# Accent-Aware Speech Recognition System for Virtual Assistant

This project implements a \*\*real-time accent-aware speech recognition system\*\* using deep learning and speaker adaptation techniques. It uses a fine-tunable `Wav2Vec2` model from Hugging Face and speaker embeddings from `SpeechBrain` to handle various accents and personalize recognition for virtual assistants.

## Features

- Real-time speech-to-text transcription

- Accent-aware processing using `Wav2Vec2`

- Speaker adaptation via x-vector embeddings

- REST API with Flask for integration

- Easy integration into voice-based applications

## Technologies

- Python

- Hugging Face Transformers

- Librosa & Torchaudio

- SpeechBrain

- Flask (REST API)

## Installation

1. Clone the repo:

```bash

git clone https://github.com/your-username/accent-aware-virtual-assistant.git

cd accent-aware-virtual-assistant