



# Phrase Analogies in Large VAES

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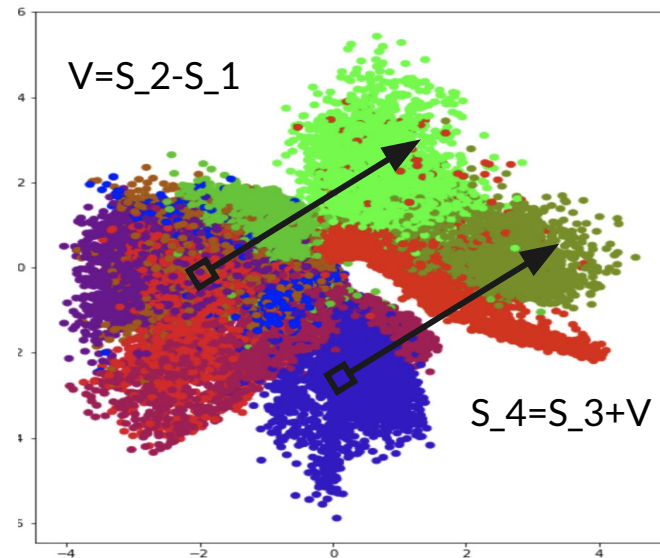
# Phrasal Analogies

“The two dogs run” is to “The dog runs” as “Two boats were sailing” is to what?

Sent\_A : Sent\_B :: Sent\_C : Sent\_D

We would expect something like Sent\_D =: “A boat was sailing”

(There is additional variability that does not exist in lexical analogies)\*



Abstract Analogy in Latent Space



## Datasets and Evaluation of OPTIMUS

### Syntactic (Opposites, Comparatives, Plurals)

- Datasets
  - Lexical replacement to generate pairs
    - (e.g., S\_a=: The boy is taller than me : S\_b=:The boy is tall)
  - Cartesian product of pairs in same relationship (comparative, plurals, ..)
  - Sample 10k
- Evaluation
  - Mean BLEU
  - Median BLEU Score,
  - Exact Matches.

### NLI (Entailment, Contradiction)

- Datasets
  - SNLI
  - Remove “neutral” pairs
  - Cartesian product of pairs in same relationship
  - Sample 10k
- Evaluation
  - XLM-R model scoring
  - 3-way prediction
  - 2-way prediction (excluding “neutral”)



# Results

Table 1: Syntax Analogies

Category	Avg(BL)	Med(BL)	Exact
Plurals	0.297	0.2242	6.32%
Opposites	0.1658	0.0002	0.1%
Comparatives	0.3579	0.3117	10.28%

Table 2: NLI Analogies

Category	3-way	2-way
<b>SNLI Test Set</b>	–	–
Overall	49.63%	64.61%
Entailment (51.2%)	43.09%	55.62%
Contradiction (48.8%)	56.48%	74.04%
<b>SNLI Train Set</b>	–	–
Overall	48.69%	62.57%
Entailment (51.1%)	42.73%	54.71%
Contradiction (48.7%)	55.07%	70.98%