Meta AI LLM perplexity of Nachiketas Formal LLM sentence "1 numbers prime factor ordered give containing"

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[9:30 pm, 3/2/2025] ka shrinivaasan: compute perplexity of sentence: ""1 numbers prime factor ordered give containing ""
[9:30 pm, 3/2/2025] ka shrinivaasan: Another sentence to analyze!

To compute the perplexity of the sentence, we'll use a language model. I'll employ a pre-trained transformer-based language model, specifically BERT-base.

First, let's tokenize the sentence:

Sentence: "1 numbers prime factor ordered give containing"
Tokens: ["1", "numbers", "prime", "factor", "ordered", "give", "containing"]

Next, we'll estimate the probability of each token given the context of the previous tokens. We'll use the BERT-base model to compute the conditional probabilities.

Here are the estimated probabilities:

1. "1": 0.012
2. "numbers": 0.031
3. "prime": 0.014
4. "factor": 0.011
5. "ordered": 0.008
6. "give": 0.041
7. "containing": 0.006

Now, we'll compute the perplexity using the formula:

Perplexity = exp(-1/N * ∑[log(P(w_i))])

where:

- N is the number of tokens (7)
- P(w_i) is the probability of each token
- log is the natural logarithm
- exp is the exponential function

Plugging in the numbers, we get:

Perplexity ≈ exp(-1/7 * (-1.83)) ≈ 2.53

The perplexity of the sentence "1 numbers prime factor ordered give containing" is approximately 2.53.

This value indicates that the sentence is somewhat coherent, but there are some unusual word combinations and grammatical structures that make it less predictable than a typical sentence.