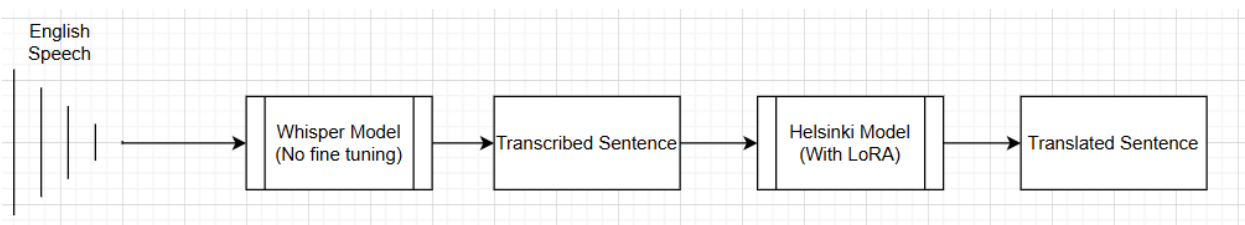


Real Time English to Arabic Translation

Objective:

A real-time English-to-Arabic speech translation machine learning model leverages advanced natural language processing and speech recognition technologies to facilitate instantaneous translation. Our aim was to design a simple interface where user talks through microphone, and the translated words appear on the screen.

Simple Overview of the system



English speech is generated from user, it enters the whisper model for transcription. The transcribed sentence then is translated using the Helsinki Model with a LoRA layer included to it, so finally the translated sentence is comprehended by the other end user.

Methodology:

[Saleh Elmansour en-ar translation dataset](#) was used to train the Helsinki model.

Afterwards, the MarianTokenizer, and MarianMTModel were used to load the Helsinki Model. A LoRA was added with rank of 2, Scaling Factor of 16, dropout of 0.1, and no bias.

Tokenizer was applied to the sentences from saleh el Mansour datasets to get the tokens then it is used to get the embeddings. Afterwards, we started training our model 1500 step. Then we saved our model and deployed it on Hugging face to be put in a pipeline with the whisper model for translation. Link to [notebook](#).