

# WebRICE - An Open Source Web Reader for Under-Resourced Languages

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# Summary

- Goal
- Background
- Using the Web Reader
- Adding a language API to our Web Reader, Example
- Everything behind Our Web Reader
- Thanks and Acknowledgements
- Main Takeaways and Future Work



# 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: WebRICE - An Open Source Web Reader



# Design considerations

- Usable by all users, including with impaired sight
- 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



# Álfur and Diljá Voices

- 1<sup>st</sup> Iteration
  - FastSpeech2 implementation by mind024 adapted for Icelandic
    - } MelGAN Vocoder
    - } Sequitur G2P for phonetic transcriptions
    - } Naive text normalization
    - } Problems producing single word utterances
    - } Published on Icelandic CLARIN
- 2<sup>nd</sup> 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



Webrice.is  
Veflesari.is



# Availability

The code base and documentation is available on GitHub under Apache 2.0:

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

Make TTS for the people, not just researchers



# Thanks and Acknowledgements

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# Main Takeaways

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

Email: [webrice@ru.is](mailto:webrice@ru.is) or lvl@judyyfong.xyz

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, better SSML support, streaming