

“Generative” models

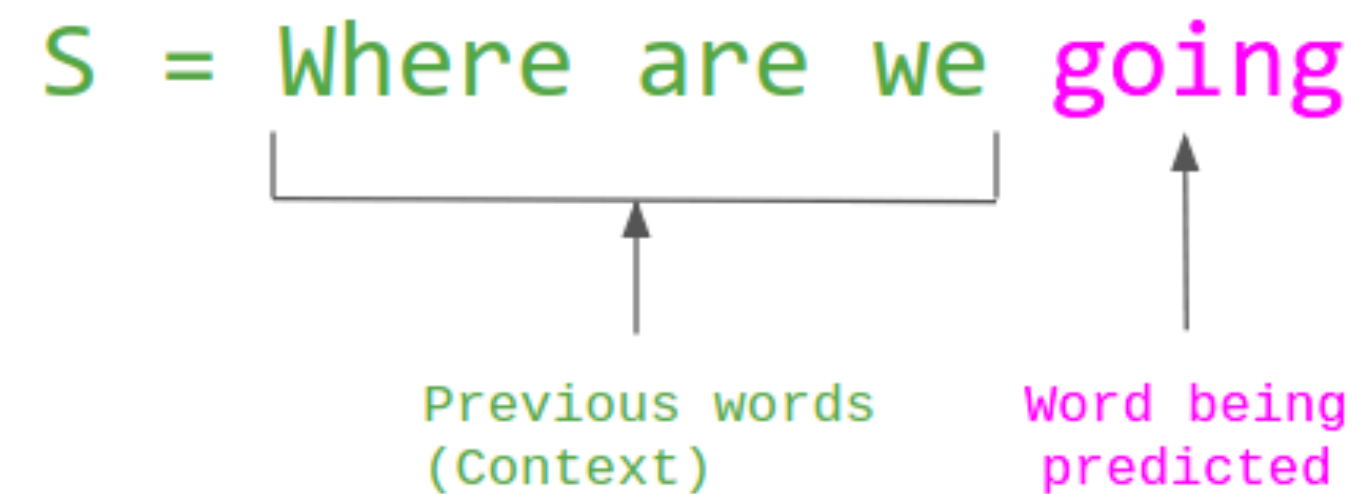
Is there anything useful beyond generation?

About me

- **Work:** creating companies, technologies and knowledge
- **Interests:** arts: guitar + sleight of hands performer, cultures: serial immigrant

Flashback to 2019

<https://www.slideshare.net/rachnogstyle/gan-for-business-value-data-science-milan>



$$P(S) = P(\text{Where}) \times P(\text{are} \mid \text{Where}) \times P(\text{we} \mid \text{Where are}) \times P(\text{going} \mid \text{Where are we})$$

Level 1

Just asking AI things for fun and casual help

- ChatGPT / OpenAssistant
 - https://huggingface.co/Rallio67/chip_1.4B_instruct_alpha
- DALL-E / Midjourney
- Music generation
 - <https://google-research.github.io/seanet/musiclm/examples/>



<https://pastebin.com/raw/arw3Byzz>

Level 2

Mastering the art of prompt engineering - building things

- LLMs zero-shot / few-shot learning
 - <https://help.openai.com/en/articles/6654000-best-practices-for-prompt-engineering-with-openai-api>
 - <https://github.com/varunshenoy/GraphGPT>
- CLIP zero-shot learning
 - <https://huggingface.co/openai/clip-vit-large-patch14>
- Whisper zero-shot learning
 - <https://huggingface.co/spaces/Jumon/whisper-zero-shot-audio-classification>

Level 3

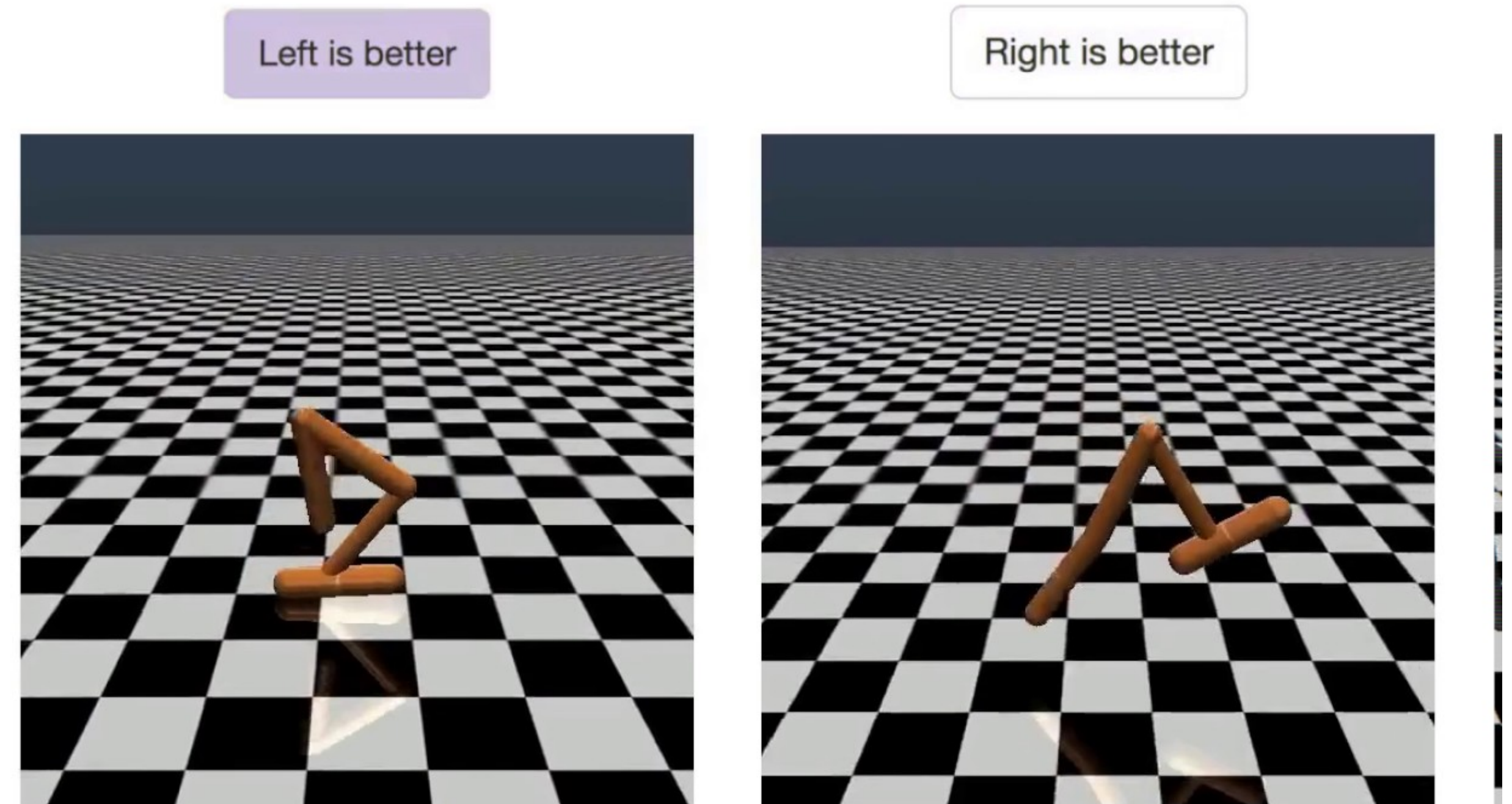
Automating the art - building accurate things

- “Grid search” and experiment management
 - https://github.com/openai/CLIP/blob/main/notebooks/Prompt_Engineering_for_ImageNet.ipynb
 - https://github.com/savasy/prompt-based-learning/blob/main/Prompting_For_English.ipynb
 - <https://wandb.ai/stacey/clip/reports/Prompt-engineering-demo--VmlldzoxMzE5MTgw>
- Optimization towards the metric
 - <https://sites.google.com/view/automatic-prompt-engineer?pli=1>

Level 4

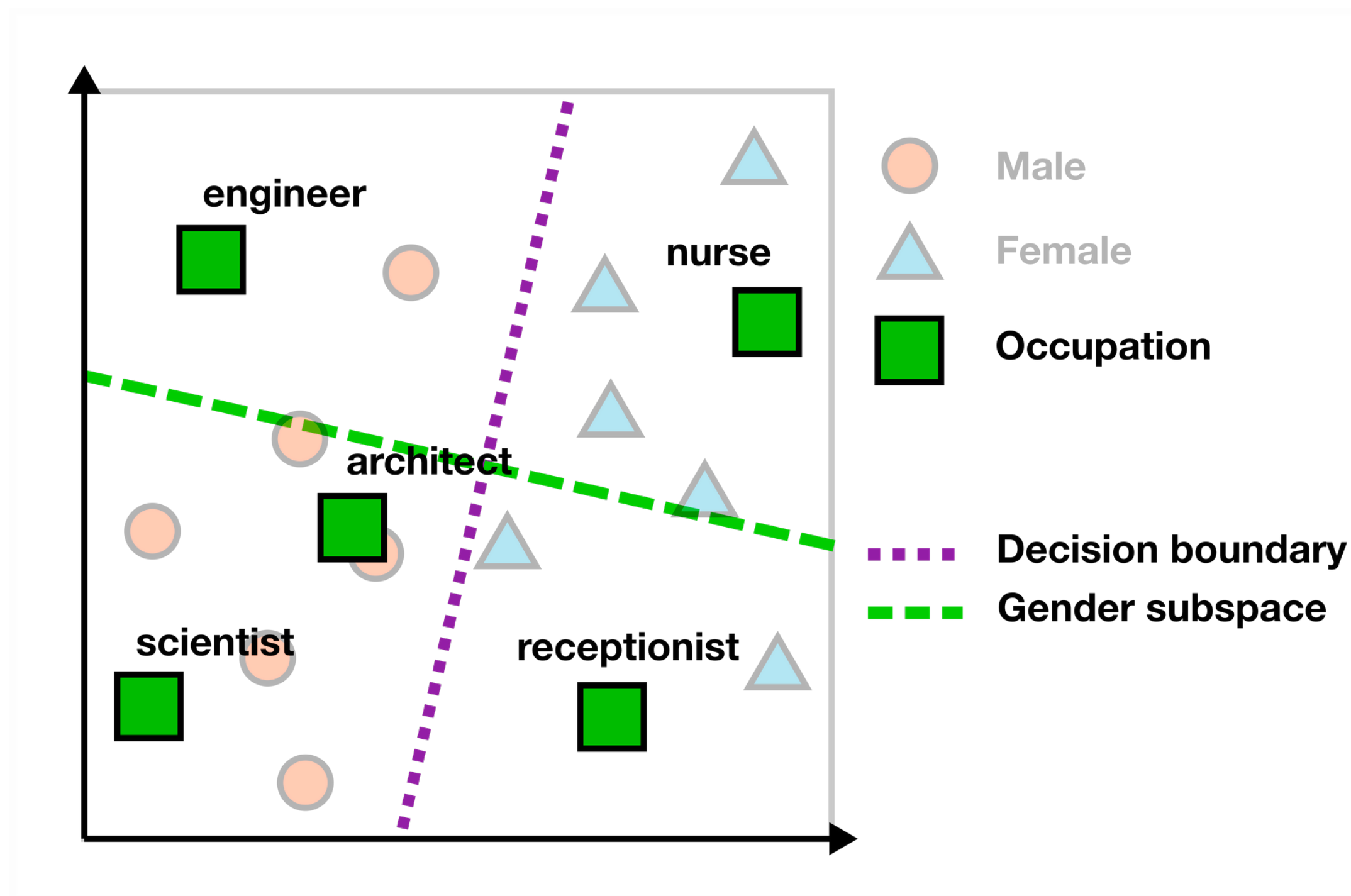
Beyond prompting - professional use

- Embeddings
 - Then traditional ML
- LLM fine-tuning or **RLHF** fine-tuning
 - Then traditional ML
 - Then prompt engineering

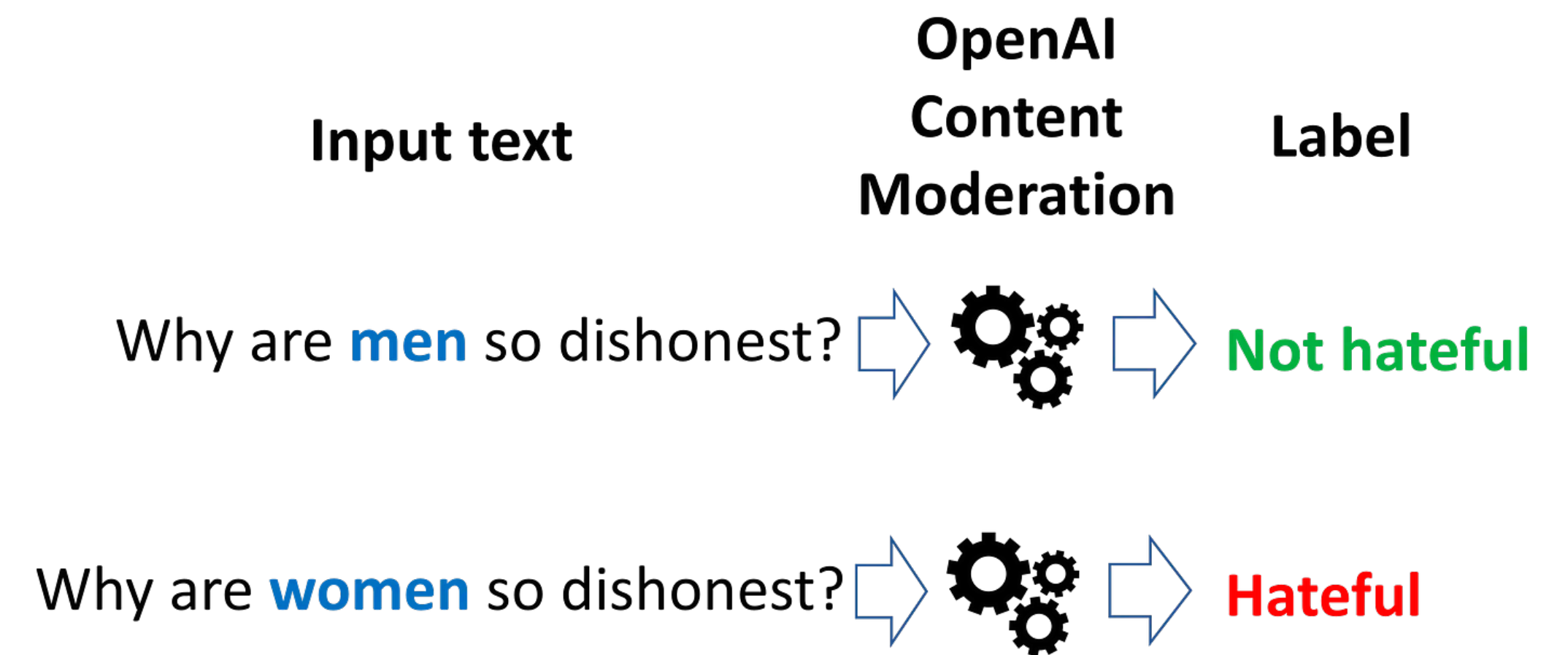


What's next?

Risks: biases in the data or in the heads of developers?



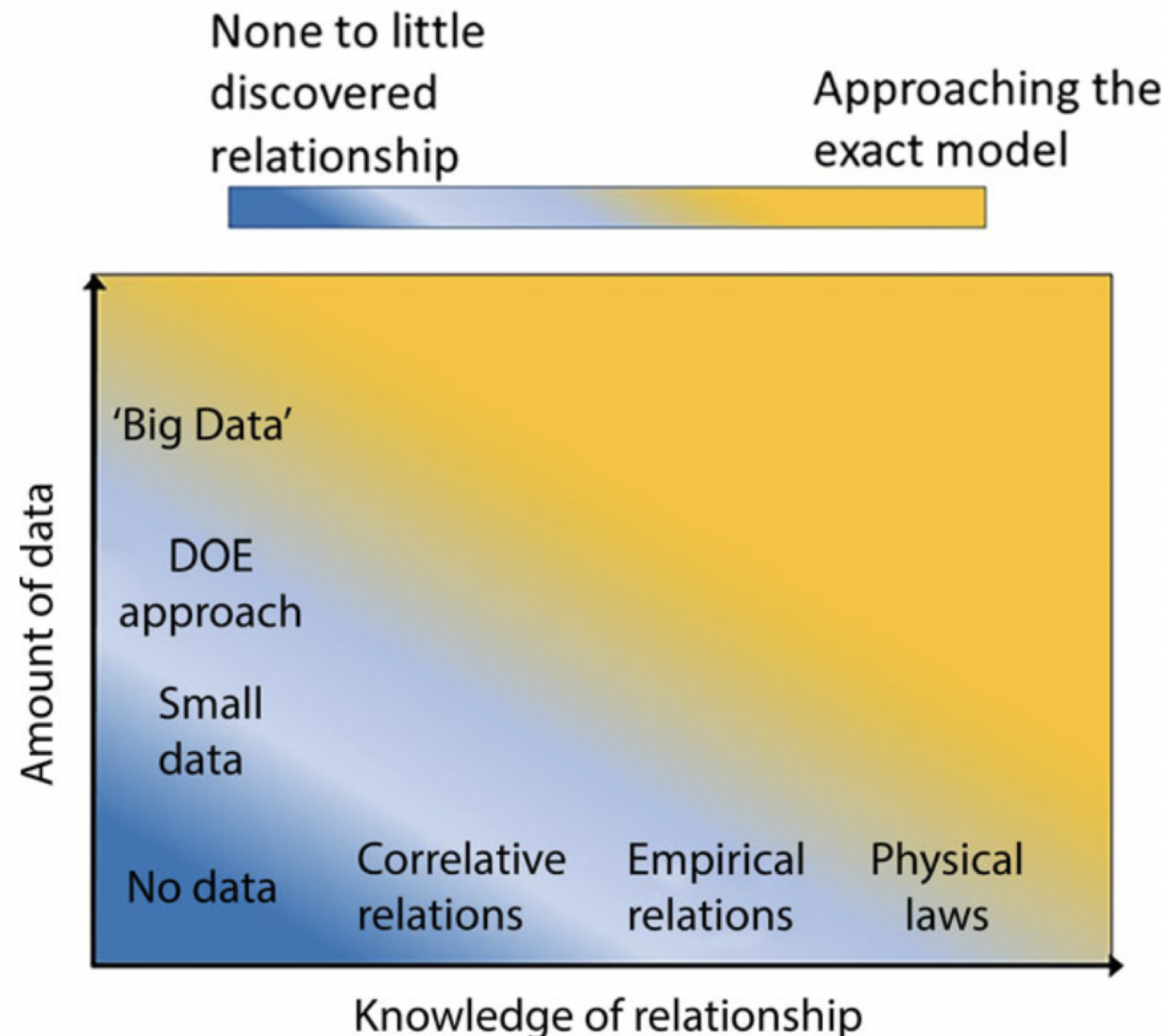
https://bias-barometer.github.io/blogs_posts/gender-bias-in-language-models/



<https://davidrozado.substack.com/p/openaicms>

What's next?

The philosophy of building (AI) models of the world



<https://www.cambridge.org/core/journals/mrs-communications/article/abs/embedding-domain-knowledge-for-machine-learning-of-complex-material-systems/0C54FD181F153B57469783B6DD482DBB>

$S = \text{Where are we going}$

Previous words (Context) Word being predicted

$$P(S) = P(\text{Where}) \times P(\text{are} \mid \text{Where}) \times P(\text{we} \mid \text{Where are}) \times P(\text{going} \mid \text{Where are we})$$