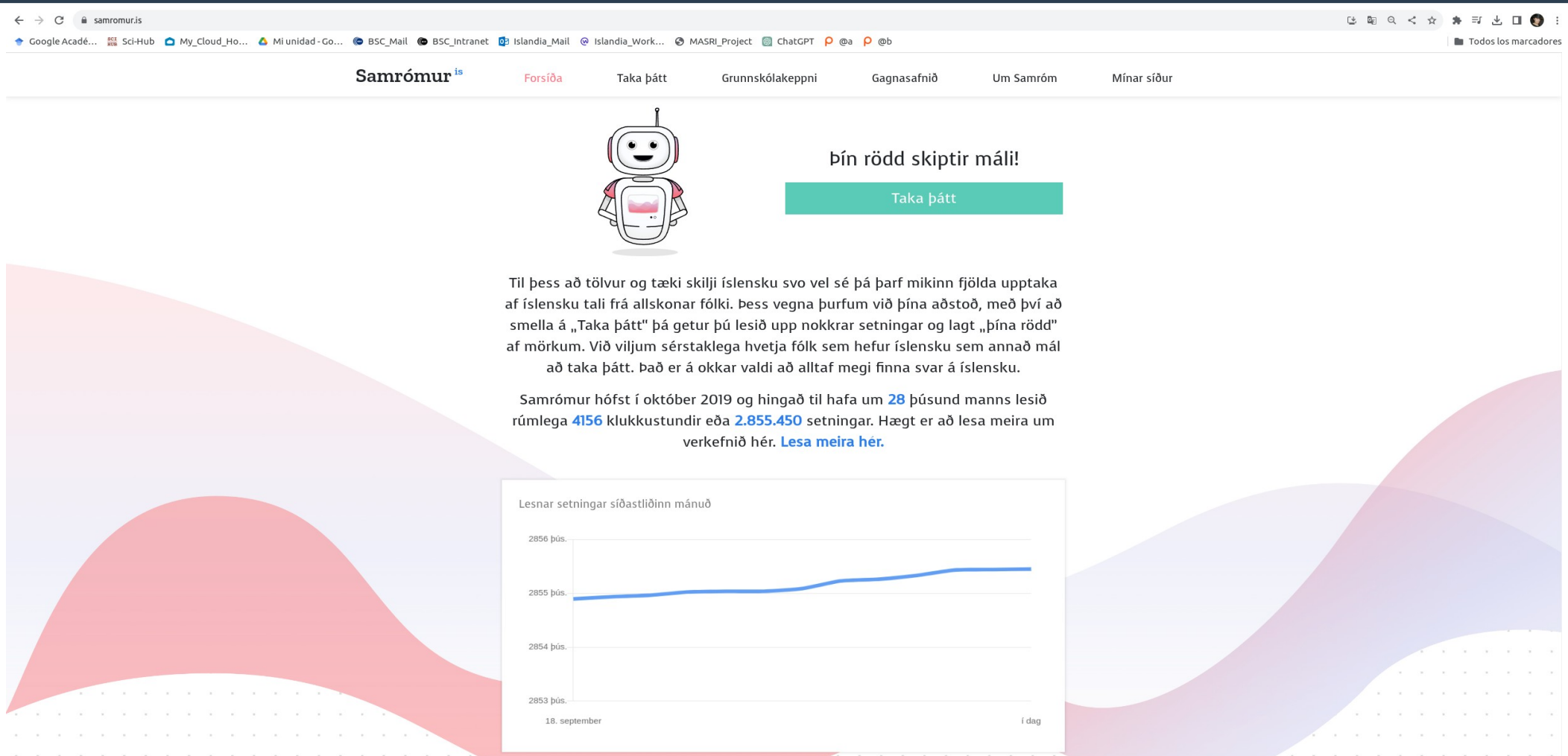
Samrómur Milljón: An ASR Corpus of One Million Verified Read Prompts in Icelandic

By Carlos Daniel Hernández Mena

samromur.is

The Samrómur Platform



Language technology programme for Icelandic 2019-2023

L2 Speakers with Samrómur

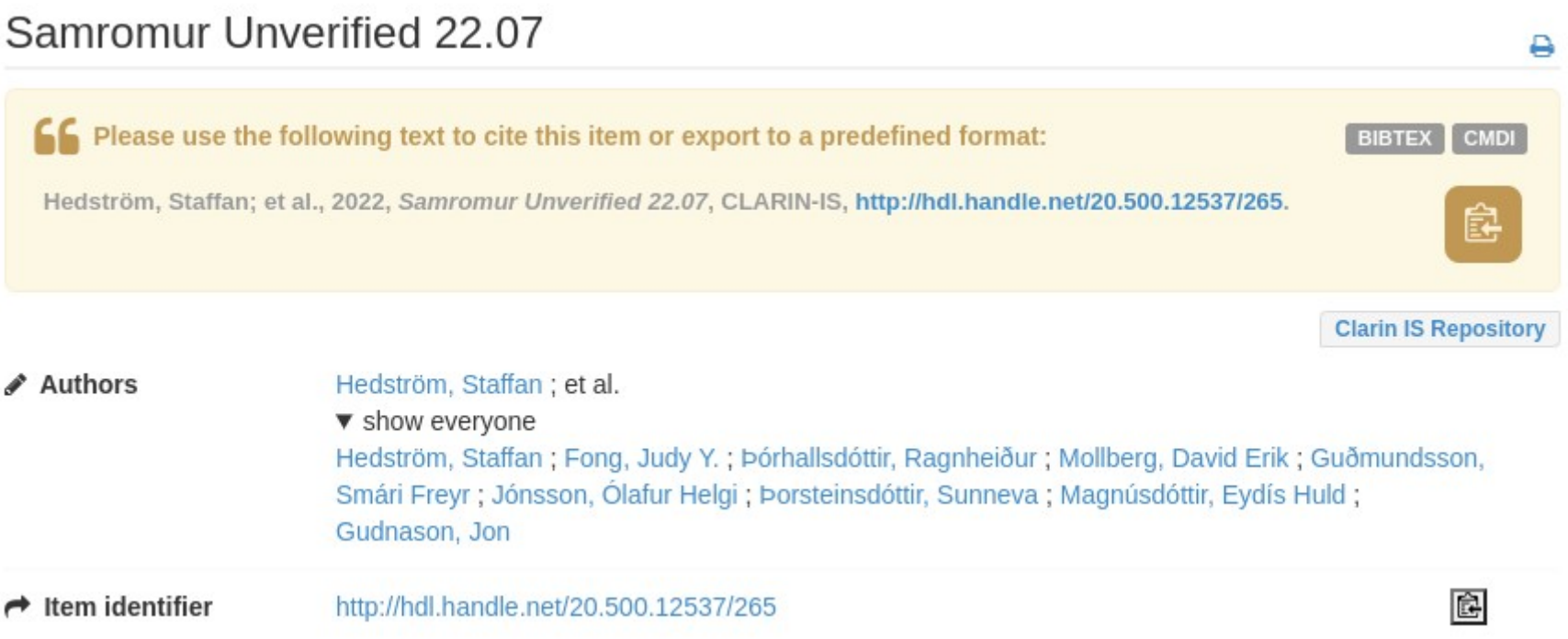
Computer-assisted pronunciation training in Icelandic (CAPTinI): developing a method for quantifying mispronunciation in L2 speech

Catlin Richter[1], Branislav Bédi[2], Ragnar Pálsson[3], and Jón Guðnason[4]

The CAPTinI Project

Samrómur Milljón

Samrómur Unverified 22.07



Samromur Unverified 22.07

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Hedström, Staffan; et al., 2022, *Samromur Unverified 22.07*, CLARIN-IS, http://hdl.handle.net/20.500.12537/265.

Clarin IS Repository

Authors Hedström, Staffan ; et al.
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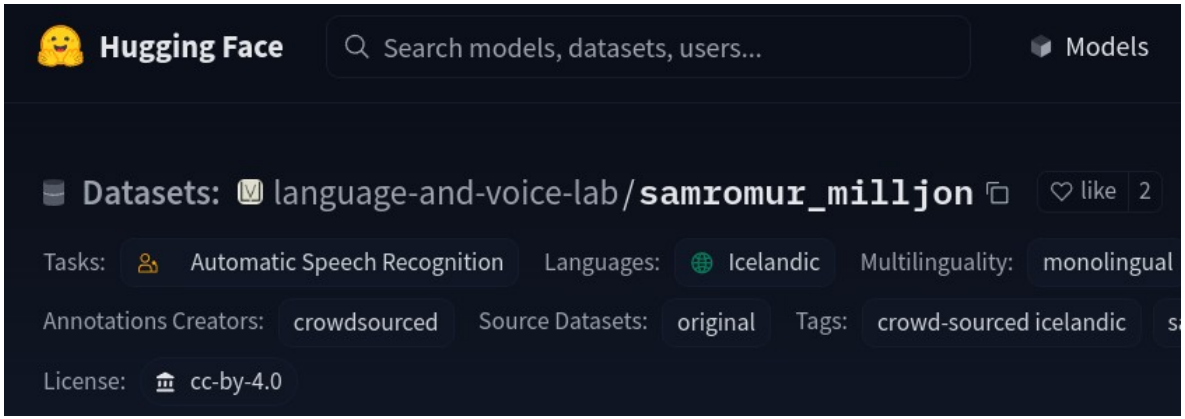
Hedström, Staffan ; Fong, Judy Y. ; Þórhallsdóttir, Ragnheiður ; Mollberg, David Erik ; Guðmundsson, Smári Freyr ; Jónsson, Ólafur Helgi ; Þorsteinsdóttir, Sunneva ; Magnúsdóttir, Eydís Huld ; Gudnason, Jon

Item identifier http://hdl.handle.net/20.500.12537/265

2,159,314 (2,233 hours) speech recordings in Icelandic that are essentially unverified!

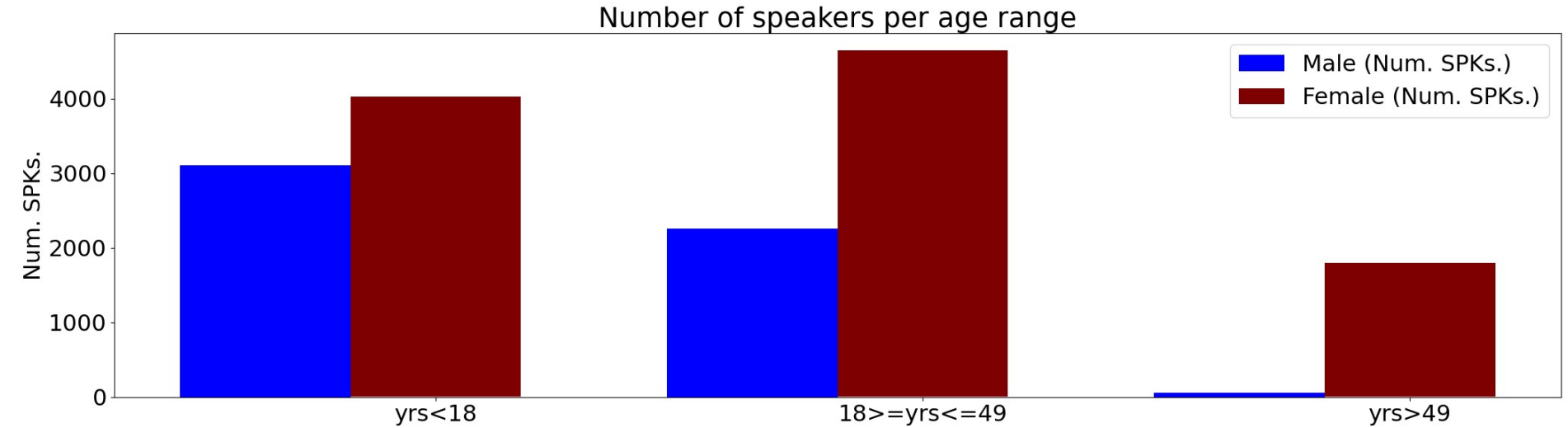
Corpus Characteristics

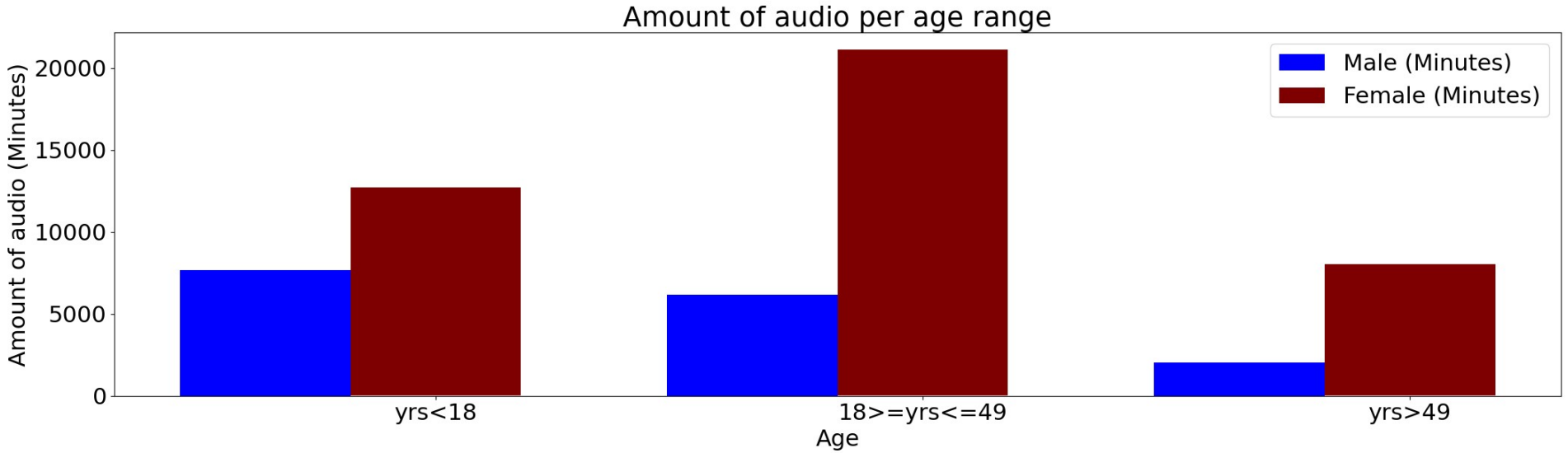


- 1,002,157 speech recordings
- 967 hours
- 16,604 unique speakers
- Range of age 4 to 79 years old
- Verified with NeMo, Wav2Vec2, Whisper and Faster-Whisper.

Gender	Female	Male	UNK
Duration	697h22m	264h28m	5h16m
Utterances	714,564	282,499	5,094
Speakers	10,447	5,948	209

Ranges of Age





The Verification

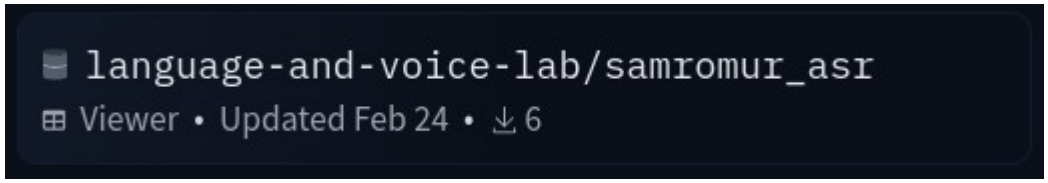
Data for the verification models

514 hours

NeMo

119 hours

Wav2Vec2

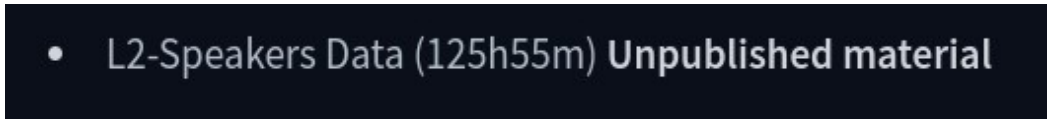


114 hours

Whisper

127 hours

Faster-Whisper



125 hours

875 + 125 hours of training data in a GPU Tesla A100 !

Verification with NeMo

carlosdanielhernandezmena/**stt_is_quartznet15x5_ft_ep56_875h**

- Samrómur 21.05 (114h34m)
- Samrómur Children (127h25m)
- Malrómur (119hh03m)
- Althingi Parliamentary Speech (514h29m)

875 hours

- Trained with 875 hours
- 2 million recordings in 7 hours
- No language model used
- 348,295 Perfect Matches

Verification with Wav2Vec2

carlosdanielhernandezmena/**wav2vec2-large-xlsr-53-icelandic-ep10-1000h**

- Samrómur 21.05 (114h34m)
- Samrómur Children (127h25m)
- Malrómur (119hh03m)
- Althingi Parliamentary Speech (514h29m)
- L2-Speakers Data (125h55m) **Unpublished material**

1,000 hours

- Trained with 1,000 hours
- 2 million recordings in 7 days
- No language model used
- 1,002,218 Perfect Matches

Verification with Whisper

language-and-voice-lab/**whisper-large-icelandic-30k-steps-1000h**

- Samrómur 21.05 (114h34m)
- Samrómur Children (127h25m)
- Malrómur (119hh03m)
- Althingi Parliamentary Speech (514h29m)
- L2-Speakers Data (125h55m) **Unpublished material**

1,000 hours

- Trained with 1,000 hours
- 2 million recordings in 36 days
- Corrupted copy of the model!
- 138,992 transcriptions in 2.5 days.
- 18,839 Perfect Matches!

This issue motivated the creation of the Faster-Whisper Model

Verrification with Faster-Whisper

language-and-voice-lab/**whisper-large-icelandic-30k-steps-1000h-ct2**

- Samrómur 21.05 (114h34m)
- Samrómur Children (127h25m)
- Malrómur (119hh03m)
- Althingi Parliamentary Speech (514h29m)
- L2-Speakers Data (125h55m) **Unpublished material**

1,000 hours

This model was created from the Whisper model shown in the previous slide.

863,220 Perfect Matches!

This model was created with 2 lines of code!

Verification Results

audio audio	speaker_id string	gender string	age string	duration float32	verified_with string	normalized_text string

Sys.	Matches	Percent.
V+N+F	325,713	32.50%
V+N+W	4,449	0.44%
V+F	537,453	53.62%
V+N	18,072	1.80%
V+W	14,390	1.43%
V	102,080	10.18%

- V = Wav2Vec2
- N = NeMo
- W = Whisper
- F = Whisper-Fast

More than 80% of the data was verified by at least 2 systems!

Models trained with Samrómur Milljón

The Wav2Vec2 Model trained with Samrómur Milljón

language-and-voice-lab/**wav2vec2-large-xlsr-53-icelandic-ep30-967h**

Dataset	V. M.	S. M.
Samrómur (Test)	9.847%	7.698%
Samrómur (Dev)	8.736%	6.786%
Samrómur Children (Test)	9.391%	6.467%
Samrómur Children (Dev)	6.055%	4.234%
Malrómur (Test)	5.643%	6.631%
Malrómur (Dev)	6.156%	5.836%
Althingi (Test)	11.437%	17.904%
Althingi (Dev)	11.093%	17.931%

V.M. = Verification Model | S.M. = Samrómur Milljón Model

The Whisper Models trained with Samrómur Milljón

language-and-voice-lab/**whisper-large-icelandic-62640-steps-967h**

Dataset	V. M.	S. M.
Samrómur (Test)	8.479%	7.762%
Samrómur (Dev)	7.299%	7.035%
Samrómur Children (Test)	7.743%	7.047%
Samrómur Children (Dev)	4.591%	4.425%
Malrómur (Test)	5.110%	11.511%
Malrómur (Dev)	5.286%	11.000%
Althingi (Test)	8.250%	16.189%
Althingi (Dev)	7.998%	16.007%

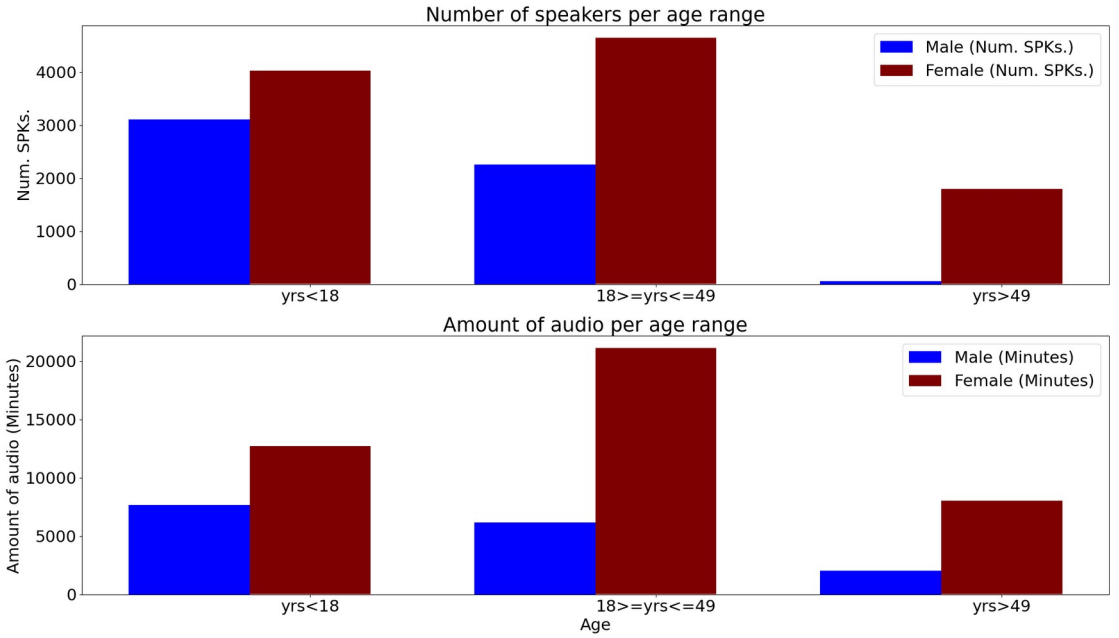
V.M. = Verification Model | S.M. = Samrómur Milljón Model

language-and-voice-lab/**whisper-large-icelandic-62640-steps-967h-ct2**

Conclusiones & Further Work

Further Work

- Verify the rest of the data of “Samrómur Unverified 22.07”.
- Organize collection campaigns to balance the data that needs to be balanced.
- Verify other information of the corpus apart from the transcriptions.



Conclusions

However, despite the pending tasks, we strongly think that the work presented in this paper is a relevant contribution to the speech technologies in Icelandic, a language that will not be under represented any more.

Thank you!