

# Punalogy: a pun analogy generator

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Project, 4th Presentation

13/01/2023

# Outline

Initial goal

## Critical Feedback

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Punalogyn

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## Evaluation

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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 :

- ▶ a function that returns 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 all the subwords exist (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')
- ▶ and then thanks to a template we put them under an analogy 'A is to B as C is to D'

## Meme generator :

- ▶ Dalle mini ( by OpenAi)
- ▶ Hugging face ( transformers library)

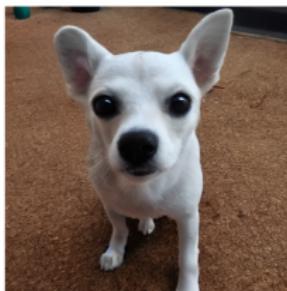
# TADAMM



IS TO



AS



IS TO



# Selection Process

Rank is obtained by :

- ▶ Frequency of each words on Short Jokes dataset (Kaggle),
- ▶ Morphological Pertinence (Rule based)

# 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<sub>p</sub>)
  2. Script overlap (SO<sub>v</sub>),
- Logical mechanism (LM). Specifically, Cratylistic LM :
  - Major premise* : If meaning motivates sound [cratylistism]
  - Minor premise* : and in two words the sound is identical (similar)
  - Conclusion* : then the meaning of the two words must be related (identical/similar)

**Importance of semantic opposition** : to support the cratylistic LM.

# 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*
- 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 :

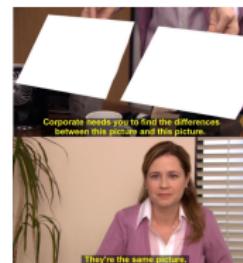
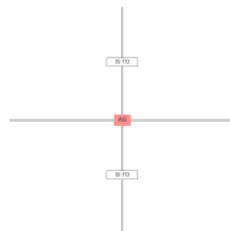
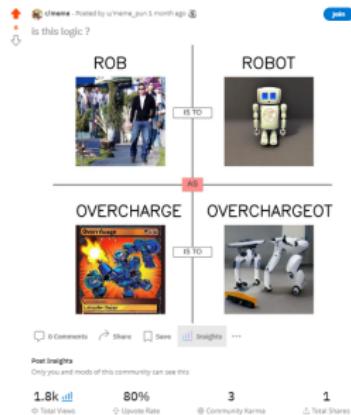


Figure – From left to right : Square template, Gru's Plan template, Winnie the poo template, Pam's interview template

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

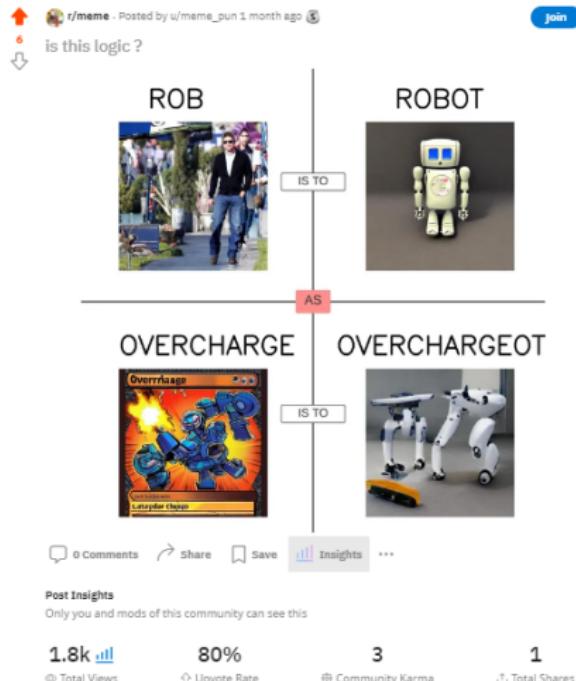


Figure – Reddit post

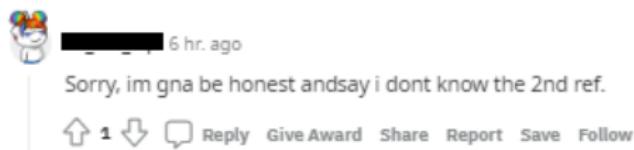
RAS : 'Rien à signaler' in French

# Reddit use

Need to be cautious about :

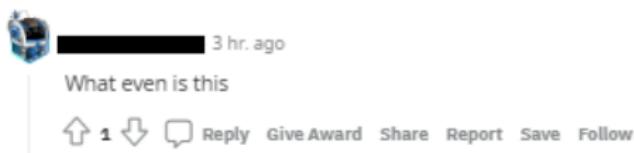
- ▶ Type of subreddit (engagement, community..)
- ▶ Hypothesis : does viral = funny ?

**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

154 r/memeconvention - Posted by u/meme\_pun 1 month ago [join](#)

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

153 r/memeconvention - Posted by u/meme\_pun 1 month ago [join](#)

Math or meth ?

What if .....

Harry Potter + Dark Maul = HairyMaul

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

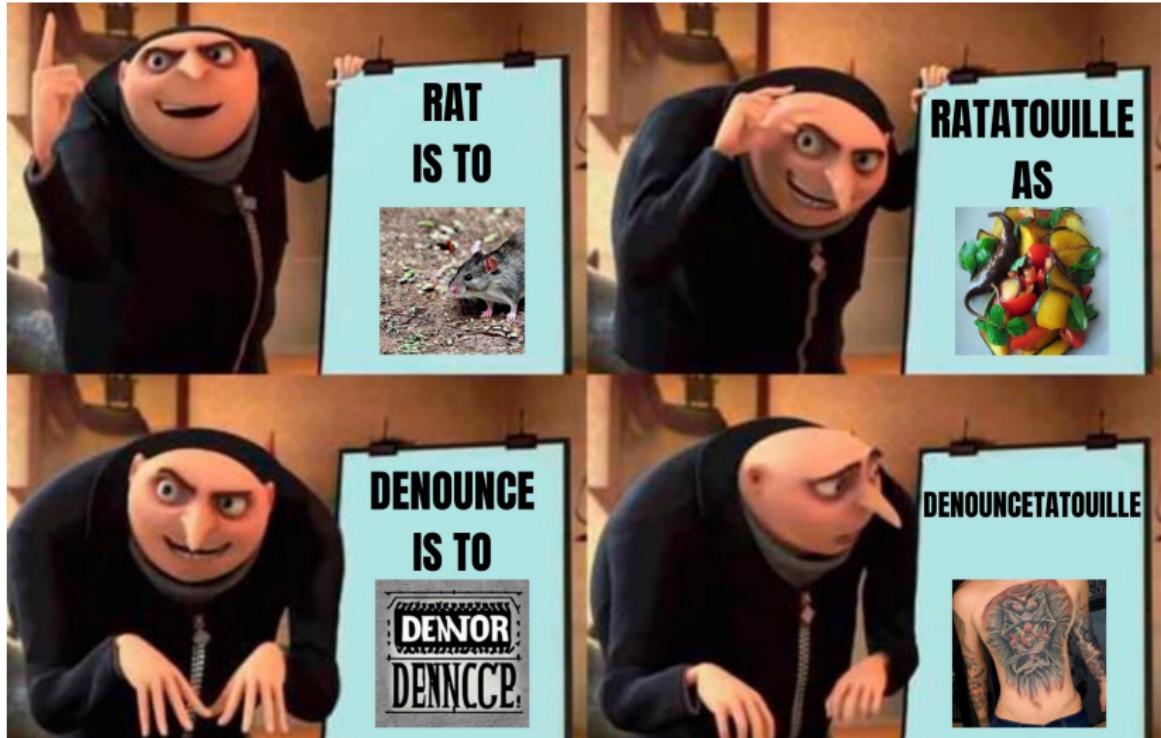
- ▶ Integrate cartoons in the analogies



- ▶ 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.