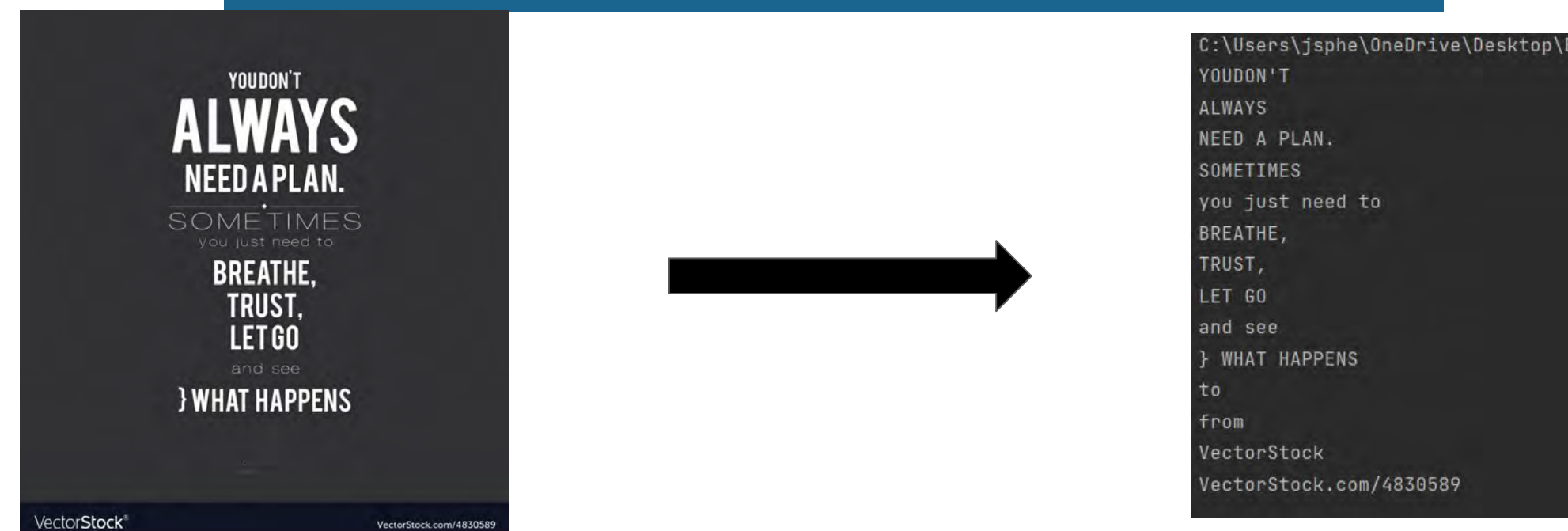


Website Accessibility Achieved Through Combining AI Fields

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Image Processing

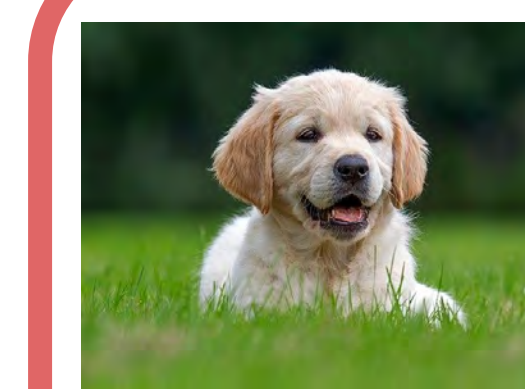


- A Neural Network trains on at least 100 images containing text that it can have new images inputted to read¹
- The program then outputs the text on the image in descending order
- This process isn't just for text however
- Can be used to output labels for images based on previous training (ie. identify image as one of a frog)¹

Our Goal

- Combining the two powerful fields of AI, GPT3 and Image Processing, we can accomplish great things
- We can develop a program that will process an image which normally outputs a single word classifying what is in the image, then GPT3 can take that word and generate a more descriptive sentence around that word
 - This idea essentially automatically creates a caption for an image
 - This can then be used to help website become more accessible
 - A website can have all of its images be captioned to help the visually impaired be able to understand images through a text to speech system

GPT3



Dog

The big dog on the hill

- Generative Pretrained Transformer Version 3
- GPT3 performs natural language processing, which is essentially the computer understanding human language²
- This idea of NLP is extremely powerful and has unlimited applications
- This could be used to take a single word as input and make a description or sentence from it

Why

- **Websites are integrated into society**
 - Scientists find papers online
 - 85% of internet users look for information with search engines³
 - Search engine websites such as Google are consistently in the top 10 most accessed websites³
- **Worldwide issue**
 - Australia, Canada, Denmark, France, Japan, and US have website accessibility policies³
- **Diversity in accessibility needs**
 - **Visual challenges**
 - Larger font, change colors, text-to-speech
 - **Physical challenges**
 - Options other than keyboard
 - Guidance on interacting with the objects on the screen⁴



Figure 1. Improper color choices result in unreadable text

Works Cited



SCAN ME

Our Program

- Step 1: The Image Processing program (detailed in the upper-left corner) trains on a series of images given labels.
- Step 2: Once training is completed, program reads in a new image without a label and must give it one.
- Step 3: The program correctly identifies the image and outputs a string that details what is inside (ie. frog).
- Step 4: We take the same string and input it into the GPT3, which returns a more descriptive sentence: "A great, green frog."

While not very intuitive in its combination, it shows how these programs could be used to help produce text for the visually impaired to read instead of images.



"Frog"

"A great, green frog."

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