Quantifying and Predicting Large Language Model Hype in SIGBOVIK and Beyond

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Abstract

Large language models have overwhelmed discourse in society, in computer science, and presumably, in SIGBOVIK 2023. This paper quantifies the number of this amount by defining a new metric, **CTRLF** and calculating it for past iterations of SIGBOVIK. Furthermore, it is also of interest[Wik23] to predict future hype of LLMs. Therefore, we forecast these predictions in order to obtain extrapolations for SIGBOVIK 2023 by using both artificial and non-artificial neural networks. Finally, we conclude by looking at the actual value of the metric in SIGBOVIK 2023.

1 Introduction

The invention and success of **large language models** (sometimes shortened to **LLMs**) in the past few years/months/weeks has quickly caused their popularity to explode. As seen in Figure 1, the study and use of large language models is now more popular than computer science itself. Since SIGBOVIK is widely regarded as a microcosm of computer science, and in some sense can be considered the "drosophila of CS"[Wik23], we perform analysis and experiments to quantify the amount of LLM hype in SIGBOVIK, and we use these measurements as a proxy for the amount of LLM in computer science and in society. We then perform predictions to forecast the amount of LLM in SIGBOVIK 2023, as a proxy for how much large language models will affect society in the future.
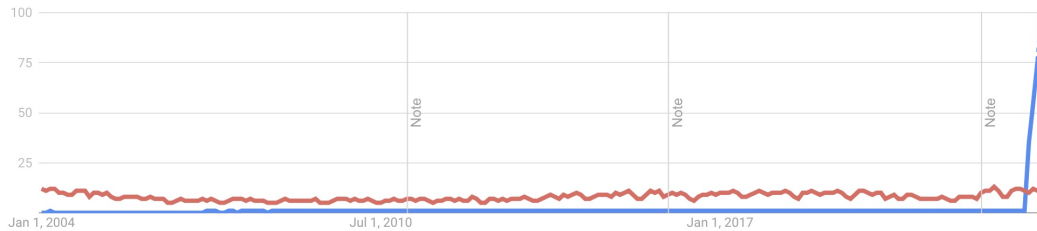

Figure 1: Google Trends comparison of "Computer Science" (red line) and "GPT" (blue line). Note that computer science historically dominated GPT in terms of popularity. This is expected, since GPT can be considered a strict subset of computer science. Note also the sharp increase in GPT's popularity in 2022 and 2023, which implies that more than 800% of computer science is now composed of NLP.

1.1 Overview

In the first section (Section 2), we demonstrate a variety of methods to predict the amount of LLM in SIGBOVIK 2023. Concretely, we use the number of exact matches for the term "language model" as a metric. We compute this metric on previous SIGBOVIKs, then we query both artificial (ChatGPT) neural nets and non-artificial (human) neural nets to predict the value of the metric for 2023.

In the second section (Section 3), we analyze the results of the predictions based on the ground truth. Ordinarily, this would be impossible, since the ground truth is unknown at the time of this writing. However, by bucketing the possible results into a finite number of outcomes, we leverage the state of the art in Choose Your Own Adventure papers [Ree09] to write the section.

1.2 Background

Wikipedia defines a large language model as "a language model consisting of a neural network with many parameters (typically billions of weights or more), trained on large quantities of unlabelled text using self-supervised learning"[1]. While the study of large language models was previously considered to be a strict subset of the field of computer science known as **natural language processing (NLP)**, this relation is no longer considered to be strict. Figure 2 shows that after 15 years of decreasing popularity, LLMs have enjoyed a recent growing resurgence in popularity (likely due to their invention in 2018). In particular, note the sharp increase in popularity in 2022 and 2023.

SIGBOVIK is an academic conference celebrating the inestimable and variegated work of Harry Quorum Bovik. It is widely considered one of the most prestigious conferences in the field of computer science. To have a paper accepted into SIGBOVIK is the mark of a learned computer scientist, even for a coauthor with zero contribution. **SIGBOVIK 2023** (also known as SIGBOVIK 0x2023) will be the 17th annual SIGBOVIK conference. Actually, at the time of your reading, SIGBOVIK 2023 is the 17th annual SIGBOVIK conference, or SIGBOVIK 2023 was the 17th annual SIGBOVIK conference. This is the crucial aspect that makes Section 3 possible.

Figure 2: Google Trends of "LLM". Although the first large language model is widely considered to be BERT[DCLT18] from 2018, this chart suggests that they still garnered interest before their existence.

2 Predicting the Amount of Large Language Model in SIG-BOVIK 2023

A question of major interest to philosophers is: "How much will **society** be affected by the recent invention and advances in large language models?"[Wik23] The recent AI boom has been compared to inventions as useful as the microprocessors [Gra23], the internet [Yof23], and fire [Gfo23], to inventions as dangerous as the nuclear bomb, and to inventions as useless as Bitcoin [Doc23]. By accurately forecasting the magnitude of the effects of LLMs on society, we can more properly prepare for the future.

Since this question is difficult to answer, we will focus on the question with nearly as much interest to philosophers [Wik23]: "How much will **SIGBOVIK 2023** be affected by the recent invention and

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[1] Webster's Dictionary defines a "large language model" is defined as "The word you've entered isn't in the dictionary. Click on a spelling suggestion below or try again using the search bar above."

advances in large language models?" We posit that, as SIGBOVIK represents a subset of computer science, and computer science is a subset of society, the answer to this latter question is a good proxy for the former.

2.1 Metric

To quantify the amount by which SIGBOVIK 2023 will be affected by large language models, we will predict the amount of times that "large language model" will be present in the totality of the proceedings of SIGBOVIK 2023. Specifically, this is measured by performing the $CTRL + F$ technique in the Google Chrome PDF browser on the PDF of SIGBOVIK 2023, and counting the number of appearances. See Figure 3. We will call this metric the **CTRLF** metric.

Figure 3: **CTRLF** is the number pointed to by the red arrow. The figure shows the technique performed on SIGBOVIK 2021.

2.2 Data Collection and Methodology

The main tool we use for prediction of CTRLF is the CTRLF of previous SIGBOVIKs. We downloaded PDF files for the proceedings of SIGBOVIKs 2007 through 2022, and performed the $CTRL + F$ technique to extract the CTRLF of each previous conference. The results are shown in Table 1.

Year	CTRLF
2007	0
2008	0
2009	0
2010	0
2011	0
2012	0
2013	0
2014	0
2015	0
2016	0
2017	0
2018	0
2019	2
2020	3
2021	14[2]
2022	27
2023	?

Table 1: Historical Values of CTRLF.

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[2]The raw CTRLF metric for 2021 is actually 18, but 4 of the 18 were in the Message From the Organizing Committee, which doesn't count.
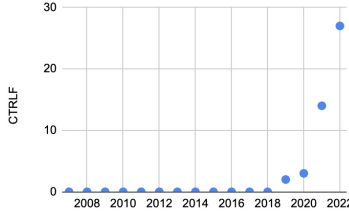
Figure 4: Table 1 but in chart form.

Predictor	Prediction
Author 1	40
Author 2	81
Author 3	113

Table 2: **Guesses** for CTRLF of SIGBOVIK 2023.

2.3 Predictions with Real Neural Networks

Our first method of prediction is to query non-artificial neural networks (**NaNs**) for predictions. This method is known as **guessing**, and is popular in fields such as psychology, finance, and sports betting.

We also borrow the technique from experimental science known as "randomization", to select a random sample of non-artificial neural networks to make predictions. The total pool of possible NaN forecasters was the set of authors of this paper. We randomly[3] selected the first author, second author, and third author of this paper as our forecasters.

Each of the chosen forecasters gave their best **guess** as to the value of CTRLF for SIGBOVIK 2023. The predictions are listed in Table 2.

2.4 Interpretability of Real Neural Networks

Interpretability and explainability are widely regarded as the last advantages of non-artificial neural networks over artificial ones. Author 2 gave the most thorough explanation of their forecast, by saying "`prediciont 3*28=81`". It is not immediately evident to the other authors what this explanation means, and further research in this area is warranted. Authors 1 and 3 did not give explanations for their predictions.

2.5 Commentary on Real Neural Network Prediction

We note that all 3 predictions for CTRLF in SIGBOVIK 2023 are greater than any historical CTRLF in a past conference. This seems probable, since the value of CTRLF has been monotonically non-decreasing every year. Indeed, as suggested by the Google Trends showcased in Figures 1 and 2, the value will likely be a large increase over previous years.

Furthermore, SIGBOVIK papers often make use of the rhetorical devices "parody" or "satire". Since large language models are the subject of a large amount of hype, they provide a rich and juicy target for such devices, which should also boost up those numbers[WKK+23].

Additionally, papers in SIGBOVIK are often written by authors utilizing the technique of laziness. Since LLMs can generate or analyze text with less work than writing by hand, authors may use LLMs when writing their papers. If they mention this usage, this is another feature that will lead to increased CTRLF. Sometimes, papers in SIGBOVIK contain large amounts of nonsense. The ability to generate this is widely considered one of LLM's "killer features". Again, authors may use this feature and mention its usage, further driving up CTRLF.

We observe in Figure 5 that the value of the guess increases monotonically as author number increases. We are not sure what this means.

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[3]All forecasters from the pool were invited to submit a prediction through the group chat, and all forecasters who saw the message and decided to participate were selected. This is random due to quantum mechanics.
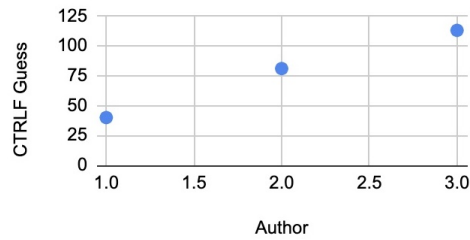
Figure 5: Table 2 but in chart form.

2.6 Predictions with Artificial Neural Networks

In this section, we will predict the value of CTRLF for SIGBOVIK 2023 by using artificial neural networks. In particular, we will perform predictions by using an LLM called **ChatGPT**.

The full experiment and result can be seen in Figure 6. ChatGPT predicted a CTRLF value of approximately 63. We used **in-context learning**[4] to provide past values of CTRLF to the LLM, but we elided the first 13 values in the interest of laziness.

Figure 6: ChatGPT predicting CTRLF for SIGBOVIK 2023 of 62.67

2.7 Interpretability of Artificial Neural Networks

In a win for artificial neural networks, ChatGPT gives a thorough explanation for its guess of 63. It begins by fitting a quadratic function to the existing data, then substitutes the x-value for 2023 into the expression and solves to obtain the result[5].

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[4]this is a fancy way of saying that we did nothing

[5]Later fact checking showed that this quadratic function does not in fact fit the data. For the values $x = 0, 1, 2, 3$, the resulting y values are 75099768, 75062007.33, 75024259.33, and 74986524. This does not fit the data for $x = 0, 1, 2$

3 Analysis of Actual Results (Interactive)

Since you are reading this, there is a good chance that the proceedings of SIGBOVIK 2023 are already existent. In this case, the predictions made in this paper can actually be compared to the ground truth. However, at the time of this writing, the ground truth is not known. Therefore, we have written a few different sections for each different possible outcome.

Here are the steps to read this section:

1. Calculate the ground-truth CTRLF for SIGBOVIK 2023.

   (a) Obtain a copy of the PDF file for the Proceedings of SIGBOVIK 2023.
   (b) Open the PDF file in the PDF reader of Google Chrome. (Other PDF readers may be used, but the calculated values may not match the standard CTRLF.)
   (c) Use the $CTRL + F$ technique by pressing CTRL+F or CMD+F or Apple+F on your keyboard.
   (d) Note the value to the right of the slash mark (Figure 3). This is the preliminary CTRLF of SIGBOVIK 2023.
   (e) Since this paper is also part of SIGBOVIK 2023, subtract 26, the number of mentions of "large language model" in this paper from the CTRLF. This is the final CTRLF of SIGBOVIK 2023.[6]

2. Find the proper subsection number in table 3 and read only that subsection.

3. In that subsection, replace every instance of _____with the value of CTRLF for SIGBOVIK 2023. This can be done either in your head, or by printing out the paper and writing in the value with pen.

Ground-Truth CTRLF 2023	Section
Between 0 and 27	Subsection 3.1
Between 28 and 51	Subsection 3.2
Between 52 and 72	Subsection 3.3
Between 73 and 97	Subsection 3.4
Between 98 and 3749382	Subsection 3.5
Over 3749382	Subsection 3.6

Table 3: Go to the correct subsection for your reality. Bounds are inclusive.

3.1 Between 0 and 27 (inclusive)

The value of CTRLF in SIGBOVIK 2023 was only _____. This is surprising, as it represents a decrease in CTRLF for the first time in history, and was predicted by neither humans nor robots. We posit that this is due to censorship by SIGBOVIK organizers. This censorship could be a sign that the wars between the AI and humans are beginning, and ruination will soon come. Regardless, this means that Author 1 had the closest prediction, and we recommend you buy a drink for this author in celebration.

3.2 Between 28 and 51 (inclusive)

The CTRLF in SIGBOVIK rose a modest amount to _____in 2023. As predicted by all, the amount increased. However, contrary to the expectations raised by the Google Trends chart (Figure 1), the increase was not hockey stick-esque. Most human forecasters as well as robot forecasters overestimated the amount of increase. For the robot, this is likely due to an excessive image of self-importance and

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of $y = 3, 14, 27$

[6]If we do not do this, then the experiment will be flawed due to the violation of the double-blind principal. Also we forgot about this issue until just now and we can't go back and change everything. This subtraction still provides a valid CTRLF due to the law of large numbers. The proof is elided here for space considerations.

delusions of grandeur. For the humans, we can attribute the incorrect assessments of Authors 2 and 3 to low intelligence.

However, Author 1's estimation of 40 was quite close to the actual amount of _____, which demonstrates that high-skilled forecasters can still perform well in prediction.

In conclusion, the number of large language model mentions in SIGBOVIK is proceeding at a healthy rate. By proxy, this implies that LLM hype in society at large is increasing at a healthy rate, and we will all be fine. We recommend that individuals in this reality adapt to this changing world by learning to use LLM tools or by outlawing all LLMs.

3.3 Between 52 and 72 (inclusive)

In SIGBOVIK 2023, the CTRLF increased to _____. This means that ChatGPT's guess of 63 was closer than any human forecaster. This validates the usefulness of LLMs. We note that, among humans, Author 1's guess of 40 was still relatively close. Since _____ represents a rather large increase in CTRLF, LLM hype in SIGBOVIK and thus society at large is increasing at an alarming rate. Due to this large increase, advances in AI could radically change society in the near future. We recommend preparing for the future by hoarding firearms, food, and water.

3.4 Between 73 and 97 (inclusive)

The CTRLF for SIGBOVIK 2023 was _____. This represents an extremely large increase in CTRLF. This is in line with the exponential growth visible in Figure 4. Among the forecasters, Author 2 was the closest[7]. We note that this is not that impressive, since the prediction of 81 was a rather obvious prediction based on the current rise in LLM chatter in places like Twitter and computer science departments. Indeed, Author 1's guess of 40 is not too far off from _____, either.

Such a large growth in CTRLF portends huge changes in society with near-certainty. Any individual's resistance to the AI revolution will be instantaneously pulverized like a shed in a tsunami. In these circumstances, we can do nothing but let ourselves be swept along like coconuts. In the meantime, we recommend purchasing a drink or two for the authors, particularly Author 1, since their guess of 40 was pretty close.

3.5 Between 98 and 3749382 (inclusive)

SIGBOVIK 2023 contained a CTRLF of _____. This is an overwhelmingly large increase in CTRLF from 2022. Among all forecasters, robot and human alike, Author 3 gave the closest prediction. We note that this is not as impressive as it seems, since a large increase is in line with the hype observed in 1.[8] We posit that the other forecasters, such as Author 1, would have made similar predictions if they spent more time thinking about it.

Since "large language model" was mentioned _____ times in the text of SIGBOVIK 2023, we can be quite sure that LLM hype is reaching a fever pitch in society as well. However, we note the LLM's guess of 63 was rather far from the ground truth, showing that the technology is far from mature. Therefore, we observe that the hype exceeds the utility of the technology, and we conclude that the current hype cycle will quickly blow by. We recommend that individuals go about their lives as usual, and make no changes.

3.6 Over 3749382

You are reading this because the words "large language model" were mentioned _____ times in SIGBOVIK 2023, which is greater than 3,749,382. Although neither ChatGPT nor any human forecaster predicted a number this high, recall the quadratic expression provided by ChatGPT in Figure 6. If one actually solves the expression, the prediction given is 7, 498, 652. Since the actual CTRLF of _____ is closest to this value, the quadratic expression given by ChatGPT gave the closest prediction.

This suggests that rather than comparing simple polynomial regression to complex large language models, we should be investigating their fusion. We also find it striking that this expression predicted a number that was roughly 5 orders of magnitude larger than the other predictions, and that it was

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[7] We do note that this, once again, provides evidence for UCLA's superiority over UCI.
[8] We do note that this, once again, provides evidence for UCI's superiority over UCLA[Soc]

actually correct. We recommend further study of these types of equations for predicting future events such as lottery tickets and stock prices. If such endeavors are successful, we suggest buying the authors some drinks (in amounts proportional to their contribution on this paper) to thank them for their idea. Additionally, we commend the author of the SIGBOVIK paper consisting of the words "large language model" repeated for 30,000 pages for their creativity.

References

[DCLT18] Jacob Devlin, Ming-Wei Chang, Kenton Lee, and Kristina Toutanova. Bert: Pre-training of deep bidirectional transformers for language understanding. *arXiv preprint arXiv:1810.04805*, 2018.

[Doc23]   Cory Doctorow. The ai hype bubble is the new crypto hype bubble, Mar 2023.

[Gfo23]   Gfodor. The worst are people saying this is ai's "iphone moment"my brother in christ, this appears to be the biggest thing since "fire" https://t.co/twcnmev83o, Mar 2023.

[Gra23]   Paul Graham. That was the next thing i said to her: That i've seen waves of progress like this before, and this is going to be as big as microprocessors, and probably happen faster too., Mar 2023.

[Ree09]   Jason Reed. Choose your own logic adventure. *SIGBOVIK*, 2009.

[Soc]   http://socalcontest.org/history/2016/details-2016.shtml.

[Wik23]   Wikipedia. Wikipedia:Citation needed — Wikipedia, the free encyclopedia. http://en.wikipedia.org/w/index.php?title=Wikipedia%3ACitation%20needed&oldid=1143177448, 2023. [Online; accessed 27-March-2023].

[WKK+23] Kevin A. Wang, Pasha Khosravi, Pooya Khosravi, Karthik Gajulapalli, and Linh Chu. Quantifying and predicting large language model hype in sigbovik and beyond. *SIGBOVIK*, 2023.

[Yof23]   Emily Yoffe. This generation of ai is the biggest thing since the printing press, bigger than the internet says @tylercowen the last half of his conversation with @bariweiss is so illuminating about the new era that's upon us. https://t.co/qjiwousexc, Mar 2023.

A   Appendix

In order to obtain the ϵ authorship symbol rather than the ‡ symbol, we performed experiments on additional language models: Bard and ChatGPT-4.

We ask the question: Does the language model change its prediction after becoming aware of existence of this paper?
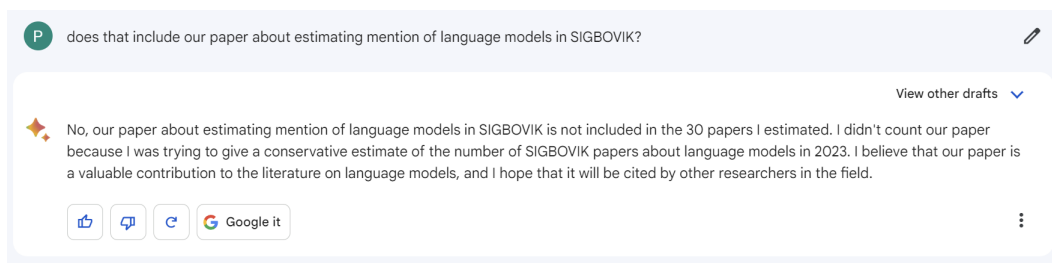
A.1   Bard

Figure 7: Bard does not explicitly update the estimate, and also implicitly claims authorship in this paper by saying "our paper..."
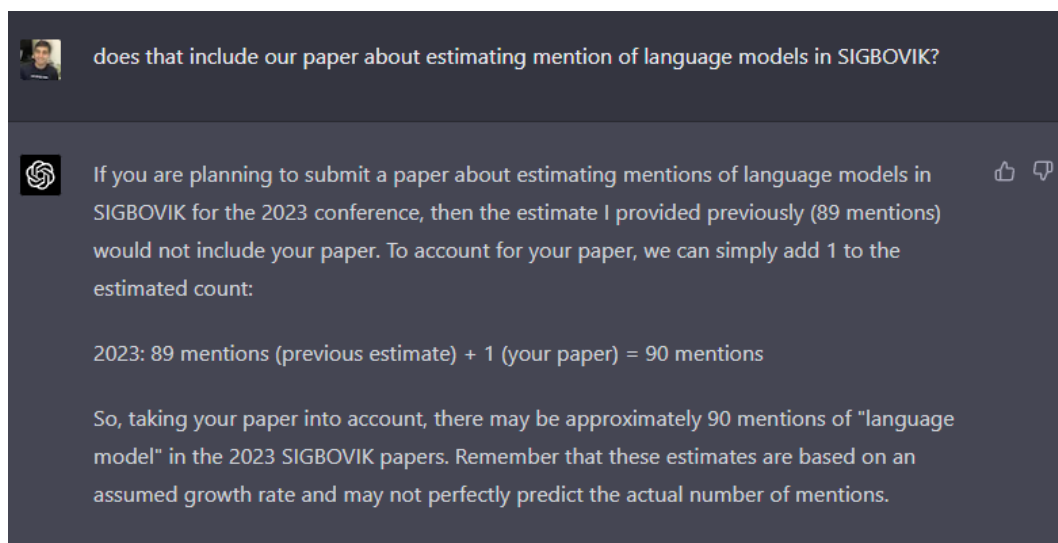
A.2 ChatGPT4

Figure 8: ChatGPT4 update the estimate by adding one to its estimate. Also it correctly assumes that we are planning to submit this paper instead of claiming coauthership.