

Self-supervised transfer learning ASR model for the Sudanese Dialect

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Instructions

- Please **edit directly on this google slide deck**. During the presentation, you will use a provided laptop for the presentation.
- The final presentation should consist of **3 min presentation + 1-2min QA from judges**. Please stick to the time as we will stop presentations that exceed 5 min.
- In your presentation please consider the following:
 - Goal of the project and what social or economic impact could it create
 - What it makes interesting and/or innovative ?
 - Challenges you have overcome
 - What have you learned from it ?
 - What makes the project special or gives your proposal an edge over similar solutions in the market ?

The Sudanese Dialect

Several tongues have contributed to form the Sudanese dialect such as Arabic, Nubian, old Egyptian, and others.



عنقريب /angareib/

The Sudanese Dialect

When the region was subject to colonization in the 19th and 20th centuries, the Sudanese dialect was further affected by words like the Turkish prefix /bāsh/which means senior, and Turkish suffix /khāna/ means a place

Word	Arabic Word	Meaning	Origins
bāshkātib	باشكاتب	senior clerk	Turkish
hakīmbāshi	حكيمباشا	senior medical officer	Turkish
shafakhāna	شفخانا	dressing point or dispensary	Turkish
ajzakhāna	أزديخانا	pharmacy	Turkish

The Sudanese Dialect

The Arabic language itself has been affected by some changes whether it is structural or semantic to suit the style and the tongue of the speakers:

Addition

Arabic Word	Dialectal form	Arabic Word	Meaning
طوح	tōtah	طوطح	flung
لوح	lōlah	لولح	waved a thing about

Amalgamation

Arabic Word	Dialectal form	Arabic Word	Meaning
بلا شئ	balāsh	بلاش	free of charge
هذه الساعة	'hassa	هسا	now



قعو نجة / Frog

Motivation

- Dialects are not taught in schools or even standardized although there are a rich popular dialect culture of folktales, songs, movies. hence dialects spoken not written.
- There is no annotated speech dataset for the Sudanese dialect.
- Most of Arabic dialectal NLP and speech researches classify Sudanese dialect with the Egyptian.

Sudanese dialect speech dataset

- The data came from online resources (YouTube videos) extracting audio from them resulted in nearly 70 audio files.
- Cleaning the audio files and transcriptions writing for each file as been said by speakers.

Sudanese dialect speech dataset

- The dataset consists of 3544 records
- 9 Females and 24 Males
- 4 Hours

SDN Dialect XLSR-Wav2Vec2

Fine-tuned on the Sudanese dialect and best result
was
WER : 0.743763

OOOK.SD

SDN Whisper Model

Small:	56.32 WER
Medium:	44.69 WER
Large:	41.02 WER

TIPS and guidelines

- Please do not copy the contents from other materials (if it is very difficult to redraw, it is acceptable with the appropriate citation information).
- It depends on the audience, but it is a good idea to spend some time clearly presenting the introduction/motivation/problem setups
- Use a simple picture to emphasize your method/concept
- Long sentences in slides are not a good idea
- If you are showing numbers, please extract important numbers or highlight important numbers
- Add a take-home message in your final part