

# BDS MPhil

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Finn-Ole Höner; Supervisors: Bas Donkers, Dennis Fok

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# Decoding Marketers' Intentions: Deterministic Generation of Ad-Claims

## Setting

- Advertising claims with meta information & ratings

## Contribution

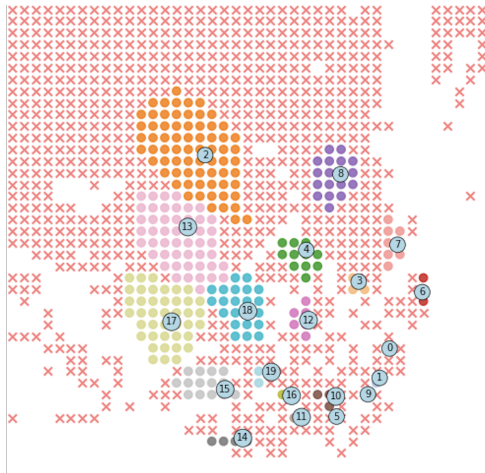
- Novel “summary embeddings”, that make an LLM generate a specific ad-claim.

## What's done?

- Algorithm, validation, data acquisition, Snellius application

## What's next?

- Empirical application, first-draft



**Figure 1:** 2D-generation space.

## Can consumer preferences inform LLM text generation?

- **Application:** Generating advertising claims with an LLM, based on consumer preferences.
- **Methodology:** Find input-embeddings for GPT, that generate a specific advertising claim (we call these “summary embeddings”). We model these “summary embeddings” with an Autoencoder, which gives us a “generation space” for advertising claims.
- **Toy-Example:** Tangible (e.g. “50% more visible shine after one use”) and intangible (e.g. “Rediscover vibrant, joyful hair”) advertising claims.

We try to find an input-embedding that makes an LLM generate a specific output-sequence: Find the summary embedding  $\mathbf{e}^*$  that maximizes the likelihood of the target-sequence  $t_1, \dots, t_L$  given the summary embedding  $\mathbf{e}$ :

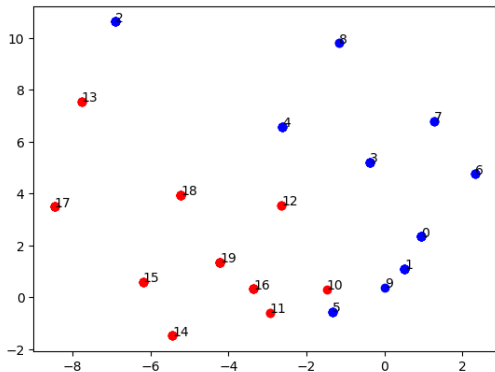
$$\mathbf{e}^* = \arg \max_{\mathbf{e}} \sum_{i=1}^L \log p(t_1, \dots, t_L | \mathbf{e}).$$

We impose restrictions on  $\mathbf{e}^*$  by using an Autoencoder (AE) to model its elements. The hidden layer of this AE is our “generation space”.

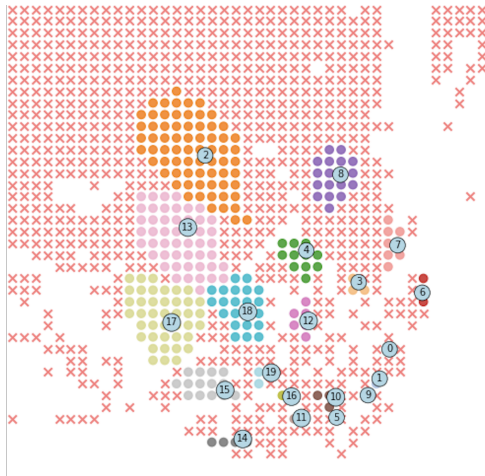
- Summary embeddings generate target sequences.
- Separation of tangible and intangible claims in generation space (Figure 1).
- Grid-search exploration reveals “candidates” for new claims (red crosses) and “islands” regenerating training data claims (color-coded circles) (Figure 2).

### **Next Steps:**

- Optimize optimization process.
- Enhance generation mode for clearer new claims.
- Integrate consumer preferences/ratings for generated claims.



**Figure 2:** Tangible and intangible claims in 2D-generation space.



**Figure 3:** Grid-search across 2D-generation space.