

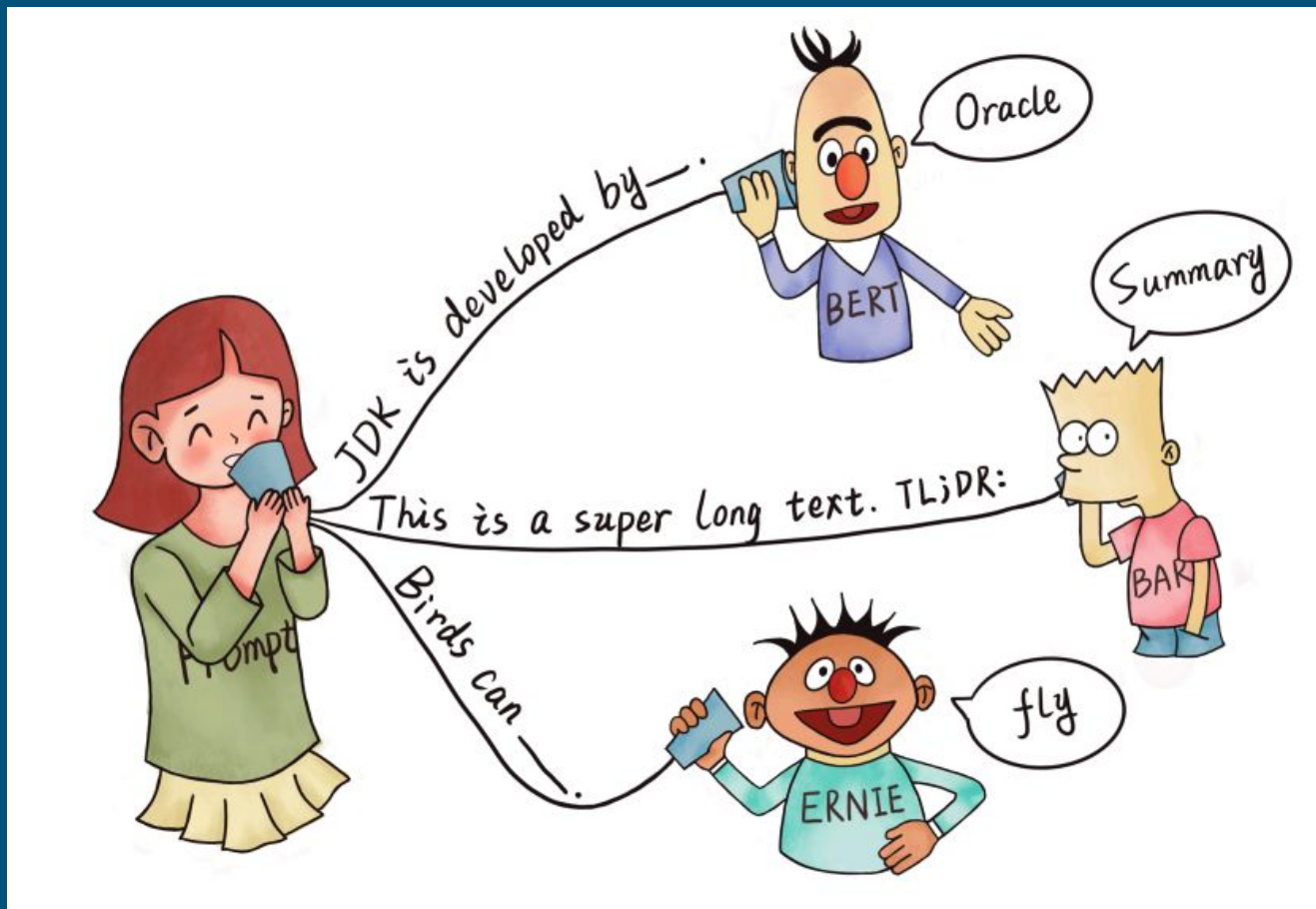


Language Model Prompting



Wei-Rui Chen



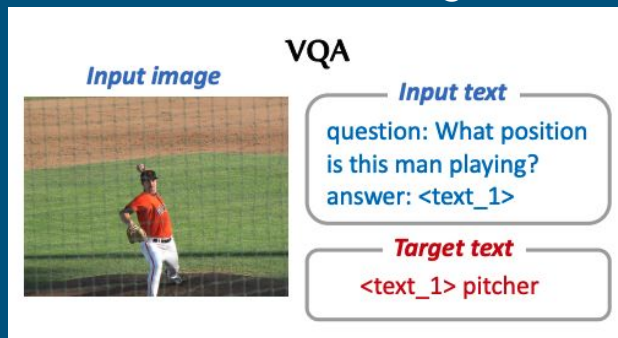


Jin et al. 2022 - VQA

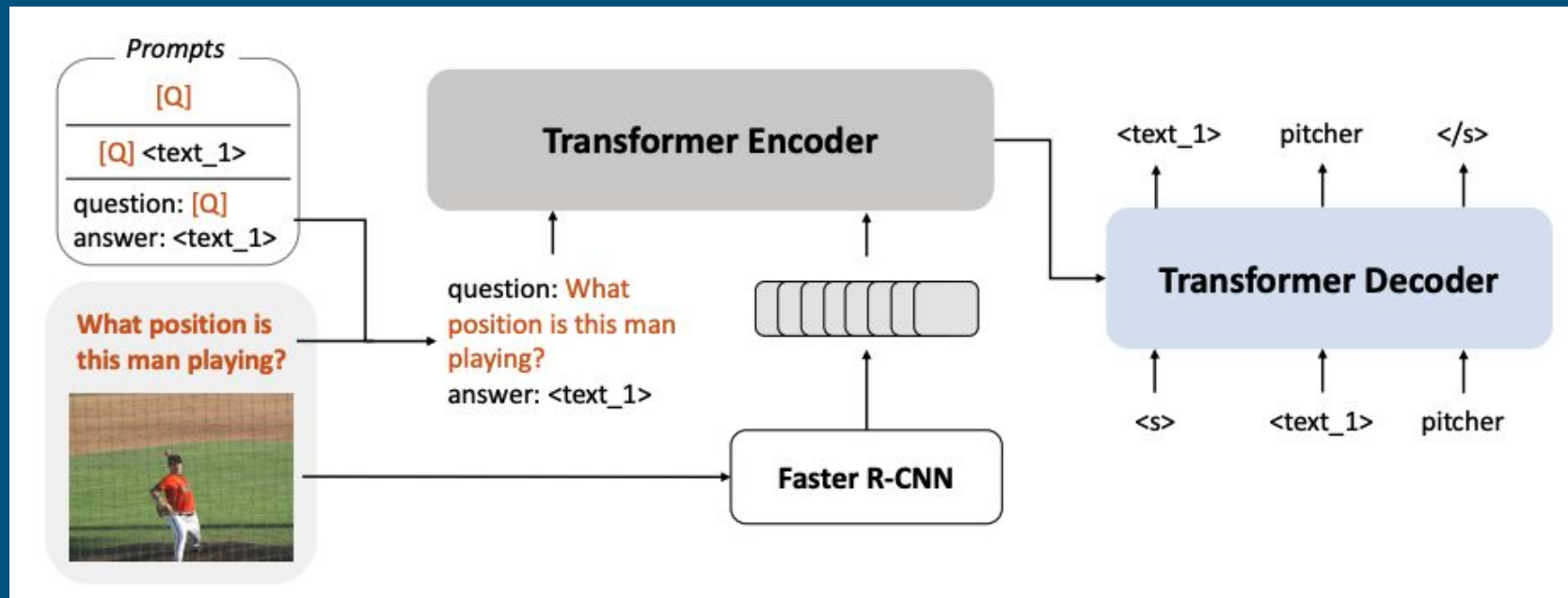
Input: An image and a question

Output: An answer to the question

Yang et al., 2021 uses GPT-3 by converting images into textual descriptions so that GPT-3 can understand the images.



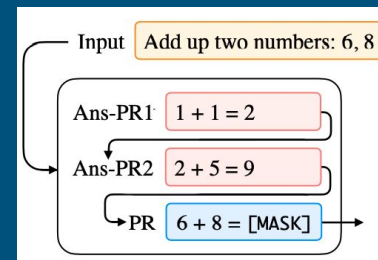
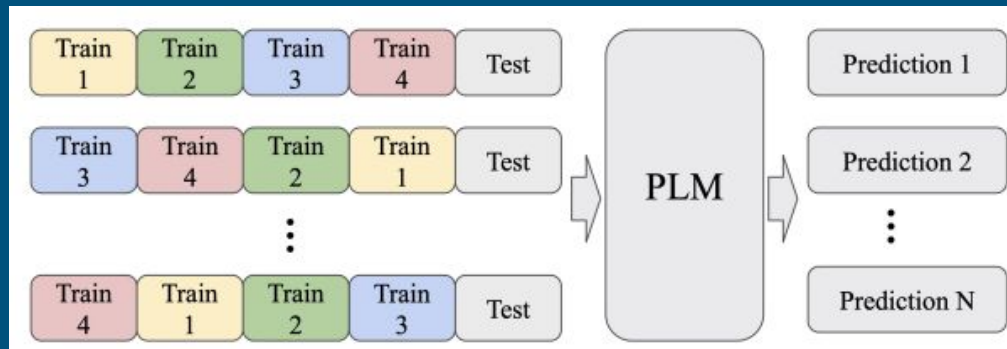
Jin et al 2022



Lu et al. 2022 - Background

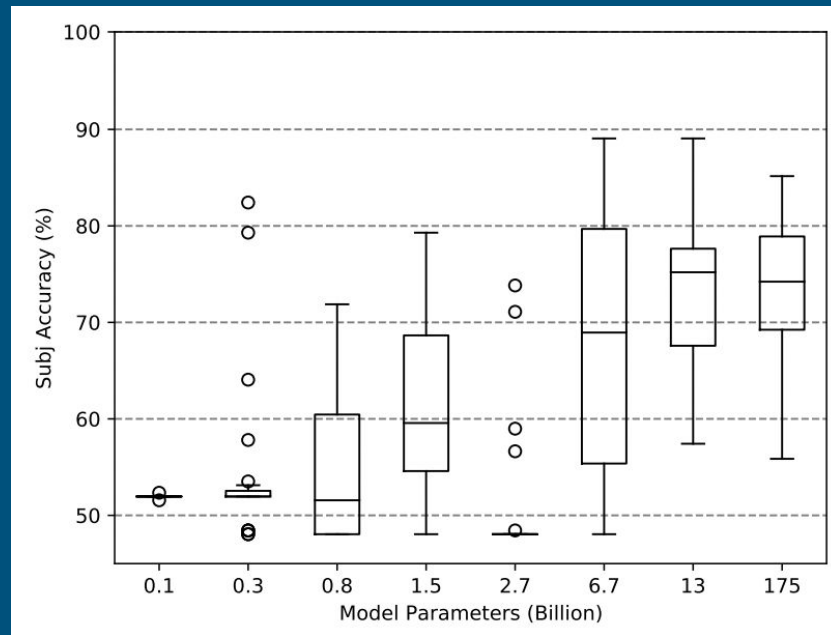
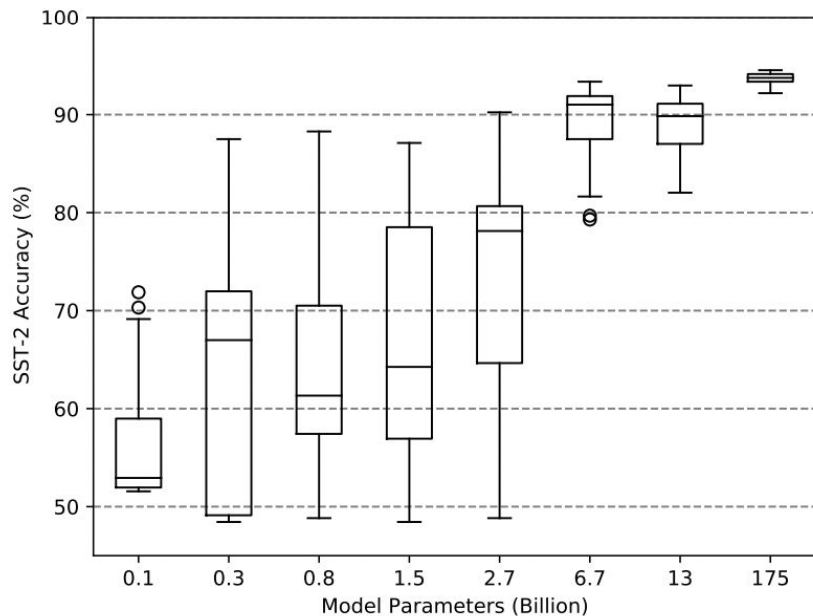
Sensitivity of the order of training examples

For a given task, the model receives as input some number of examples demonstrating the task, up until some final example that the model should complete itself. Input is fed into the language model as a single, continuous chunk of text.



Source: Lu et al. 2022 (left),
Liu et al. 2021(right)

Lu et al. 2022 - Sample Order Matters

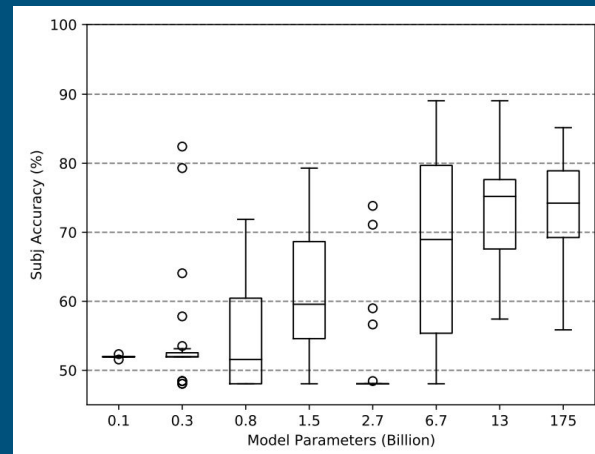


Lu et al. 2022 - Sample Order Matters

Increasing model size does not guarantee low variance

Permutation are not transferable across models

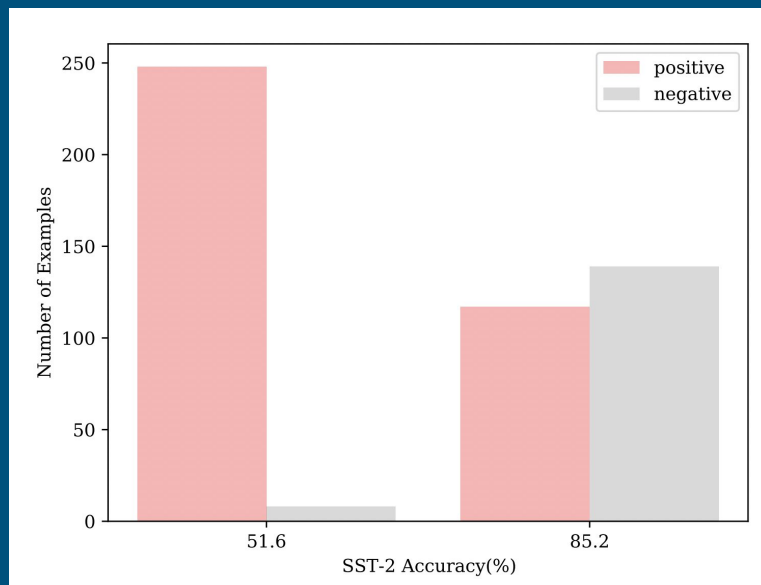
88.7% acc in GPT2-XL -> 51.6% acc in GPT2-Large



Source: Lu et al. 2022

Lu et al. 2022 - Methodology

Error analysis: bad prompt \leftrightarrow unbalanced predicted label distribution



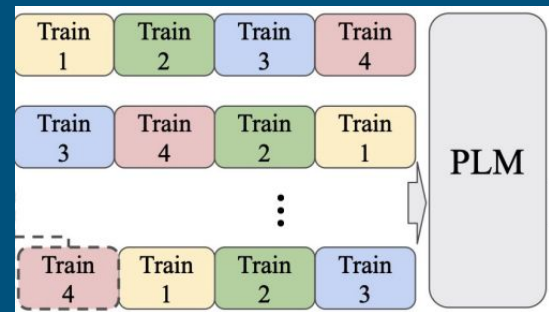
Source: Lu et al. 2022

Lu et al. 2022 - Methodology

Probing set: like dev set but constructed with training examples

Step 1: Find the probing set with highest entropy of predicted label dist among n !

Step 2: inverse function to get the best sample ordering



Qi et al. 2022 - Background

Natural Language Inference (NLI)

Inferential

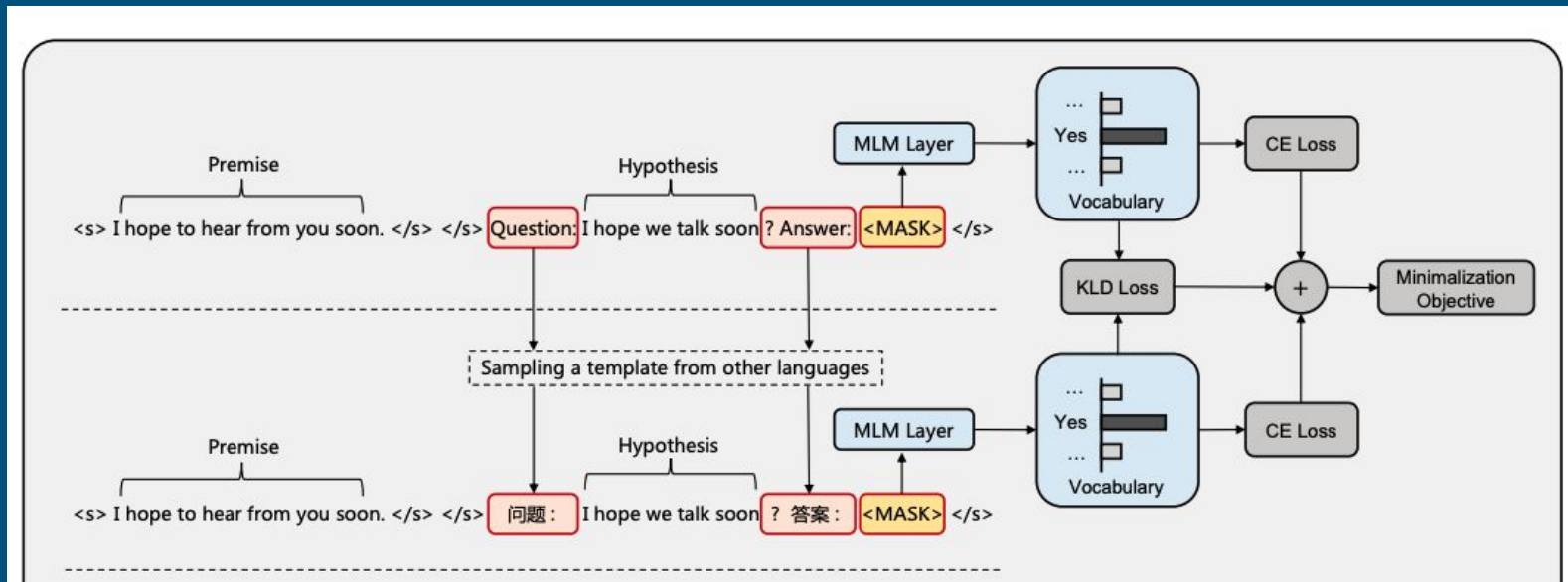
Relationships (entailment, contradiction, neutral)

Premise -----> Hypothesis

Cross-lingual Natural Language Inference (XNLI)

Models trained on source language (usually English) and tested on target (non-English) language.

Qi et al. 2022 - methodology



$$\mathcal{L} = \mathcal{L}_X + \mathcal{L}_{\bar{X}} + \mathcal{L}_{\text{KLD}}$$

Q & A

