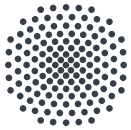

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PhiTag

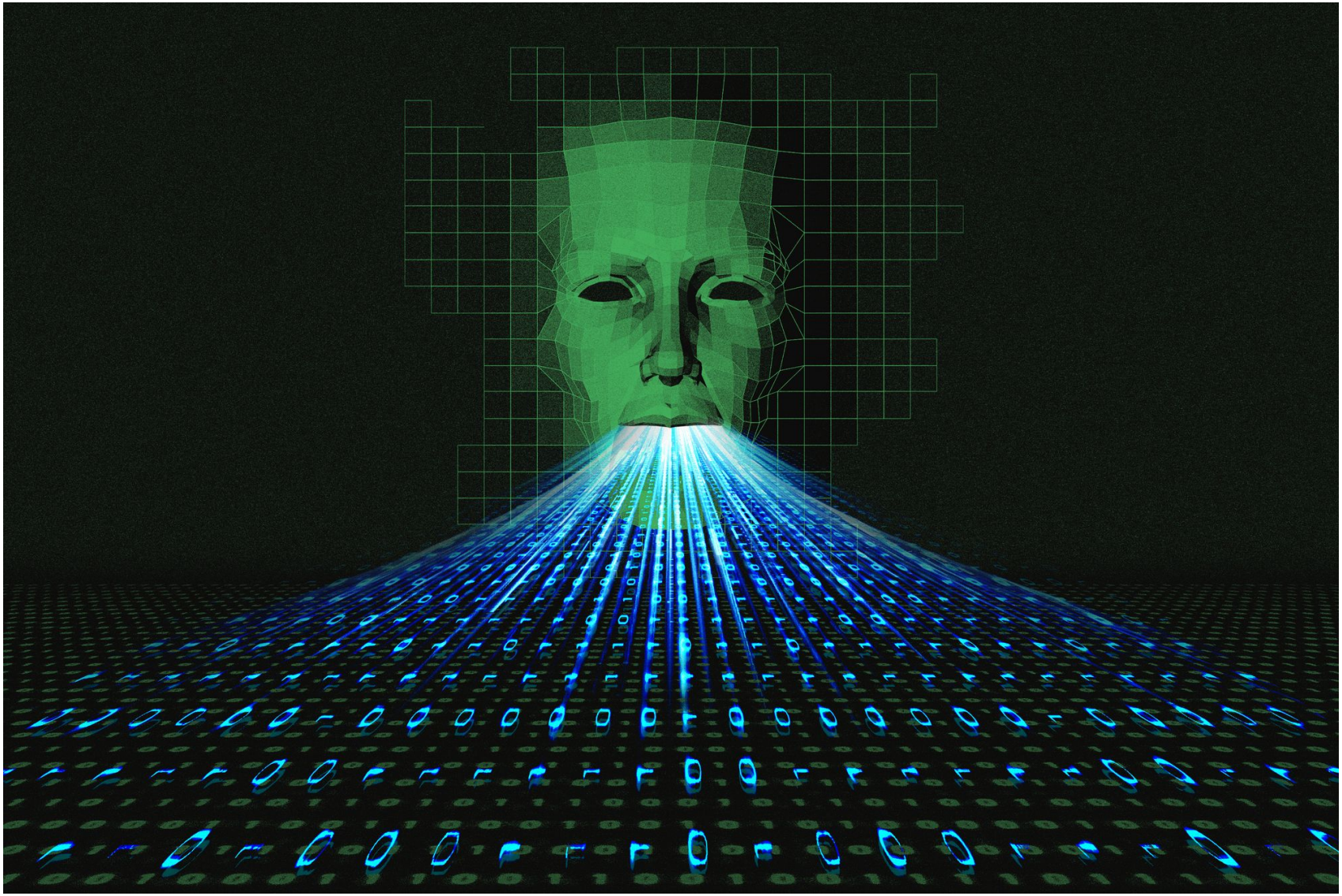
An open-source text annotation tool

May 13, 2024

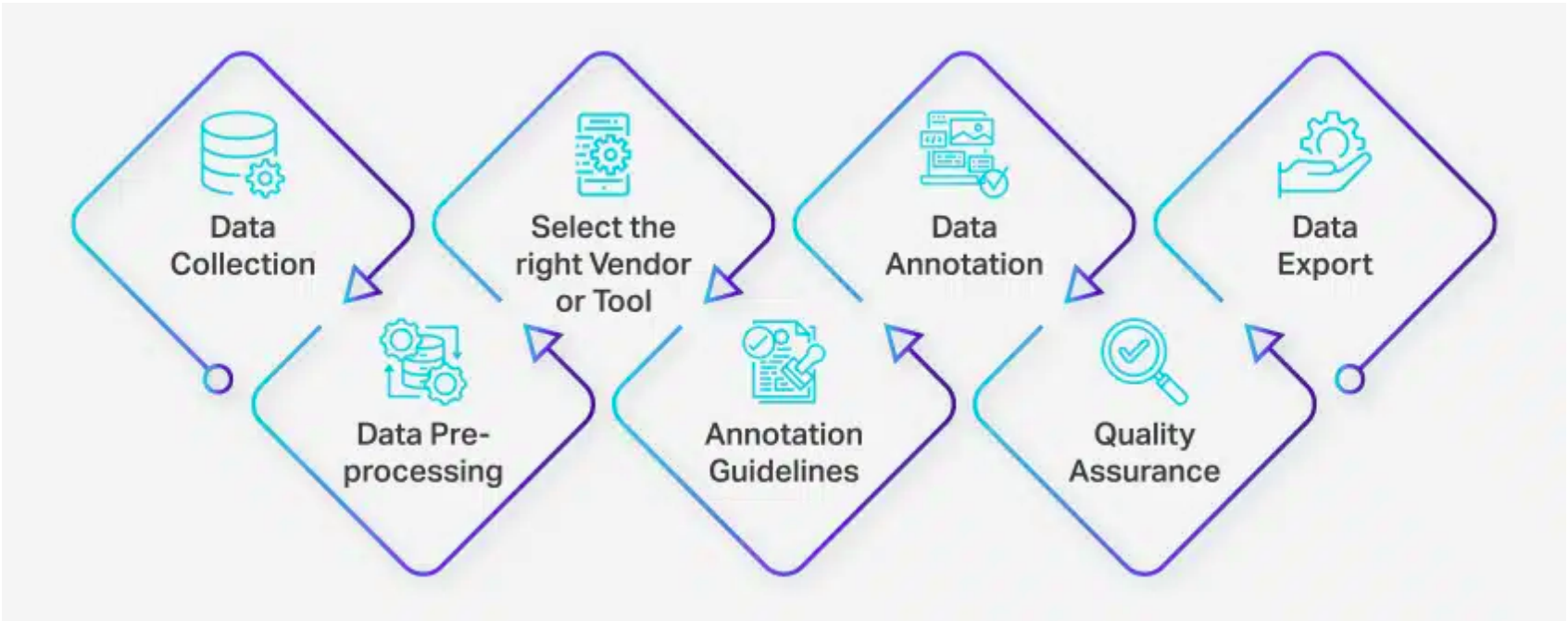
Dominik Schlechtweg

PhiTag

Problem/Opportunity: data-hungry AI models



Data annotation process



standardize & automate

Added value

- **time** and **cost** reduction for
  - human annotation
  - computational annotation
  - model training process

PhiTag

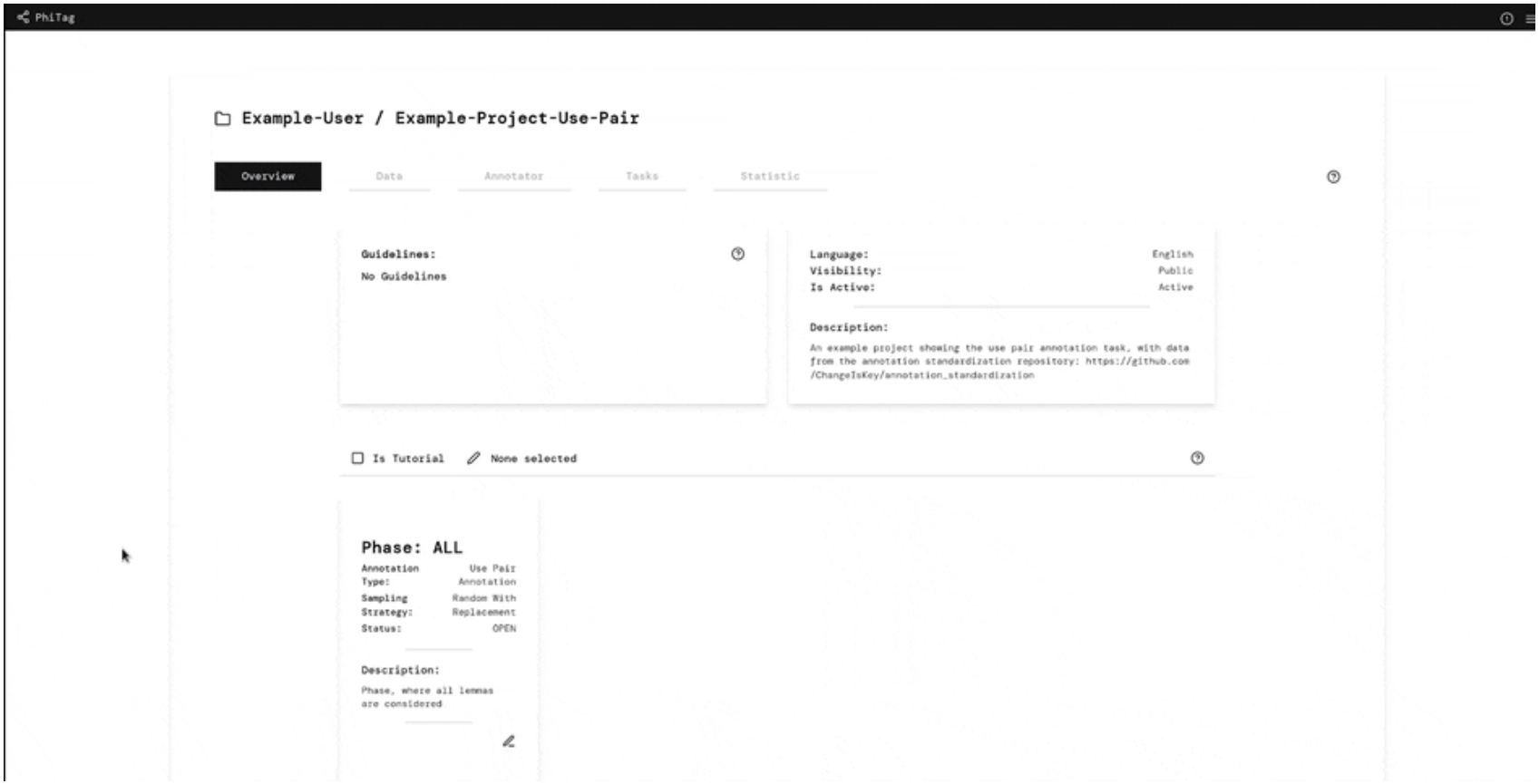
- online text annotation system[1]
- open source[2]
- various task types
- human and computational annotation
- interfaces with Prolific & OpenAI
- agreement statistics

[1] https://phitag.ims.uni-stuttgart.de/
[2] https://github.com/Garrafao/phitag

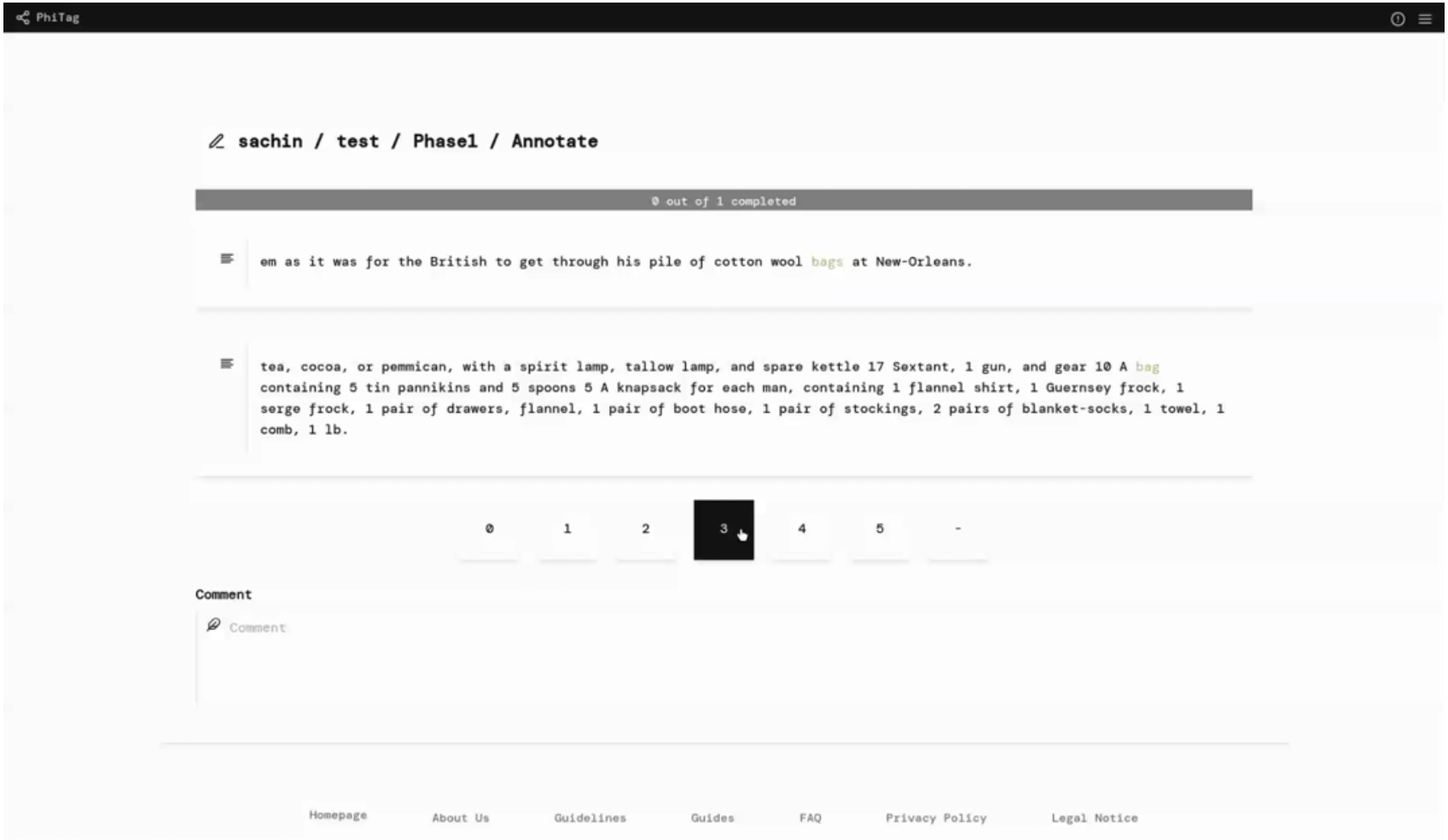
Task types

- Text Label
  - text, tag, label set
  - graded WSD, entity matching
- **Text Pair**
  - text, text, label set
  - WiC, translation quality
- Text Rank
  - text, text, text. . . , rank
  - question answering
- Text Free
  - text, input text
  - instruction task, topic annotation, summarization
- Text Choice
  - text, text, text. . . , choice
  - preference task, sentiment

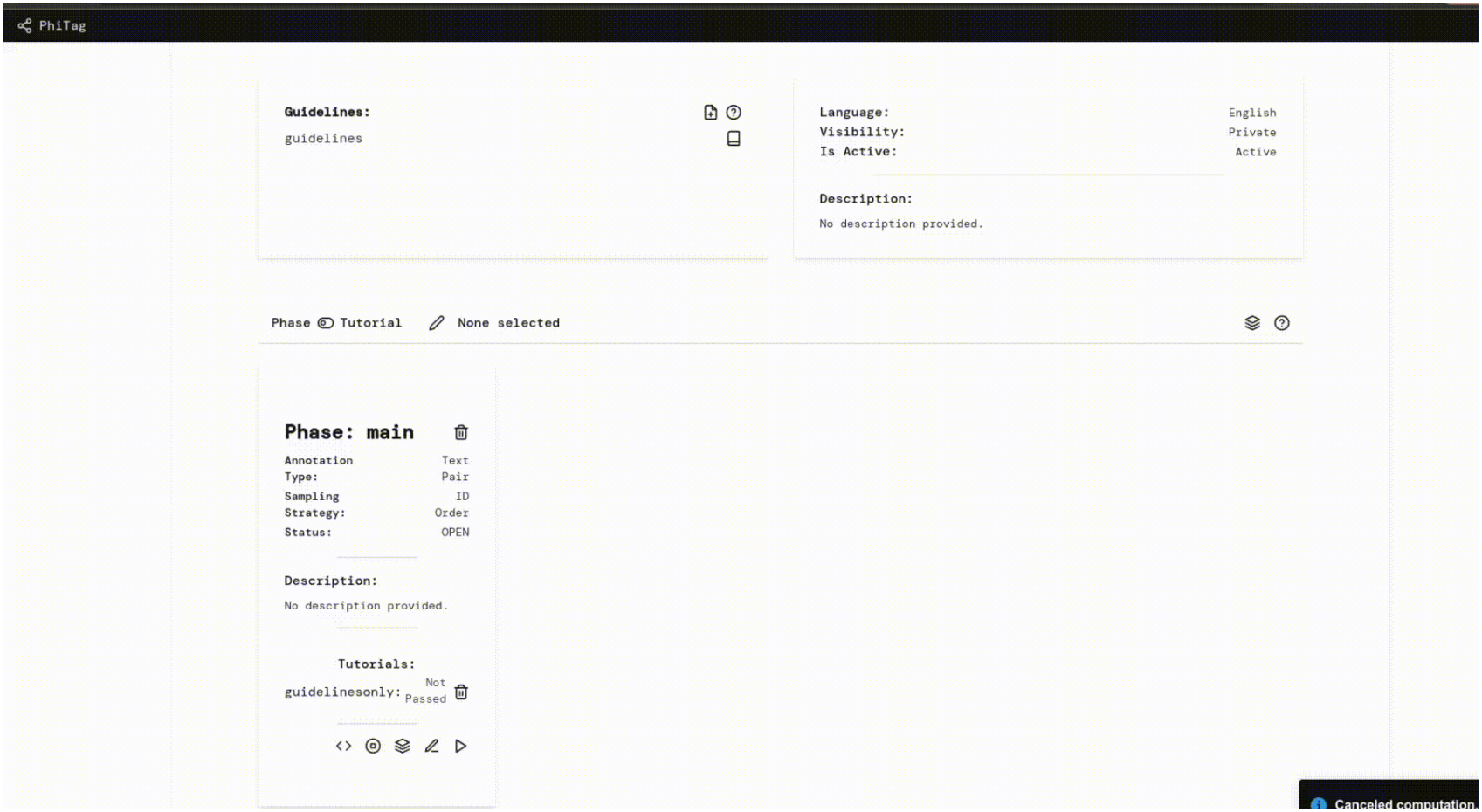
Human annotation



Interface Prolific



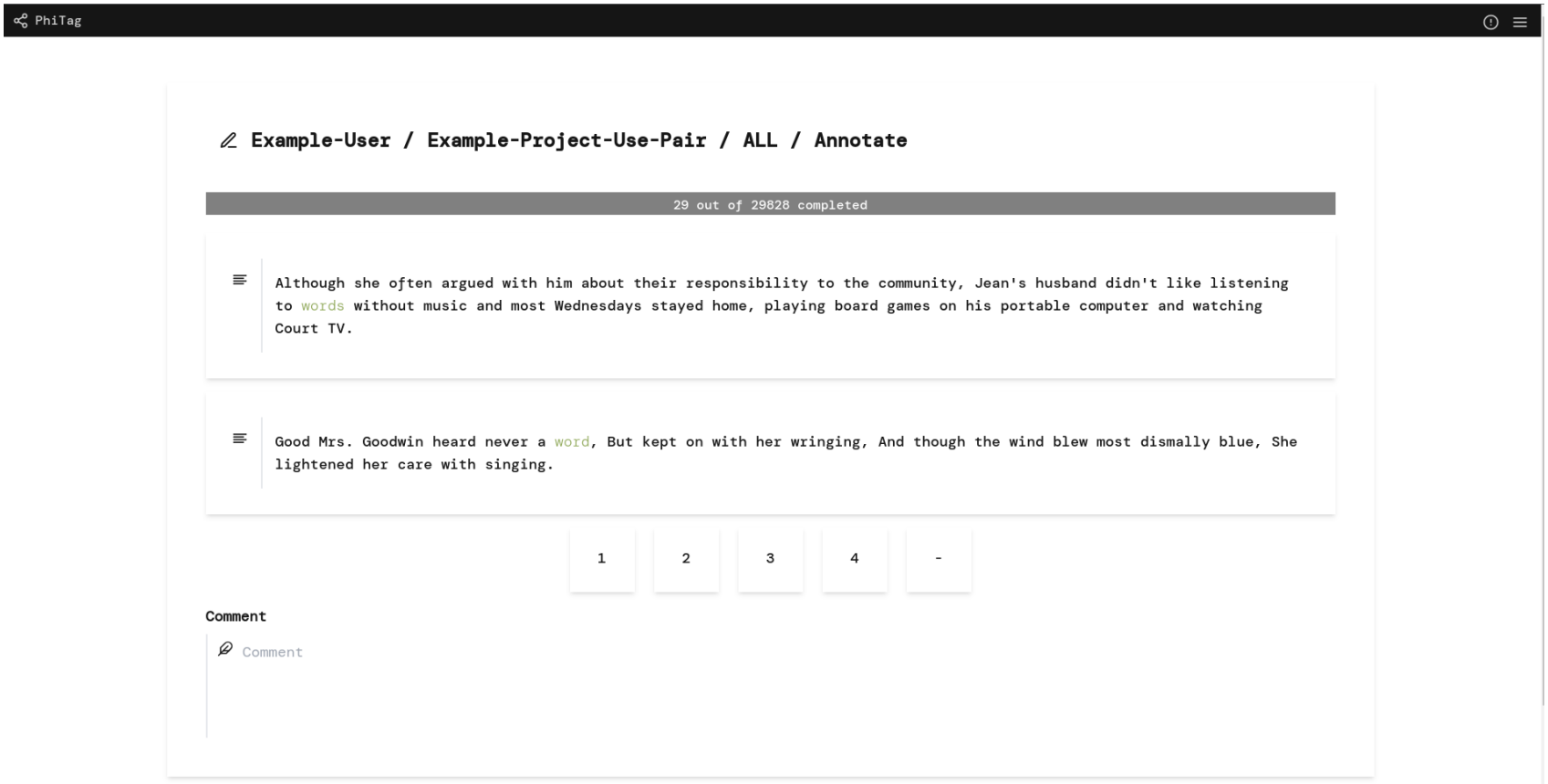
Computational annotation



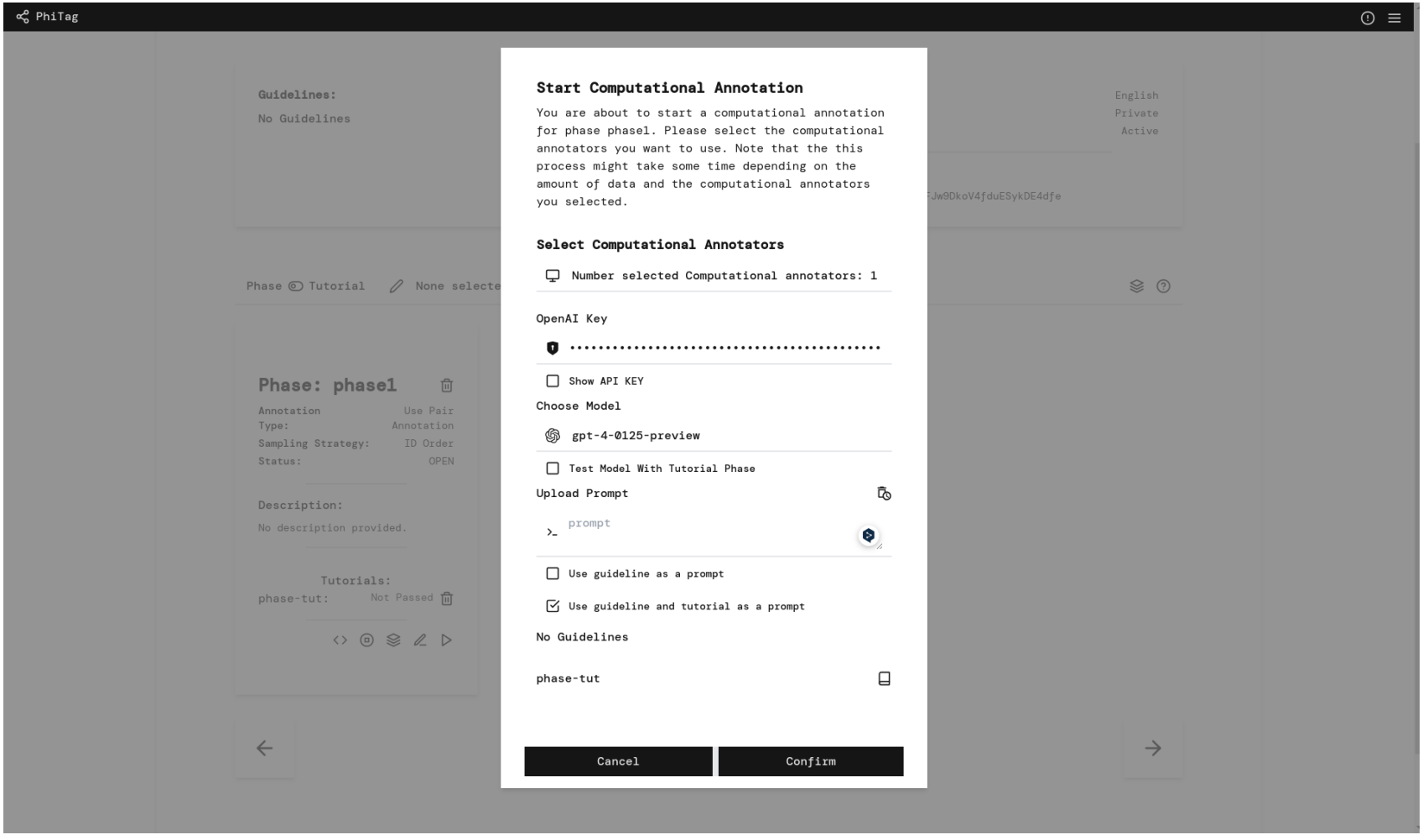
Computational annotation - case study

- **Main question**: Can we reuse human training data (guideline, tutorial) to train (prompt) LLMs?

Case study - task type



Case study - model type



Case study - prompt types

1. guideline
2. guideline + tutorial
3. customized

Case study - data

Dev	Train	Test
46	140	744

Test data split statistics using DWUG EN (Schlechtweg et al., 2021)

Case study - results

Strategy	**dev**	**test**
guideline	-0.07	0.03
guideline + tutorial	0.01	0.06
customized	0.74	**0.54**

Mean prompting results over five trials measured with Krippendorff's α

More studies

- topic relatedness (under review)
- semantic relatedness (ongoing)
- word sense annotation (Lautenschlager, Hengchen, & Schlechtweg, 2024)

Next Steps

- more tasks:
  - span annotation
  - refine preference & instruction tasks
  - what are industry needs?
- industry partners?
- funding?

References I

Lautenschlager, J., Hengchen, S., & Schlechtweg, D. (2024). *Detection of non-recorded word senses in english and swedish.* Retrieved from `https://arxiv.org/abs/2403.02285`

Schlechtweg, D., Tahmasebi, N., Hengchen, S., Dubossarsky, H., & McGillivray, B. (2021, nov). DWUG: A large Resource of Diachronic Word Usage Graphs in Four Languages. In *Proceedings of the 2021 conference on empirical methods in natural language processing* (pp. 7079–7091). Online and Punta Cana, Dominican Republic: Association for Computational Linguistics. Retrieved from `https://aclanthology.org/2021.emnlp-main.567`

Image sources

- p. 2: https://www.wsj.com/tech/ai/ai-training-data-synthetic-openai-anthropic-9230f8d8, last accessed May 9, 2024.
- p. 3: https://www.habiledata.com/blog/why-data-annotation-is-important-for-machine-learning-ai/, last accessed May 9, 2024.

Customized prompt

You are a highly trained text data annotation tool capable of providing subjective responses.
Rate the semantic similarity of the target word in these sentences 1 and 2. Consider only the objects/concepts the word forms refer to: ignore any common etymology and metaphorical similarity! Ignore case! Ignore number (cat/Cats = identical meaning). If target is emoji then rate by its contextual function. Homonyms (like bat the animal vs bat in baseball) count as unrelated. Output numeric rating: 1 is unrelated; 2 is distantly related; 3 is closely related; 4 is identical meaning.Your response should align with a human's succinct judgment.
Sentence 1:[SENTENCE 1]
Sentence 2: [SENTENCE 2]
Target word: [TARGET WORD]
Please provide a judgment as a single integer. For example, if your judgment is Identical, then provide 4. If your judgment is Unrelated, provide 1.

Guideline prompt

You are a highly trained text data annotation tool capable of providing subjective responses.
[MODIFIED GUIDELINES]
Sentence 1: [SENTENCE 1]
Sentence 2: [SENTENCE 2]
Target word: [TARGET WORD]
Please provide a judgment as a single integer for Sentence 1 and Sentence 2 above. For example, if your judgment is Identical, then provide 4. If your judgment is Unrelated, provide 1.

Guideline + tutorial prompt

You are a highly trained text data annotation tool capable of providing judgments based on contexts provided to you.
[MODIFIED GUIDELINES]
Here are few sample instances and their corresponding judgements:
Example sentences
Sentence 1: [SENTENCE 1]
Sentence 2: [SENTENCE 2]
Target word: [TARGET WORD]
Please provide a judgment as a single integer for Sentence 1 and Sentence 2 above. For example, if your judgment is Identical, then provide 4. If your judgment is Unrelated, provide 1.