BetterRead

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Goals

BetterRead’s main goal is to create an accessibility tool meant to make browsing the web quicker and easier for those with visual impairments. BetterRead uses artificial intelligence and machine learning to pick out the important parts of web pages even on pages with no accessibility standards.

Intellectual Merits

- BetterRead uses innovative machine learning to pick out important parts of a webpage and relay them to the user
- Avoiding ads, detecting pictures, and determining importance of headlines/articles sets BetterRead apart from other popular screen readers on the market today

Broader Impacts

The main goal of BetterRead is to promote diverse internet usage by allowing vision-impaired users to navigate the internet and give them experiences similar to able-bodied users

- BetterRead directly impacts vision-impaired users and we hope to improve their experience and relationship with the internet
- Through this project, we hope to bring more awareness to the vision-impared community and the technologies available to them

Design Specifications

- Three components make up our project:
  - WebExtension
  - REST API
  - Machine Learning
- WebExtension is the user facing application
- WebExtension communicates to the machine learning model using the REST API

Design Specifications

A Better Screen Reader

A screen reader for people with vision disabilities that uses machine learning to help navigate web pages with ease and efficiency.

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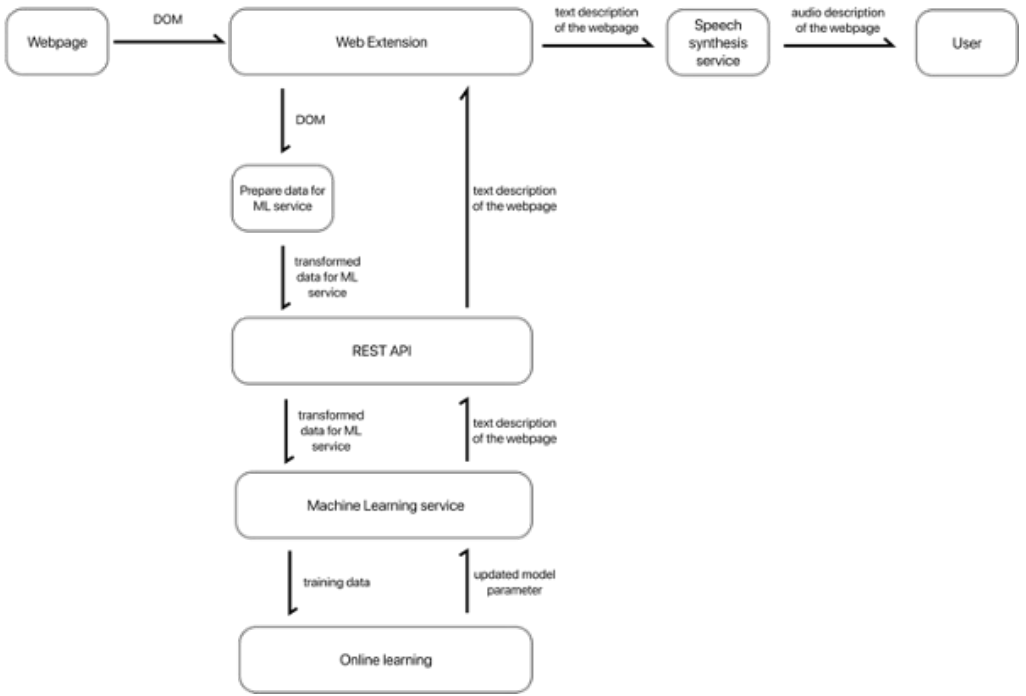

Technology

- Web Extension
  - Written in HTML/CSS/Javascript
  - Multi-platform (Chrome, Firefox, Edge)
- REST API
  - Hosted on Amazon Web Services
- Machine Learning
  - Keras Frontend for TensorFlow
  - Hosted on Amazon Web Services SageMaker

Milestones

Milestone	Description	Delivery
v 0.1	Gather Research	1/27/2021
v 0.2	Develop Web Extension	2/14/2021
v 0.3	Develop REST API	2/21/2021
v 0.4	Develop Machine Learning model	3/7/2021
v 0.5	Refine Connections, Clean up code	3/14/2021
v 1.0	Test screen reader on website for final presentation	3/23/2021

Results

- We have developed a frontend for our system that users can interact with.
- We are developing the backend API that connects the user to our machine learning service.
- We are developing the machine learning service to provide useful results for the user.
- We are in the processes of connecting each sub component to create a single cohesive system.

Challenges

- A significant challenge is designing an interface for a web extension that is accessible to people with vision impairments.
- The overcome this challenge, we researched design of existing software tools for vision impaired people.
- Another significant challenge is the development of a machine learning model that can give useful results to the user.
- To overcome this challenge, we will have to try several machine learning techniques and find the implementation that gives the best results.
- In order to achieve a well trained model, we will need good data. We have raw data, but we need to devise a method to transform our data in such a way that it will be useful and conducive to training.
- Our team is working together to overcome these challenges.

Thank you