translate it into Burmese, and simplify complex terms or definitions into learner-friendly explanations. Ultimately, this project seeks to make international educational resources more inclusive for low-resource language learners in Myanmar, empowering them to participate equally in global knowledge exchange and promoting lifelong learning in line with the principles of quality and equitable education.

### **2. Relevance to Sustainable Development Goals (SDGs):**

This project directly supports SDG 4: Quality Education, particularly targets 4.A (inclusive educational facilities) and 4.7 (education for sustainable development). By enabling Burmese learners to access English-medium lectures through real-time translation and summarisation, it promotes equitable access to global education and lifelong learning. Furthermore, it contributes to SDG 10: Reduced Inequalities by addressing linguistic and technological barriers that limit opportunities for students in low-resource and non-English-dominant contexts.

### **3. Literature Examples:**

Synchronous Speech Recognition and Speech-to-Text Translation with Interactive Decoding (Liu et al. 2019): This paper proposed an interactive decoding framework that performs speech recognition and speech-to-text translation synchronously, enabling faster and more integrated bilingual transcription systems. Their method highlights the feasibility of real-time translation pipelines, which aligns with our system's goal of delivering live, simplified Burmese captions for educational videos. [paper link](#)

Meta’s No Language Left Behind (Meta, 2023): Introduces high-quality translation models for over 200 low-resource languages, including Burmese, proving the feasibility of delivering localized educational content through AI-powered translation. [paper link](#)

### **4. Describe Your Data:**

The project uses lecture and podcast transcripts sourced from open platforms (Coursera, YouTube, edX). Data includes English text files (TXT/JSON), with selected segments manually translated and simplified into Burmese for evaluation. [link](#)

### **5. Approach (Machine Learning or Deep Learning):**

Our approach follows a staged pipeline optimized for multilingual educational accessibility. First, we ingest lecture transcripts, either from official video captions or zero-shot transcriptions using Whisper. Next, we segment and normalize the text, annotate glossary terms, and then translate each segment into Burmese using a large language model. The translated segments are further simplified into Burmese through structured summarization, producing concise bullet points with emphasized formulas and definitions for STEM lectures. To support active learning, we construct a retrieval-augmented generation (RAG) system using multilingual embeddings and FAISS, enabling Burmese Q&A grounded in the transcript. Finally, we will do necessary evaluation of the pipeline with human review and other metrics.