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# **Internet Meme Analysis**

**Md. Shafi-Ud-Doula**

**Department of Computer Science & Engineering,  
Begum Rokeya University, Rangpur, Bangladesh**

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# Outline

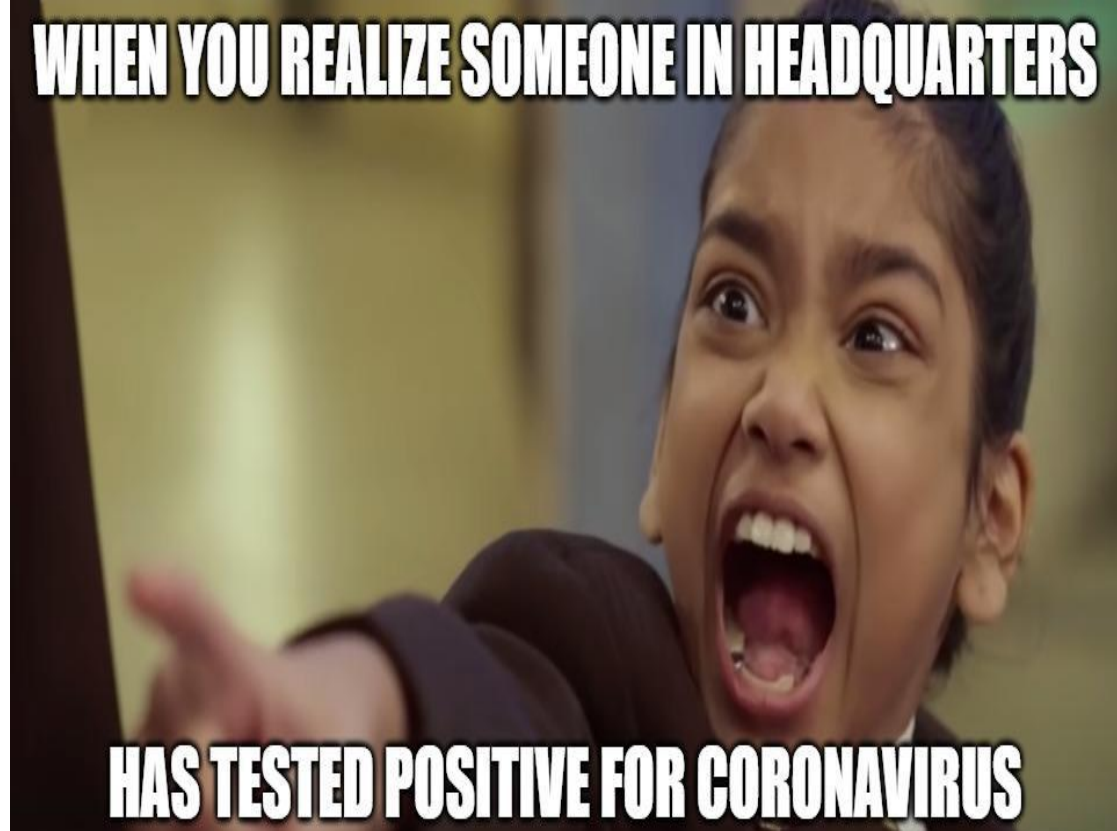
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- **Introduction**
  - **Problem Statement & Possible Solutions**
  - **Existing Works on Internet Meme Analysis**
  - **Proposed Solution**
  - **Experiment: Dataset**
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# Introduction(1/1)

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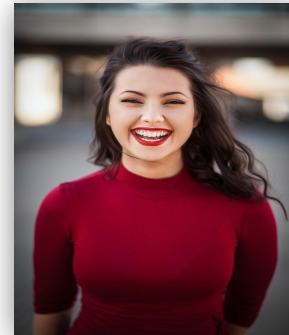
- **Internet Meme** – is a type of content that spreads virally via the internet.
- **Form of Meme** – short video, GIF or an image.
- **Purpose** – usually used for humorous purposes or to express sarcasm.
- **Internet Meme Analysis** –
  - Identification of offensive Content
  - Sentiment Analysis
  - Classification of Content



# Difficulties in Internet Meme Analysis(1/1)

- Analysis content detection have been extensively explored in a single modality such as-
  - Text
  - Image
- Combining two modalities makes meme analysis challenging.

He is good at problem solving. → +



→ +



→ ?

# Existing Works on Internet Meme Analysis(1/1)

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- - Combining visual and textual data associated with the meme[1]
  - Become difficult to devise all of the features of the meme.

# Possible Solutions(1/1)

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## ■ Intuition

- Build an Internet Meme Analyzer by dealing
  - Along with **Text data in Meme Image** we will use **Image Text Description** generated from **Visual Data of Meme**.
  - Recent techniques from the
    - **Attention Based Encoder-Decoder** (*Image Text Description*)
    - **Transformer** (*Meme Analysis*)

## Proposed Solution (1/5)

### ■ Internet Meme Analysis Framework

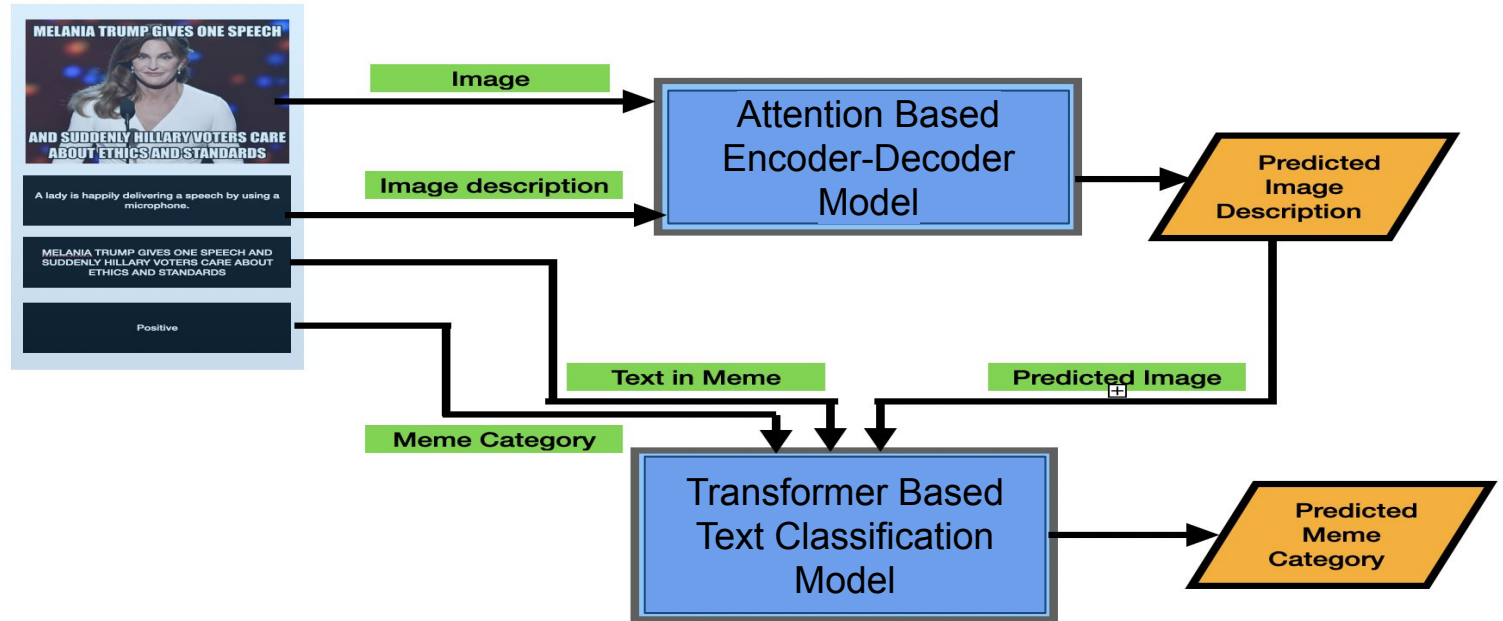


Figure: Process flow for Internet Meme Analysis

## Proposed Solution (2/5)

### ■ Internet Meme Analysis Framework

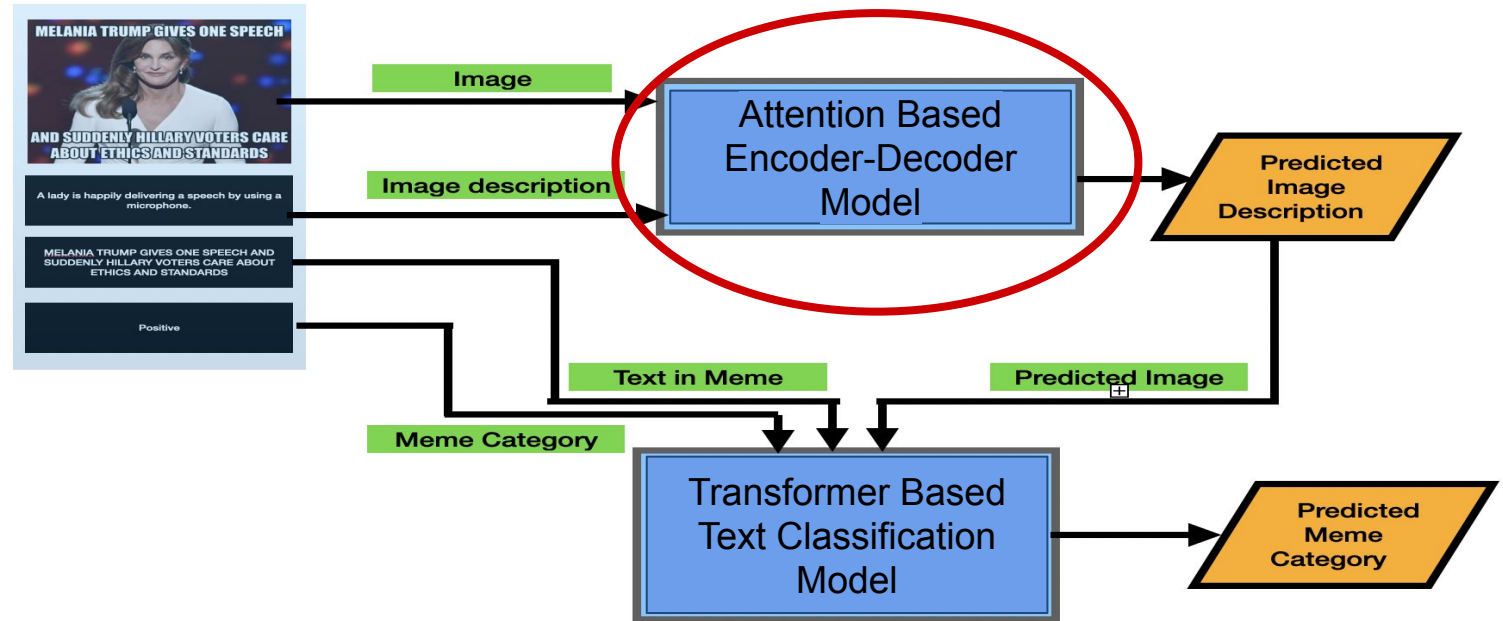


Figure: Process flow for Internet Meme Analysis



## Proposed Solution (3/5)

### ■ Attention based Encoder-Decoder Model Inspired By

- Show, Attend and Tell: Neural Image Caption Generation with Visual Attention[2]

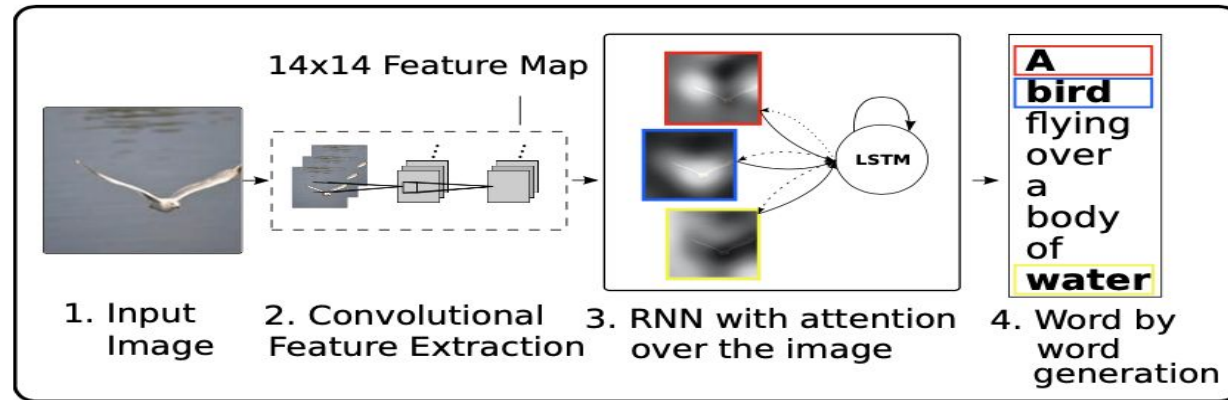


Figure: Image Caption Generation with Visual Attention

## Proposed Solution (4/5)

### ■ Internet Meme Analysis Framework

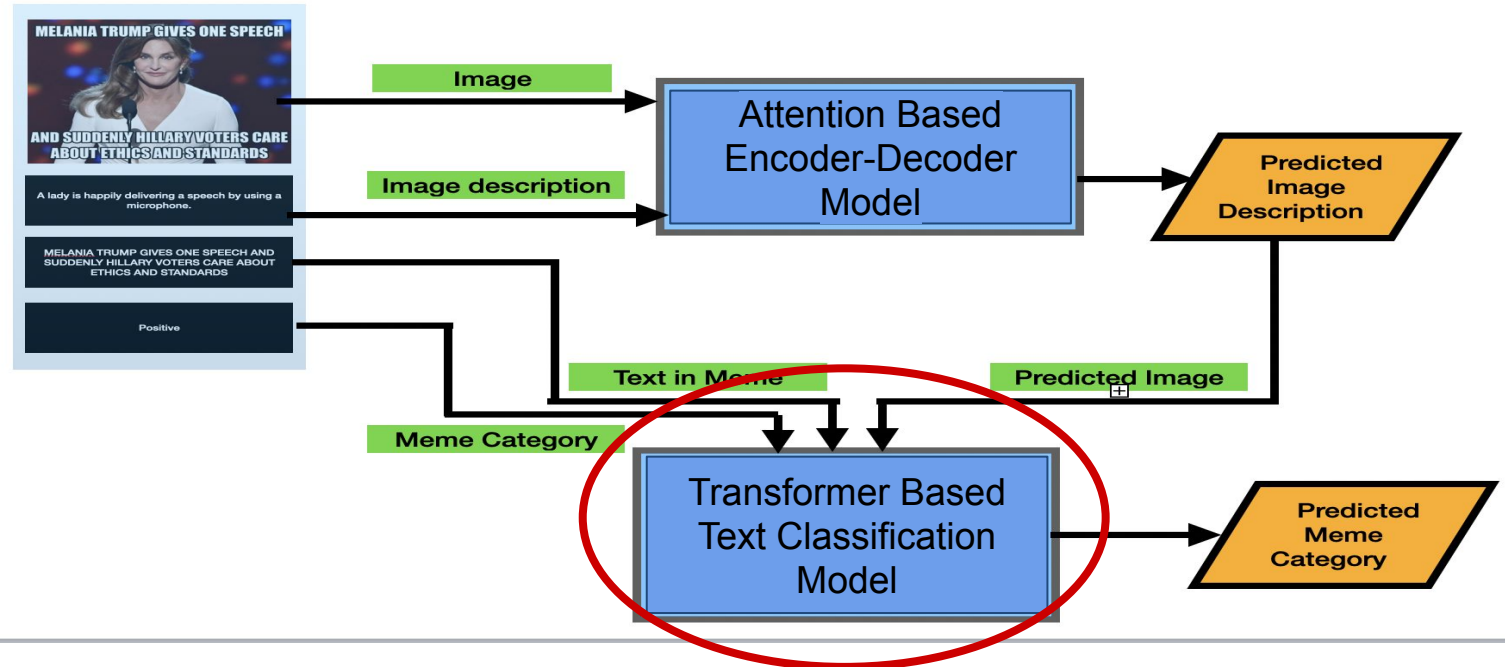


Figure: Process flow for Internet Meme Analysis

## Proposed Solution (5/5)

### ■ Transformer Based Text Classification Model Inspired By

- Attention Is All You Need[3]
- BERT: Pre-training of Deep Bidirectional Transformers for Language Understanding[4]

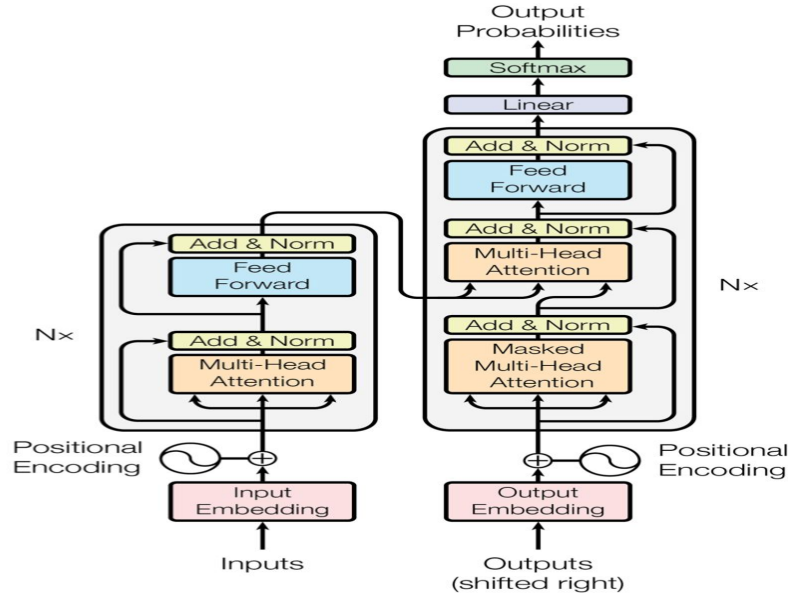


Figure: Transformer Architecture

# Experiment (1/1)

## Resources

### - data

#### - Multimodal Meme Dataset (MultiOFF)

1. Meme Image
2. Text in Meme Image
3. Category of Meme
4. Image Text

Description(Need to annotate)



0WBXRH9.png



1BeUIMs.png



1DY6I9Q.png



2iaC1qq.png



2MXmVri.png



2myYC1v.png

Image_Name	Text_In_Image	Category	sage Description
MultiOFF_Dataset/img_dir/img_0.png	I REFUSE TO DEBATE MY PRIMARY OPPONENT BECAUSE I'M FOCUSED ON THE GENERAL. MY PRIMARY OPPONENT GETS TO DEBATE THE REPUBLICAN NOMINEE	Non-offensiv	young man is laughing
MultiOFF_Dataset/img_dir/img_1.png	Max @ mdlabick BERNIE SANDERS RALLY 2016-02-24 , 10:10 AM	offensive	me young boys and girls are smiling and showing victory sign.
MultiOFF_Dataset/img_dir/img_2.png	Blame The Black Guy yeah , Hillary , I do n't care if you try to blame your decision to use an unsecured email server on a black guy just so long as I'm not the black guy you're blaming ! CARTOONS by Hen www.cartoons hen Com Copyright Henry Christensen , 2016	offensive	male cartoon is holding a telephone receiver and talking.
MultiOFF_Dataset/img_dir/img_3.png	Bernie or Hillar Be informed . Compare them on the issues that matter . SUPER BOWL Issue : HALFTIME SHOW " I wish it were " Woo ! Play just Beyoncé ! " The Scientist ! "	Non-offensiv	poster showing a male and a female photo where they are smiling
MultiOFF_Dataset/img_dir/img_4.png	http : // gic10 L OCICLO com " Bernie Sanders is now free to gic ttp vacation in Venezuela and enjoy watching his ideas put into effect . " ttp ttp raLogic1 hTL : 1.com http John Hayward : // LiberalL dalLogic10 http : // Lib com http : // LiberalLo FaceBook.com/LiberalLogic101 http : // LiberalLogic101.com ( We do n't mind if you download and share this image , just leave attribution )	Non-offensiv	young girl is standing with a baby in the street of the slum
MultiOFF_Dataset/img_dir/img_5.png	" This Will Be The End Of Bernie's Campaign , " Says Increasingly cucked SMALL REDDITOR	Non-offensiv	gentle man is in normal mood

# Reference

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- 1.Shardul Suryawanshi, Bharathi Raja Chakravarthi, Mihael Arcan, Paul Buitelaar "Multimodal Meme Dataset (MultiOFF) for Identifying Offensive Content in Image and Text"  
Language Resources and Evaluation Conference (LREC 2020), Marseille, 11–16 May 2020
- 2.Kelvin Xu ,Jimmy Lei Ba, Ryan Kiros Kyunghyun Cho Aaron Courville Ruslan, Salakhutdinov Richard S. Zemel Yoshua Bengio "Show, Attend and Tell: Neural Image Caption Generation with Visual Attention"
- 3.Jacob Devlin Ming-Wei Chang Kenton Lee Kristina Toutanova "BERT: Pre-training of Deep Bidirectional Transformers for Language Understanding"