



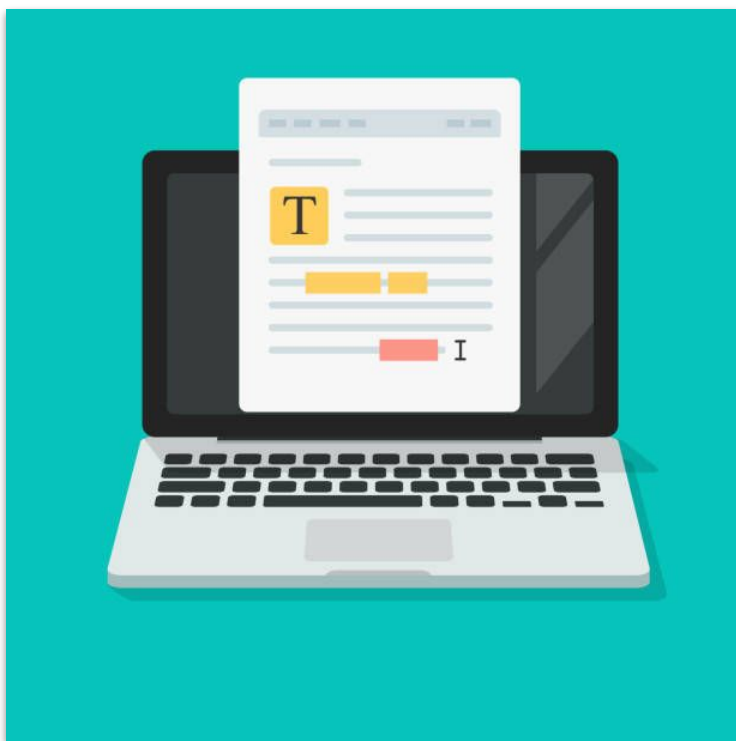
Introduction

Email Assist

We are making a Email Tool to help people with cognitive disabilities. Email already has issues and this problems are likely worse for those with cognitive disabilities.

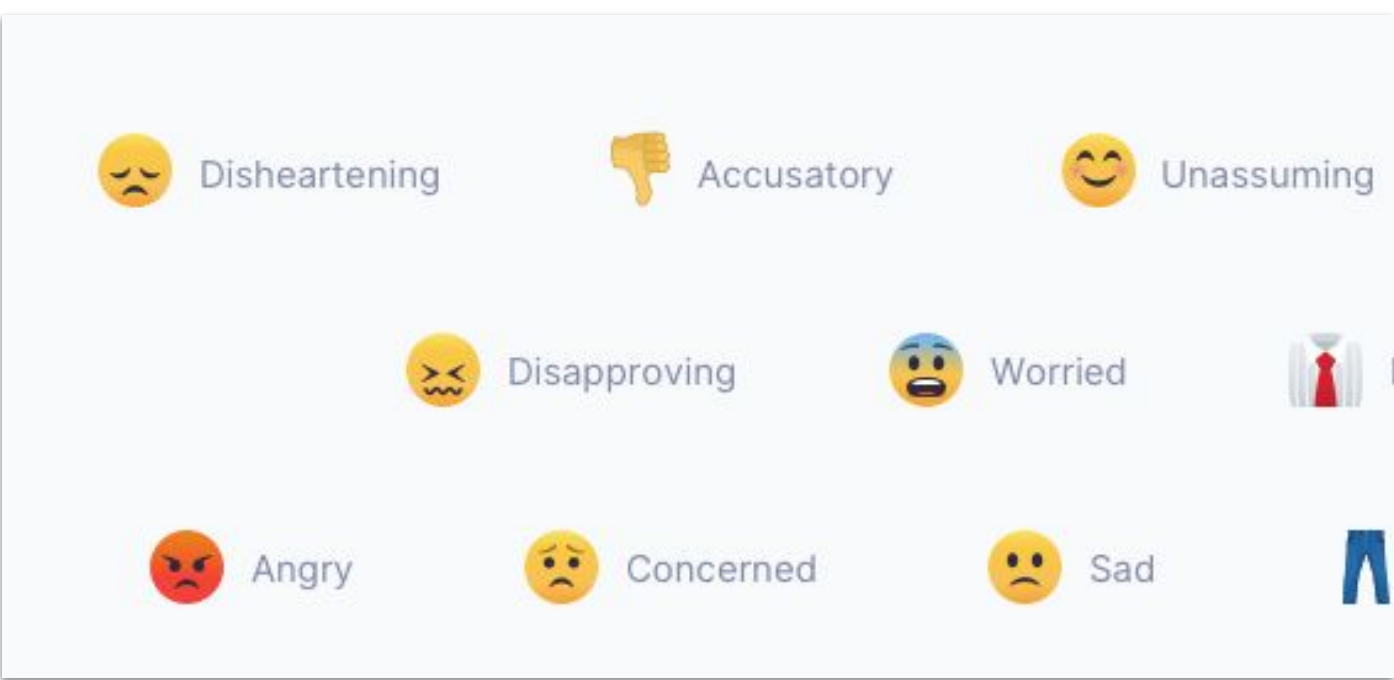
Well Crafted Emails are Difficult to Write

- Correct Language Use/Flow
- Brevity
- Email Formatting
- Information Accuracy
- Appropriate Tone



Email Sentiment can get lost in Translation

- 50% of Emails are Misunderstood
- Recipients of Two Word Emails often Interpret them as sarcasm (“Great Work”, “Good Job”)
- Source: *Can You Hear Me? How to Connect with People in a Virtual World*
- Grammarly’s “Tone Detector” was built out specifically to improve tone transference in email



Reading Long Emails and Writing the Perfect Email can be Overwhelming

- Long Emails can be a major source of anxiety
- This can make it hard to distill core info from the email.
- *LA Livingstone 2020* A Paper on Autism and Electronic Communication references the atypical communication style of ASD employees and the anxiety it can cause.



Methodology/Final Models

Email Completion

We currently use GPT-3 Davinci to reformat blocks of text in a formatted concise email. Using the standard GPT-3 model we had >95% accuracy without any fine-tuning and the prompt below:

```
prompt := ·"Write ·a ·well ·formate  
d ·email ·with ·a ·salutation ·and ·  
a ·closing ·in ·a ·friendly ·tone ·b  
ased ·on ·this ·email ·draft:  
·Ryan ·thank ·you ·for ·having ·me ·  
on ·Saturday.  
·This ·is ·James ·from ·work.  
·Please ·reply ·quick."
```

[\n\nDear Ryan,\n\nI hope this message finds you well', ' I wanted to thank you for having me over on Saturday', ' It was great to catch up and I really appreciate you taking the time to host me', "\n\nI'm writing to you from work and If you can please reply quickly", '\n\nThanks again for your hospitality', '\n\nSincerely,\n\nJames']

Summarization

We used ‘csebuetnlp/mT5\_multilingual\_XLSum’ to generate summaries  
This model is trained on the XLSum data set which is 1.5 M pairs of BBC Articles and Professionally Written Summaries. We had >80% accuracy on test data.

[I am writing this email to discuss your performance on the DevOps team. I have been monitoring your work and noticed that you recently had a major misstep with the CI/CD pipeline. This incident caused significant disruption in our workflow, and I am disappointed in your lack of attention to detail in this situation.....]

250 Word Email -> 21 word summary

A misstep with the CI/CD pipeline has caused significant disruption in the workplace, according to a senior Dev Ops Engineer.

Sentiment Analysis

We fine-tuned BERT specifically on 1,000 different emails that were scored on a variety of emotions. We used GPT-3 to generate edge emotion emails and used some emails from the Enron Data Set. We had an accuracy score of >85% across all emails. Below is a sample output, we return the highest score.

```
Output:  
[[{'label': 'anger', 'score': 0.004419783595949411},  
 {'label': 'disgust', 'score': 0.0016119900392368436},  
 {'label': 'fear', 'score': 0.0004138521908316761},  
 {'label': 'joy', 'score': 0.9771687984466553},  
 {'label': 'neutral', 'score': 0.005764586851000786},  
 {'label': 'sadness', 'score': 0.002092392183840275},  
 {'label': 'surprise', 'score': 0.008528684265911579}]]
```

Next Steps/Demo

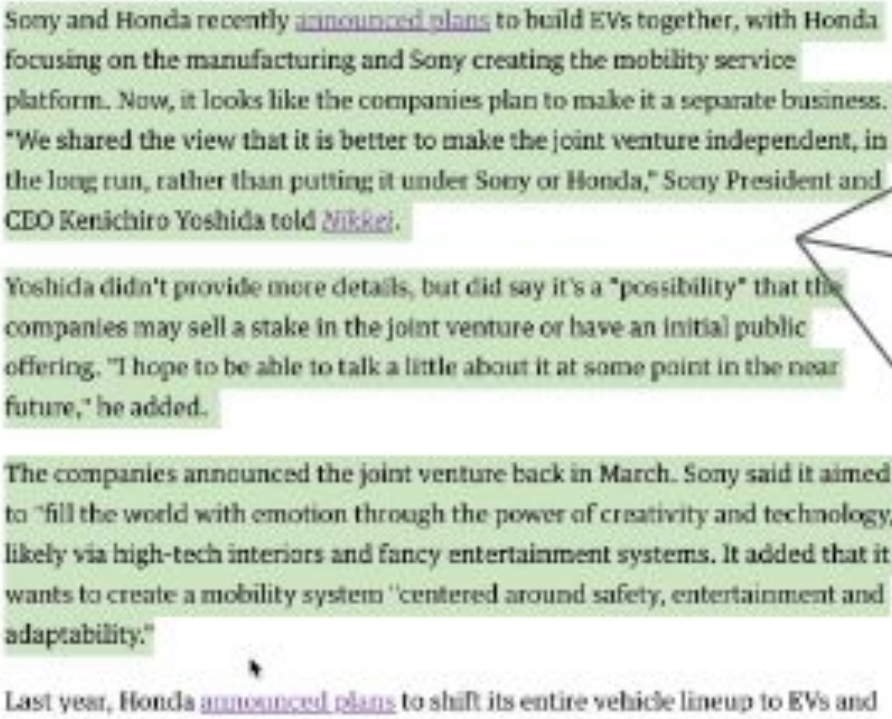
Current Demo/Follow-Along

By our poster we will have a demo of python flask app demo of our models. The UI will be 3 text boxes. Time permitting we will also have a hosted version and have a URL on a QR code.

Next Steps

1. We want to change our UI to be a Chrome Extension and work with a Non-Profit on Disability Centric Design
2. We want to further fine tune our summarization model to get increased accuracy. Some emails are called transcripts or have made up roles/last names which could lead to user error
3. We want to distribute this to people who can actually use/benefit from it

Highlight a Block of Text



Summarization  
Sentiment  
Email Completion

Team



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