
- Project Proposal -

Learning Humor with Regards to Internet Memes

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Abstract

An Internet meme is a humorous image, video, piece of text, etc., that is copied (often with slight variations) and spread rapidly by Internet users. With this project we aim to analyze what happens when current approaches to image captioning get trained to caption Internet memes instead of normal images. Specifically, our goal is to determine what common threads exist between the funniest of these images to gain insight into what features people find most humorous. This analysis will be done using machine learning methods like neural networks and will provide the framework for an auto-caption generator that should be able to produce comically viable memes from uncaptioned images.

1 Project Overview

Internet memes have been a staple of Internet culture over the past decade. They are massively shared on sites like Reddit, 9Gag, Facebook or Instagram. In general, Internet memes are created by composing text on a picture, or by putting together an image and matching text. Even though there's a strong culture around them, most memes fail to entertain people. Through this project, we want to study how current machine learning approaches produce captions for images, and then tweak them to generate humorous quotes; furthermore, we want to create a model that automatically outputs text to transform any image into a meme.

1.1 Why is this worth studying?

Making computers understand and produce humor is interesting in many ways. As we advance into a future where computers are increasingly intertwined in our day to day life, our interaction with them will increase. Improving this interaction is becoming one of the most important challenges in the computer science community. Many studies suggest that adding humor can improve our relationship and make the barrier between human and machine feel more natural; this field is known as Computational humor.

Image sharing apps and websites are amongst the most popular destinations for Internet users, and it is common for people to want to add comedic value to their posts regardless of whether they are creating a meme or simply a funny caption to make their peers laugh. Snapchat users, for example,

would likely be inclined to use a comedic auto-captioner for their images so that their friends find their snaps more entertaining. Our approach could easily be transferred to different datasets in order to gather different sentiments for genre-specific image captioning.

In addition, this project would be very useful for content creators or companies promoting their goods through social media. These people hope that their content will not go unappreciated. Suggesting statistically funny captions can improve engagement rates on posts, maximizing the effect of promotions.

1.2 Why are machine learning techniques appropriate?

Machine Learning is a fitting solution for this problem as large datasets of images need to be analyzed and abstract features need to be gathered in order to determine wherein the comedy is hidden. We then want our developed model to quickly generate new and humorous captions for images across different devices and time zones, a task specifically fit for a computer.

In addition, we want to explore how machine learning models can be trained on biased and subjective data. A funny meme to one person may not be funny to another and, as such, classifying the numerous and various tastes in content such as memes can be a tedious and complicated task for humans. However, using machine learning techniques, our model can predict patterns and classify features on its own to understand the most appropriate and effective meme for a genre. A meme genre depends on the objects in an image. For instance, if an image contains cats, then our model will classify that detail of the image and caption it accordingly to produce a funny meme. It will depend on the training data and the myriad of features it will collect on image, caption pairs in order to produce the best captions for images involving cats. Such tasks can be difficult for humans without quantitative data and a heavy reliance on subjective taste.

2 Dataset access

We will collect our data from websites that contain humorous content, especially memes. As a proof of concept we have downloaded 1000 memes from the Hot page at 9Gag. This has been done thanks to the fact that there are already some libraries available that have implemented scrapers. The example used for this sub-dataset is the npm package **9gag**. Another method for access would be the beautiful soup library for python. This library allows easy parsing of HTML, which in turn can help us grow our dataset. Another option is to use the Reddit submission datasets, a compilation of Reddit submissions. This data is also publicly available through Reddit's public API. We will utilize beautifulsoup to crawl the websites and extract the images.

3 Possible approaches

Our first focus of the project is to create a system that will learn how to generate a funny caption for a given photo. There has been a significant amount of research recently in the realm of automatic caption generation for images, so this project could work off of recent state-of-the-art systems with an additional humor aspect tied in. For instance, a system like Andrej Karpathy's NeuralTalk2 (<https://github.com/karpathy/neuraltalk2>) or Vinyals et al. Image Captioning model for TensorFlow(<https://research.googleblog.com/2016/09/show-and-tell-image-captioning-open.html>), which use a convolutional neural network to extract features from a photo and a recurrent neural network to learn the words associated with those features, can be used to read in a photo and produce not just a caption for the photo, but a caption that the viewer would find funny. Another possible approach that we could take would be to use the standard caption generator as is and feed the results into another model to translate the captions into a humorous format.

The two major features to investigate are the image itself, which would contain relevant information on what is trying to be captioned, and the meme title, which is the primary point of humor in the meme. The independent variable in this method is the number of 'likes' that an image gets on a given website. It may also be useful to determine where different memes are most popular, as humor is highly cultural and is subject to large variations for varying regions. If this overly complicates the model, then all memes outside of the United States will be filtered from the training data.