

Punalogic: a pun analogy generator

Louis Berrane, Abir Lettifi, Camille Saran, Maeva Sillaire

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Outline

Initial goal

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Initial goal

Proposed Project VI – Analogy for puns

Morphological Word Embeddings for Semantic Analogies: Deep learning models of analogy have been successfully developed for both morphology [1, 2] and semantic [6]. While semantic embeddings perform poorly on morphological analogies, one can wonder if the newly developed morphological word embedding of [1] is able to perform well on semantic analogies.

A potential application of the results obtained is to manipulate semantic and morphological analogies with the same model, which could lead to a specific form of pun: “*woman* is to *womango* as *man* is to *mango* (like the fruit)”.

Project goal: experimenting with semantic and morphological embeddings to build a single model for both semantic and morphological analogies.

What has been accomplished

Punology generator :

- ▶ return a list of all possible subwords of a word (at least 2 characters)

```
tokenizer("apple")
```

```
['pple', 'app', 'pl', 'pp', 'le', 'ap', 'ple', 'appl', 'ppl']
```

- ▶ for more puns, generate more subwords by appending all possible character alphabetic (ca => caa, cab, cac, cad...)
- ▶ check if subword exists (wordnet)
- ▶ create new words by using semantics relations (syn, hyper, hypo, ant) and constructional morphology
'mag is to Emmanuel Magron as press is to Emmanuel Pressron'

What has been accomplished

- ▶ Thanks to a template we put them under an analogy '*A is to B as C is to D*'
- ▶ Selection process to rank punalogies. Get only the 1st one. Rank is obtained by :
 - ▶ Frequency of each words on Short Jokes dataset (Kaggle),
 - ▶ Morphological Pertinence (Rule based),
 - ▶ Morpheme frequency of neologism.

Meme generation :

- ▶ Dall-e mini (OpenAI, open source on Hugging face)
- ▶ Stable Diffusion (via Hugging face)

TADAMM

CAT

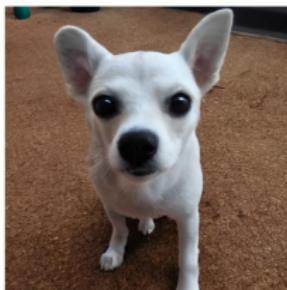


AVOCATO



IS TO

DOG



AVODOGO



IS TO

Critical Feedback

FEED



FEEDBACK



IS TO

TIP



TIPBACK



AS

IS TO

Humor Theories

Incongruity theories, hostility theories, release theories.

Incongruity-Resolution Theory [1]

Surprise disambiguation (SD)

An initial incongruity is then resolved

1. 1st (more obvious) interpretation of the set-up
2. Second-hidden interpretation of the set-up
3. meaning of the punchline

5 items : *obviousness, conflict, compatibility, comparison and inappropriateness*

Puns Taxinomy [2]

- ▶ Linguistic phenomena (*homophony, homography, etc*),
- ▶ Linguistic categories (*syntagmatic, paradigmatic, etc*),
- ▶ Surface structure (*phonetic distance between the two phonetic strings punned upon*)
- ▶ Eclectic (*mix criteria*)

Puns humor

Following General Theory of Verbal Humor (GTVH)[3]
-> *Incongruity Theory.*

Humor in puns is linked to 2 keys elements :

- Script opposition (SO) :
 1. Script oppositess (SO_p)
 2. Script overlap (SO_v),
- Logical mechanism (LM). Specifically, Cratylistic LM :
If meaning motivates sound, then the meaning of similar-sounding words must be similar

Importance of semantic opposition : SO, LM

Rage is to fragility as anger is to fangerlity

Punology Analysis

What works :

- Morphological blending on neologism,
- Punology is generated,
- Variety of puns,
- Selection process.

What doesn't :

- Semantic relationship (important to humor !)
FEED - TIP
- SO > semantic opposition (not strict antonyms !)
- Inconsistent image generation.

Image Problems

Difficulty to represent events, abstract properties, concepts in one image.

Semiotics Parenthesis :

3 entities [4] : Referent, Image, Concept.

3 types of signs [5] : Icon, Index, Symbol.

+ complex meaning > + difficult to make it iconic.

Fragility ?



Figure – From right to left : Fragility images generated by Stable Diffusion, by Dall-E mini

Template choice

Hypothesis : template influences on making punology funny or not.

Use of 4 meme templates :

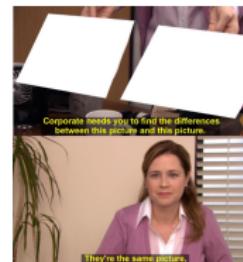
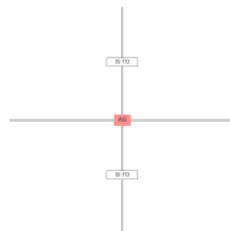
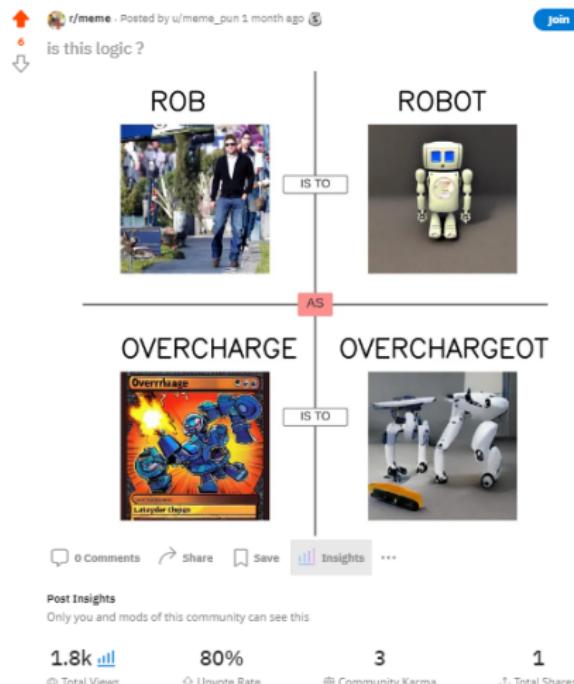


Figure – From left to right : Square template, Gru's Plan template, Winnie the poo template, Pam's interview template

Currently being tested on Reddit...
Results for next time !

Evaluation

Objective Evaluation to have a learning, decision-making and future actions



Reddit Appreciation Score - RAS

Main idea : Quantify humor of a meme by computing how it was received on Reddit.

Hypothesis : *The funnier the meme, the more viral it is.*

Used metrics :

- ▶ Nb of total views,
- ▶ Upvotes rate,
- ▶ Nb of shares,
- ▶ Nb of upvotes

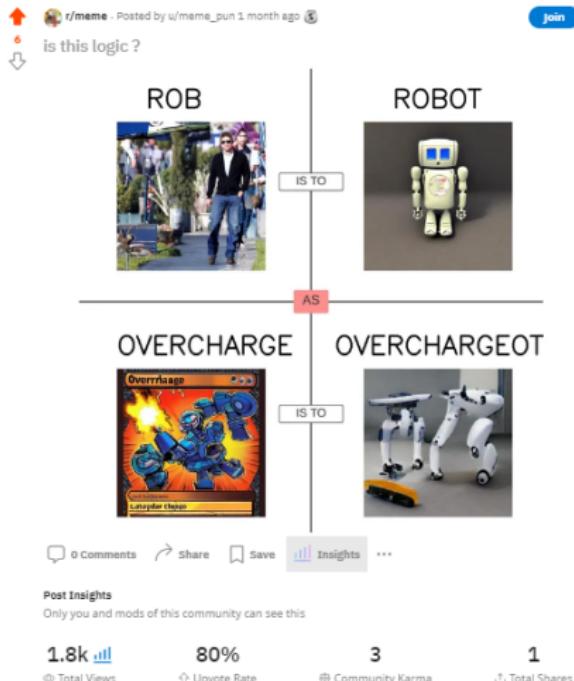


Figure – Reddit post

RAS : 'Rien à signaler' in French

Reddit use

Need to be cautious about :

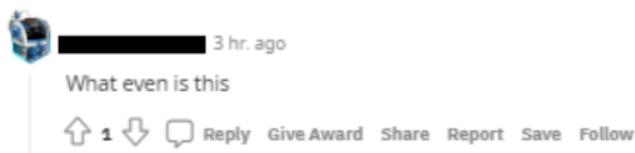
- ▶ Type of subreddit (engagement, community..)
- ▶ Hypothesis : does viral = funny ?

Qualitative evaluation from comments :



Sorry, im gna be honest and say i dont know the 2nd ref.

1 Reply Give Award Share Report Save Follow



What even is this

1 Reply Give Award Share Report Save Follow

Figure – Comments from meme post

Human Evaluation

Online survey :

Participants : a small group

When : January

Survey will...

- ▶ Test if punology is
 - (1) funny > *likert Scale (0-5)*,
 - (2) is understood > *Yes or No* (SD, from IR Theory [1]),
- ▶ Test if meme adds humor,
- ▶ Test which template is the funnier,
- ▶ Depending on personal data.

Reddit feedback

186 r/memeconvention - Posted by u/meme_pun 1 month ago

Is that math ?

What if

+ =

Han Solo Gandalf
Handalf

2 comments Share Save Insights

Post Insights
Only you and mods of this community can see this

4.8k Total Views 97% Upvote Rate 379 Community Karma 6 Total Shares

133 r/memeconvention - Posted by u/meme_pun 1 month ago

Math or meth ?

What if

+ =

Harry Potter Dark Maul
HairyMaud

0 Comments Share Save Insights

Post Insights
Only you and mods of this community can see this

4.2k Total Views 96% Upvote Rate 379 Community Karma 3 Total Shares

Future Project

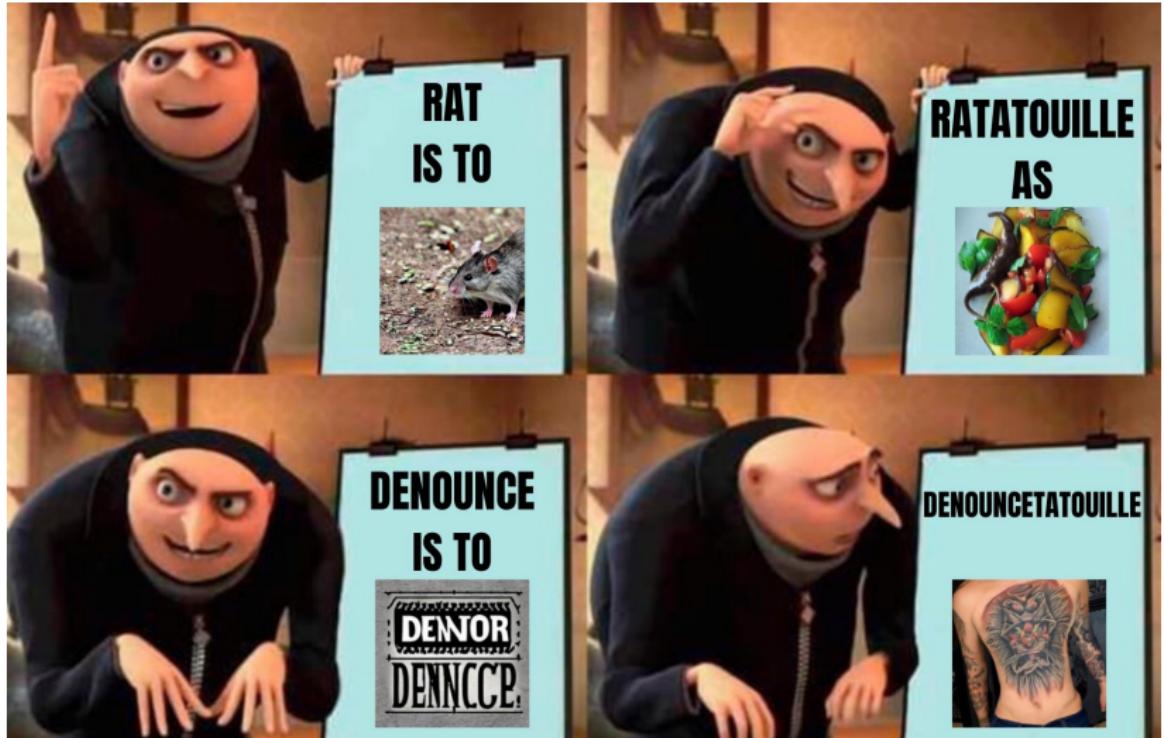
- ▶ Integrate cartoons in the analogies



- ▶ Restrain ourselves to 2-3 subjects



Thank you ! Questions ? Suggestions ?



References I

- [1] Graeme D. Ritchie. Developing the incongruity-resolution theory. 1999.
- [2] Robert Lew. Towards a taxonomy of linguistic joke. *Robert Lew*, 31, 01 1997.
- [3] Salvatore Attardo. 136The General Theory of Verbal Humor. In *The Linguistics of Humor : An Introduction*. Oxford University Press, 06 2020.
- [4] Charles Kay Ogden and Ivor Armstrong Richards. The meaning of meaning : A study of the influence of thought and of the science of symbolism. 1923.
- [5] Albert Atkin. *Peirce's Theory of Signs*. 01 2010.

References II

- [6] Rada Mihalcea and Stephen Pulman. Characterizing humour : An exploration of features in humorous texts. In Alexander Gelbukh, editor, *Computational Linguistics and Intelligent Text Processing*, pages 337–347, Berlin, Heidelberg, 2007. Springer Berlin Heidelberg.
- [7] Miriam Amin and Manuel Burghardt. A survey on approaches to computational humor generation. In *Proceedings of the The 4th Joint SIGHUM Workshop on Computational Linguistics for Cultural Heritage, Social Sciences, Humanities and Literature*, pages 29–41, Online, December 2020. International Committee on Computational Linguistics.
- [8] Kim Binsted and Graeme D. Ritchie. Computational rules for generating punning riddles. 1997.

References III

- [9] Robin Rombach, Andreas Blattmann, Dominik Lorenz, Patrick Esser, and Björn Ommer. High-resolution image synthesis with latent diffusion models, 2021.
- [10] Boris Dayma, Suraj Patil, Pedro Cuenca, Khalid Saifullah, Tanishq Abraham, Phúc Lê Khc, Luke Melas, and Ritobrata Ghosh. Dall·e mini, 7 2021.
- [11] Urban definitions.
- [12] Pyenchant.