

An Open Source Web Reader for Under-Resourced Languages

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Summary

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Motivation

Language technology is only useful if people use it

Language technology should be accessible by all

Divorcing Language technology availability from large companies

Goal: Create a tool usable by people for free

Solution: An Open Source Web Reader



Design considerations

- Usable by all users, including with impaired eyesight
- Embeddable with existing websites
- Open source
- Simple user friendly interface
- Good latency
- Variable text lengths (legal documents are long)
- Focus on Icelandic in the Icelandic market
- Integrate with separate TTS backends



Example TTS API call

- HTTPS request
- Similar request content across TTS APIs
 - Tiro TTS (Icelandic only)
 - AWS Polly

```
{  
  "Engine": "standard",  
  "LanguageCode": "is-IS",  
  "LexiconNames": [ ],  
  "OutputFormat": "pcm",  
  "SampleRate": "22050",  
  - "SpeechMarkTypes": [  
    "word"  
  ],  
  "Text": "Halló! Ég er gervimaður.",  
  "TextType": "text",  
  "VoiceId": "Alfur"  
}
```



TTS web service

- Tiro TTS web API
 - } HTTP Requests, usable by other apps
 - } SSML for customization
 - } 4 Icelandic voices
 - Karl and Dora
 - } Made a decade ago
 - Álfur and Diljá
 - } New from Talrómur Icelandic TTS dataset
- <http://hdl.handle.net/20.500.12537/104>

Álfur and Diljá Voices



- 1st Iteration
 - FastSpeech2 implementation by ming024 adapted for Icelandic
 - } MelGAN Vocoder
 - } Sequitur G2P for phonetic transcriptions
 - } Naive text normalization
 - } Problems producing single word utterances
 - } Published on Icelandic CLARIN
- 2nd Iteration
 - ESPNet FastSpeech2 implementation
 - } Parallel WaveGAN and multi-band MelGAN trained
 - } Abbreviations are expanded
 - } G2P through LSTM encoder-decoder S2S model
 - } Published on HuggingFace



Web Reader User Interface

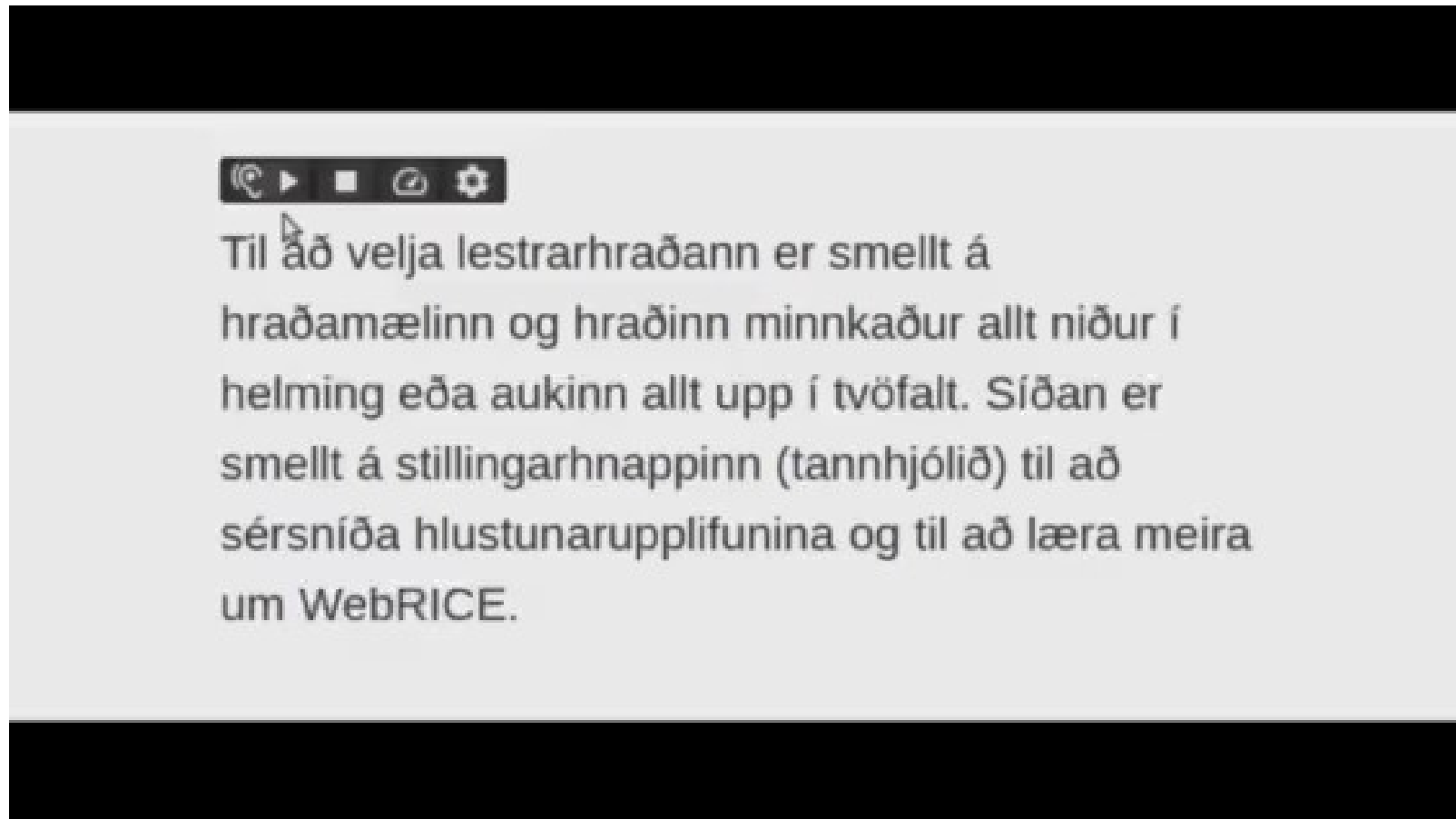


美國佔北美洲一大片，東臨大西洋，西至太平洋。大概 12,000 年前第一個人嚟到呢片大陸嘅。佢哋可能係經由俄羅斯去到阿拉斯加。1492年，哥倫布航海發現呢片大陸，跟住歐洲人就喺呢度定居。

Play/Listen, Stop, Speed (speedometer), & Settings Buttons



Using the Web Reader, Icelandic Example



Availability



The code base and documentation are available on github under Apache 2.0:

<https://github.com/cadia-lvl/WebRICE>

Make TTS for the people, not just researchers



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Main Takeaways

The code base and documentation are available on github under Apache 2.0:
<https://github.com/cadia-lvl/WebRICE>

Email: webrice@ru.is

Adding web readers to websites embeds under-resourced languages in daily use, in this example, Icelandic

Future work

- Browser Plugins: Chrome, Edge/Chromium Based, Firefox

- Wordpress plugin

- More TTS APIs and voices, in browser and companies

- Features: highlighting, volume control, extensive SSML support, streaming