

Further development of a web application for the annotation of specific linguistic features

Donghwa Park

Informatics
Eberhard Karls Universität Tübingen

Presentation, 08.04.2019

Table of Contents

1 Motivation

2 Approach

3 Evaluation

4 Bonus

Table of Contents

1 Motivation

2 Approach

3 Evaluation

4 Bonus

- Many children with reading and writing disorders
- Recognition of syllable important
- Syllable-based reading exercise can help
- Web application considered that generates such exercise texts
- Aimed to help therapists, teachers, parents and children

Starting position

- COAST: Web application that was developed with the previously described motivation
- Problem: It only supports German, some more helpful functions (dictionary, audio pronunciation) can be added and the usability can be improved

- English support using CELEX2 (that was used for German)
- Dictionary Service (Definition function & Audio pronunciation function)
- Other modifications to improve usability

Table of Contents

1 Motivation

2 Approach

3 Evaluation

4 Bonus

- Definition function
- Audio pronunciation function
- For analyzed text (in the pop-up annotation)
- Separate dictionary service for free look-up

Definition function

- WordNet: Lexical database of English from Princeton University Department of Computer Science
- WordNet as words' definition database
- Database creation using SQLAlchemy
- Python script 'DefinitionService' to get definition and synonyms
- For frontend, 'dictionary' function to send HTTP Request

Audio pronunciation function

- Included in dictionary service
- gTTS (Google Text-to-Speech) python library
- Audio data is binary
- For HTTP Request json format is used
- Json doesn't directly support binary data
- String → MP3 file → Audio data (binary) → String in Base 64

Dictionary Service backend

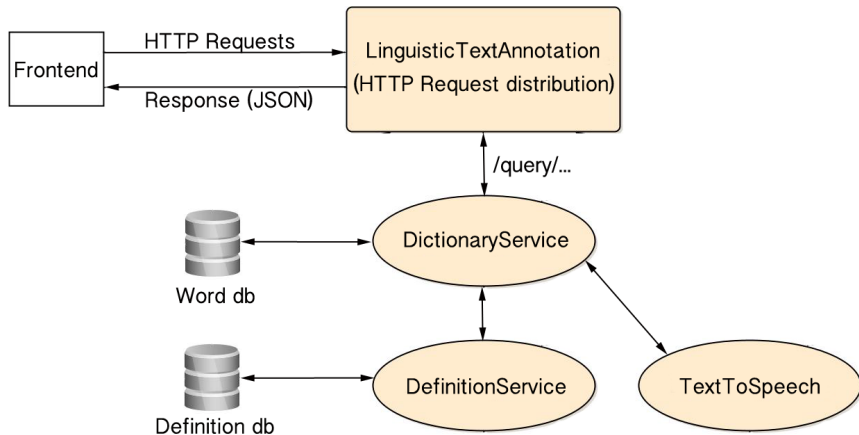


Table of Contents

1 Motivation

2 Approach

3 Evaluation

4 Bonus

English text generation

No artist has ethical sympathies . An ethical sympathy in an artist is an unpardonable mannerism of style . Thought and language are to the artist instruments of an art . Vice and virtue are to the artist materials for an art .

Diversity of opinion about a work of art shows that the work is new , complex , and vital . When critics disagree , the artist is in accord with himself .

No art-ist has eth-i-cal sym-pa-thies . An
eth-i-cal sym-pa-thy in an art-ist is an
un-par-don-able man-ner-ism of style . Thought
and lan-guage are to the art-ist in-stru-ments of
an art . Vice and vir-tue are to the art-ist
ma-te-ri-als for an art .
Di-ver-si-ty of o-pin-ion a-bout a work of art
shows that the work is new , com-plex , and
vi-tal . When crit-ics dis-a-gree , the art-ist is
in ac-cord with him-self .

on annotation

no art-ist has eth-ical syn

artist

Annotate ☒

Stress pattern:

art | et | | (unstressed)

Hyphenation:

art-ist

(Separate syllables with "-")

TAKE OVER THE SAME WORDS

Part of speech: Noun
Lemma: artist
Definition:
a person whose creative work shows
sensitivity and imagination
Synonyms:
creative person
Listen to pronunciation:

0:00 / 0:01

separate service

Dictionary Service

Enter a word to see its definition or to listen to its pronunciation.

Word: man

Definition:

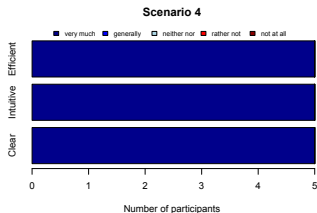
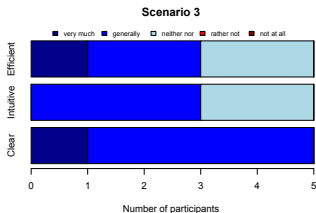
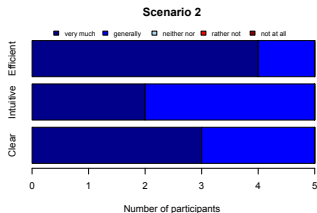
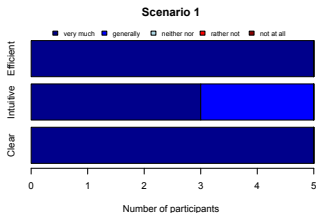
an adult person who is male (as opposed to a woman); "there were two women and six men on the bus"; a male person who plays a significant role (husband or lover or boyfriend) in the life of a particular woman; "she takes good care of her man"; an adult male person who has a manly character (virile and courageous competent); "the army will make a man of you"

Synonyms:

adult male, serviceman, military man, military personnel, valet, valet de chambre, gentleman, gentleman's gentleman, homo, human being, human, world, human race, humanity, humankind, human beings, humans, mankind, piece

Listen to pronunciation:

0:00 / 0:00



Conclusion

- Generation of English exercise texts successful
- Usability improved through modifications
- Font settings can be more approachable
- Further development in other languages possible
- Word database can be extended

Table of Contents

1 Motivation

2 Approach

3 Evaluation

4 Bonus

How to deploy



- Install Python3, Flask, SQLAlchemy, SQLite, Pyphen, Spacy, gTTS on the server
- Deploy the backend
- Adjust variable `SERVER_URL` in `app_service.dart`
- Make the frontend deployable using command 'webdev build' and deploy the files under `build/web` directory (See [here](#) and [here](#) for more information.)

Thanks for your attention!
Questions & Live-demo