Captcha Generator for Visually Impaired

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Keywords— Include at least 5 keywords or phrases

1. Introduction

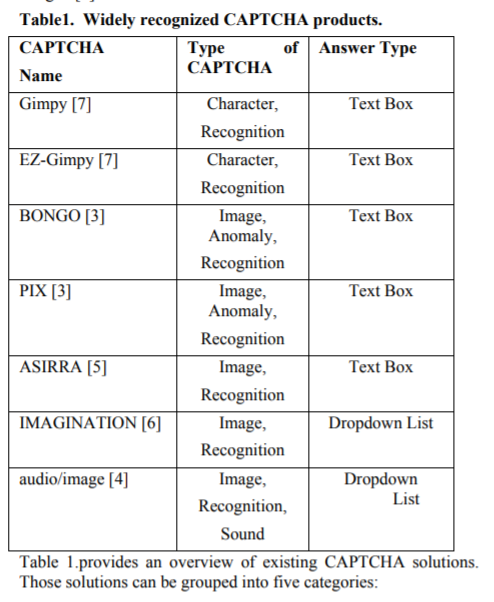
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1. Related literature

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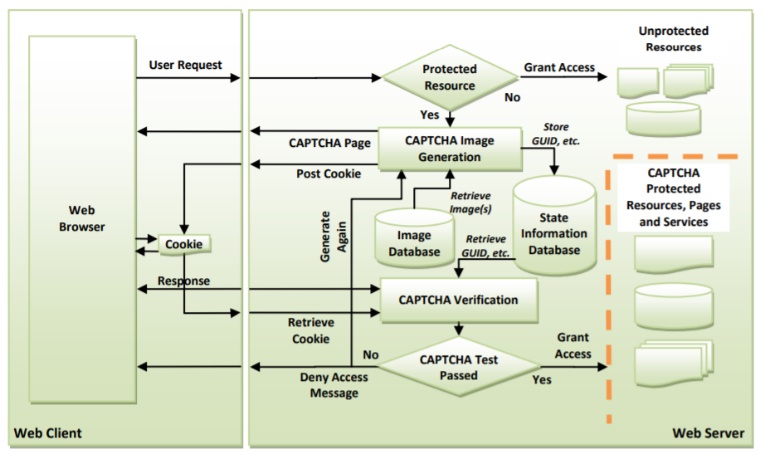
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1. Proposed methodology

A Web server can store both public and private resources, such as web pages, data saved in a database or files, or any other type of service.

Human users on the client side will be able to use it. The client computer sends a resource to the server when the user asks for it.

If the resource is not protected, it is allowed this right. If a resource is CAPTCHA protected, access is restricted. It is only given to it after passing the CAPTCHA test. as seen in the diagram



The main objective of our CAPTCHA is to make

the CAPTCHA useable and accessible for people with low vision or colour blindness

Inception v3 is a widely-used image recognition model that has been shown to attain greater

than 78.1% accuracy on the ImageNet dataset. The model is the culmination of many ideas

developed by multiple researchers over the years. It is based on the original paper:

"Rethinking the Inception Architecture for Computer Vision" by Szegedy, et. al.

The model itself is made up of symmetric and asymmetric building blocks, including

convolutions, average pooling, max pooling, concats, dropouts, and fully connected layers.

Batchnorm is used extensively throughout the model and applied to activation inputs. Loss is

computed via Softmax.

The CNN module extracts the different features present in a test image. The pre-trained CNN

system can easily identify the different objects or actions present in the test image.

2) All the features and objects are passed on to the LSTM module.

3) The Flicker8K dataset has 1200 images with all the objects clearly defined and named. The

LSTM matches the objects in the test image with those already present in the dataset. The

similar object is chosen by comparing the probability, and the one with the highest matching

statistic is chosen.

4) The entire process is repeated several times with the same image to increase the accuracy and

train the dataset in recognizing the objects or actions with different filters.

The Flickr30k dataset has become a standard benchmark for sentence-based image description.

Annotations are essential for continued progress in automatic image description and grounded

language understanding. They enable us to define a new benchmark for localization of textual entity

mentions in an image. We present a strong baseline for this task that combines an image-text

embedding, detectors for common objects, a color classifier, and a bias towards selecting larger

objects. While our baseline rivals in accuracy more complex state-of-the-art models, we show that its

gains cannot be easily parlayed into improvements on such tasks as image-sentence retrieval, thus

underlining the limitations of current methods and the need for further research.

We chose the Flicker8K dataset because-

* It is small in size. So, the model can be trained easily on low-end laptops/desktops...
* Data is properly labelled. For each image 5 captions are provided.
* The dataset is available for free.

We have mainly two types of data within this dataset

* Images
* Captions (Text)

The size of the training vocabulary is 7371. The top 10 most frequent words are

('a', 46784),('in', 14094),('the', 13509),('on', 8007),('is', 7196),('and', 6678),('dog',

6160),('with',5763),('man', 5383), ('of', 4974)

The prototype tool developed is a web-based technique. It was implemented on an a windows platform and uses simple interfaces. However, this concept can be implemented in any other platform versions, such as iOS, Android, and Windows phones.

The first interface requires users to enter their option of colour blindness, the second interface then displays images based on the selected disability and a text field to input the catcha.



Figure 3: Normal Image



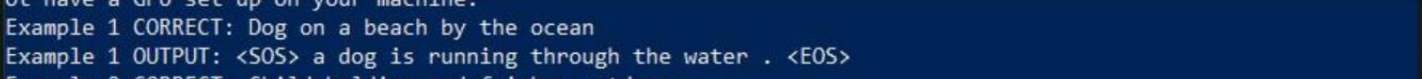
Figure 4: Red-Blind/Protanopia

1. Results

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1. discussion

To improve our project, we could-

* Using a larger dataset.
* Changing the model architecture, e.g. include an attention module.
* Doing more hyper parameter tuning (learning rate, batch size, number of layers, number of
* units, dropout rate, batch normalization etc.).
* Use the cross validation set to understand overfitting.
* Using Beam Search instead of Greedy Search during Inference.
* Using BLEU Score to evaluate and measure the performance of the model

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1. conclusion

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