Accent Guesser

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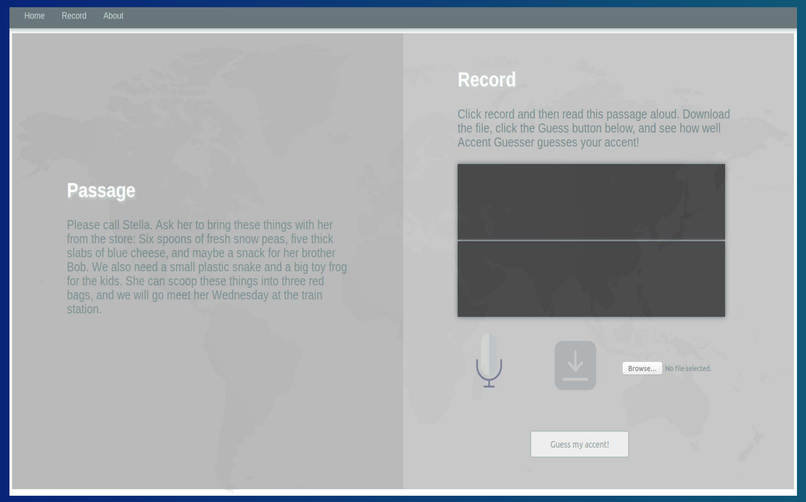
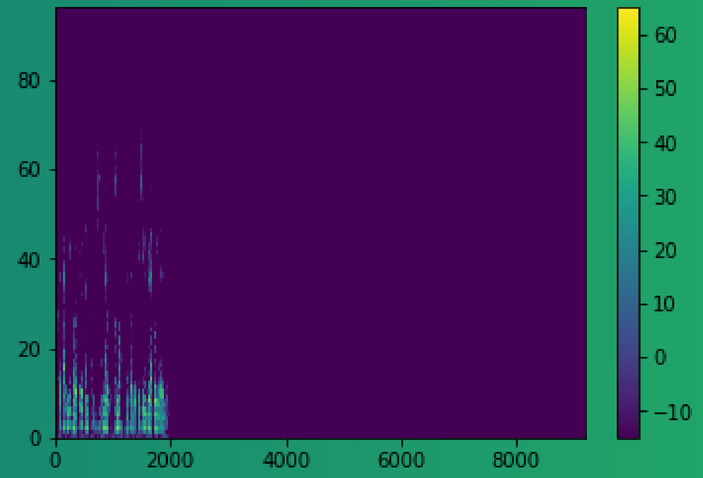


- Introduction -

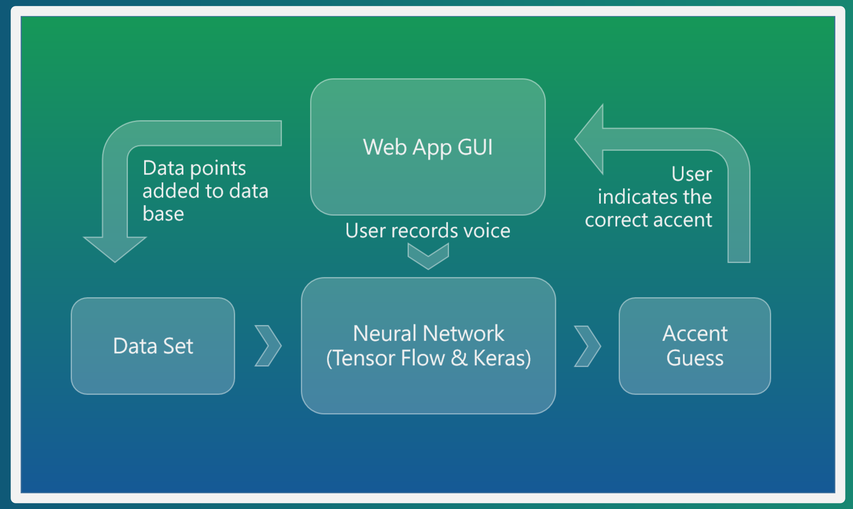
Based off of a dataset found from Kaggle (link below), we are training a convolutional neural network (CNN) to be able to detect the accent of a speaker reading the below passage in English. Utilizing a graphical user interface (GUI), the user has the ability to record their voice and upload it to be tested, and then be able to see a guess. After this, the user has the option to indicate whether the guesser was correct or not, and the CNN will be able to use these recordings as future datasets to train on.



Visualization of a sample recording processed into a MEL spectrogram

- Hit Record -

Before running the accent guesser on your system, follow the steps in the README.md in order to install the appropriate packages. Once these are installed, navigate to the accent guesser webpage by running web_app.py, and follow the instructions onscreen to reach the screen above. In order to have the accent guesser take in your recording, you must start and stop your recording; it will then save to your computer. Using the browse button on the webpage, locate the file and upload it, and then have it guess!



- The Convolutional Magic of a Neural Network -

Our Accent Guesser runs on a convolutional neural network (CNN) using Keras and Tensorflow. After training on thousands of audio recordings from the Speech Accent Archive, the CNN develops a system of equations which should classify audio data based on the speaker's accent. The training process labels these, processes it against a system of weights, and makes a guess. Calculated error adjusts weights, and then the process is repeated until a sufficient level of accuracy is reached. A Flask based web-app acts as the GUI, which records and asks for feedback on the CNN's guess to train on the new recordings.

- Next Steps -

To expand on this project in the future, and reflect on the process thus far, the bullets below outline the next steps we would take to improve the accent guesser:

- Massively expand database, scraping data from other speech archives
- Cosmetic and technical touch-ups on website
- Get website live on the Internet for training and proper storage of network feedback

- Passage -

"Please call Stella. Ask her to bring these things with her from the store: Six spoons of fresh snow peas, five thick slabs of blue cheese, and maybe a snack for her brother Bob. We also need a small plastic snake and a big toy frog for the kids. She can scoop these things into three red bags, and we will go meet her Wednesday at the train station."

- Acknowledgements-

Many thanks to GitHub user *drscotthawley* for the usage of his audio classifier. Thank you as well to Chris Wilson and Matt Diamond for the JavaScript providing in-browser audio recording capabilities.