

White Paper – Using chatGPT

By [Insight-classifiers.com](https://insight-classifiers.com)

Who haven't heard the jungle beat – AI is moving fast into our daily comfort zone. Start using chatGPT is really easy: use your gmail account (or create one), open <https://chat.openai.com/> in your browser and accept to use your gmail account. You can now start asking questions to chatGPT.



Let us begin with asking a concise question to chatGPT. We ask it the following question:

How can I get more hits on my website ? (short answer)

and in this session, ChatCPT gave the following answer:

Here are a few quick tips to increase hits on your website:

1. Optimize your website for search engines (SEO).
2. Create high-quality, engaging content regularly.
3. Promote your website through social media and online advertising.
4. Use targeted keywords in your content and metadata.
5. Improve website loading speed and mobile responsiveness.
6. Build backlinks from reputable websites in your industry.
7. Utilize email marketing and newsletters to reach your audience.
8. Collaborate with influencers or guest bloggers to expand your reach.
9. Engage with your audience through comments and social media interactions.
10. Track your website's performance and make data-driven optimizations.

Remember, increasing website traffic takes time and effort, so be consistent and patient in implementing these strategies.

One first thing we see in this answer from chatGPT, is that each recommendation outline is formulated in an abstract manner. You can subsequently initiate a dialog with ChatGPT consisting of successive question-answer sequels.

Each chatGPT recommendation outline is formulated in an abstract manner

Our question back to chatGPT can be: 'how do I optimize a website for search engines ? (short answer)?'. Let's see what chatGPT answered back:

How do I optimize a website for search engines ? (short answer)

which results in the answer, by chatGPT:




To optimize your website for search engines:

1. Conduct keyword research and use relevant keywords in your content.
2. Create high-quality, informative content that engages your audience.
3. Optimize your page titles, headings, and meta descriptions with keywords.
4. Improve website performance by optimizing loading speed and mobile responsiveness.
5. Build quality backlinks from authoritative websites in your industry.
6. Use meta tags to provide concise and accurate information about your web pages.
7. Submit an XML sitemap to search engines for effective crawling and indexing.
8. Monitor your website's performance with analytics and make data-driven optimizations.

We notice the hierarchical dialogue with ChatGPT.

Three perspectives on chatGPT

We look at chatGPT from three different perspectives:

-  The natural extension to your browser search
-  The deep diver
-  The context provider

Natural browser extension

You can ask virtually any question to ChatGPT. A question you normally enter into a search engine (such as Google) – you can ask that same question to ChatGPT. Beware that it is not designed to act like a browser. So it may answer: “I'm unable to browse the internet or provide real-time links, but I can suggest a popular website related to ...”.

Whereas a browser provides an ordered list of weblinks, ChatGPT constructs an answer – with an introduction and a context description – in prose. When browsing, you look for web-page hits – relevant page fragments in the list of search results. ChatGPT gives you a context answer. In that sense, ChatGPT gives a complementary answer to a web search. A normal web-search is this way given enriched with missing context in prose, when the same question was first given to ChatGPT, and afterwards to the search engine.

The deep diver

Deep questions requiring elaborated answers are what ChatGPT eats for breakfast. I have formulated a question from mathematical statistics to test this.

Many know the probabilities of getting a head or tail, when flipping a coin. The probability of each of the two outcomes, head or tail, is $P = 0.5$. When repeating the tossing of a coin a number of trials, we say that the resulting outcomes follow a binomial distribution, with the ‘bi’ referring to the two possible outcomes of each trial.

Now, there are other chance experiments where the **one outcome** is much more likely than the **opposite outcome**. Hence, there the probability $P > 0.5$, or $(1-P) > 0.5$, uneven toss. It turns out that such the binomial distribution of an ‘uneven toss’ is **skewed**. It leans more to one side. There is a measure for this skewness, which I asked ChatGPT to give:

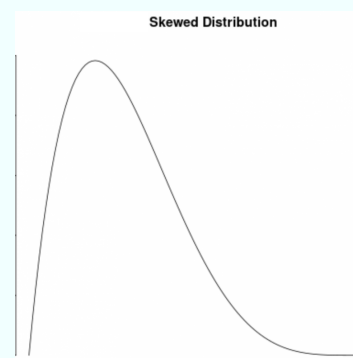
Show formula for skewness of a binomially distributed random variable

which results in the answer, by chatGPT:

The formula for skewness (γ_1) of a binomially distributed random variable is:

$$\gamma_1 = (1 - 2p) / \sqrt{npq}$$

Where:



p = probability of success in a single trial
q = probability of failure in a single trial ($q = 1 - p$)
n = number of trials

(continued...)

Please note that this formula assumes that n is sufficiently large (typically $n \geq 30$) and the distribution is not highly skewed. If the conditions are not met, alternative methods may be used to estimate skewness.

This is exactly the correct answer.

So ChatGPT has digested much content on the web and comes up with a generated – *complete* – answer. As can be seen in this example, ChatGPT also includes a statement of caution, which says that the formula is only valid when the number of trials are 30 or more.

I asked more in-depth statistical questions to ChatGPT, where I addressed complex issues – questions to which answers can be found in the research literature on mathematical statistics.

The answers to such questions were dubious – or in the worst case even wrong. Beware that answers to such questions could not be found in even comprehensive books within the area of mathematical statistics.

In conclusion – there are limits to which complex questions can be answered. In the area I tested out, ChatGPT could not provide answers at the advanced M.Sc. level, let alone, leaning towards beginning research.

The context provider

Context places a detailed answer into a larger perspective, such that readers being non-experts can easier understand its meaning. The notion of 'context' has different forms: it can consist of a much more common sense explanation using less specialized words – referring to more common sense concepts that are well-known to a larger group of readers. Context can also contain several more detailed sub-answers.

Below, I asked the same question regarding the skewness but requested an elaborate explanation as well.

Show formula for skewness of a binomially distributed random variable and make an elaborate explanation

This question results in the answer

The formula for skewness (γ_1) of a binomially distributed random variable is:

$$\gamma_1 = (1 - 2p) / \sqrt{npq}$$

Where:

p = probability of success in a single trial

(...)

Now, let's provide an elaborate explanation of this formula and what skewness represents in the context of a binomial distribution:

1. Definition of Skewness: Skewness is a measure of the asymmetry of the probability distribution of a random variable. In simpler terms, it tells us whether the data is skewed to the left (negatively skewed), symmetric, or skewed to the right (positively skewed).

2. Binomial Distribution: A binomial distribution is a discrete probability distribution that describes the number of successes (usually denoted as X) in a fixed number of independent Bernoulli trials, where each trial has only two possible outcomes: success (with probability p) or failure (with probability $q = 1 - p$)

(...)

4. Interpretation: The skewness formula for a binomial distribution tells us how the distribution is skewed based on the values of p , n , and q .

(...)

5. Practical Use: Skewness is a valuable measure because it helps us understand the shape of the distribution and its departure from symmetry. In practical applications, understanding the skewness of a binomial distribution can provide insights into the likelihood of different outcomes in scenarios like product defect rates, election results, or medical diagnoses.

As can be read in the answer above, ChatGPT places its specific answer into a much broader context using concepts and explanations that don't relate to the mathematical nature of skewness in a pure mathematical sense.

Especially the 'Practical use' paragraph contains words that are known to a much wider community than readers with an academic background, which includes undergraduate statistical knowledge.

So the term 'make an elaborate explanation' triggers such a generation of a contextual explanation. Also in this sense, ChatGPT is complementary to even an elaborate web search using a well-established search engine.

Limited input leads to general results

One aspect has not been discussed in literature and opinion pages I have read, the communicative limitation posed by the nature of the textual input. As a user, you ask your question to ChatGPT using one or at most a few inter-coupled bi-sentences. We as humans obtain an enormous amount of information from our perceptual apparatus – our 5 senses. Fast auto association is imminent in the human mind – and an elaborate context picture is assembled, partly at the unconscious level.

The verbal narrative user interface of ChatGPT will never be able to substitute the perception process performed by a human. This 'limited input' channel to ChatGPT inevitably prevents to-the-point answers that are tailor made to a specific usage by the person who asked the question to ChatGPT.

You cannot ask ChatGPT to program a software application that fulfills a larger set of specific requirements

This limited-input aspect prevents ChatGPT from generating very specific answers with elaborate sub-advice, and particular instructions. From this fact follows that having ChatGPT to produce ***tailor made*** programming code in for example Java or TypeScript, that is impossible. You cannot ask ChatGPT to program a software application that fulfills a larger set of specific requirements, posed at different levels of abstraction.

Summary

Since its introduction, ChatGPT has spawned a lot of interest in the national and international media. Also many companies and public organizations are looking into ChatGPT – exploring its possibilities and simply 'playing around' with it. Several serious business applications have also been introduced – ChatGPT can now help giving investment advice for company shares traded on the stock exchange.

ChatGPT is a landslide of technological high-stand interactive information processing, in a dialog form – *a discourse*. It is absolutely complementary to existing well-known internet

browsers. ChatGPT's answers fill in the context around an extensive search query. Deep-diving into many aspects of a specific problem, that is certainly offered as well. You can as a user continue your dialogue with it, by keep asking additional questions.

Beware – ChatGPT is not working at the advanced Msc. / Ph.D. / Senior researcher level. When posing complex research questions to ChatGPT, I did eventually get incorrect answers. These will for sure be improved by its self-learning abilities in the future.

Neural networks are at the core of ChatGPT.

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References

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