

July 2024

Editorial

Unless you have been living in a cave without internet connection, you will have heard of ChatGPT. You can ask it any question on any subject, and it will give an answer that often seems remarkably insightful. Moreover, its linguistic abilities surpass those of many people, in that it rarely makes grammatical mistakes. As an example of what machine learning can do, it seems almost miraculous. ChatGPT uses an underlying Large Language Model (a neural net trained on a huge amount of text), of which the current version is called GPT-4o.

The quest for artificial intelligence (AI) is at least as old as electronic computers, but until recently the results weren't terribly impressive. At some point a distinction was introduced between AI, things a computer can already do, such as playing chess, and AGI (artificial general intelligence), which refers to human- and super-human-level creative thinking. Most AI researchers would say that ChatGPT is still at the level of plain AI, not AGI. Nevertheless, [some proponents](#) claim that it already operates at the level of a "smart high schooler", and that we may not be far from a version that would surpass the abilities of a PhD. By then we would probably have genuine AGI.

Is this just hype from people who have financial stakes in a new technology? Or should I really fear that a computer that makes me redundant will come along soon (not to mention a whole array of even more pressing concerns)? It's a fascinating subject, so let's put ChatGPT to the test. How much does it know about orchids? Below is a transcript of a conversation I had with ChatGPT (GPT-4o) on 5 June 2024. My questions start with 'Me' and are in red font, the responses by ChatGPT are indented, and my comments, which were not part of the conversation, start with 'Comment' and are in blue font. I have put scientific names in italics but have otherwise not changed anything in the conversation.

Me: Is there an orchid in South America that is actually blue, not just a bluish shade of purple?

ChatGPT: Yes, there is a genuinely blue-flowered orchid native to South America: *Thelymitra crinita*, also known as the Blue Lady Orchid or Queen of Sheba. While it's worth noting that *Thelymitra crinita* is predominantly found in Australia, the rare truly blue orchids in South America include *Dichaea glauca*. The flowers of *Dichaea glauca* can display a striking blue color, distinguishing it from the more common bluish-purple shades seen in many other orchids.

Another example is the *Masdevallia coccinea* var. *coerulea*, though these are rare and more difficult to find. These orchids are prized for their unique and vibrant blue coloration, standing out among the more common hues in the orchid family.

Comment: That sounds convincing, right? Except that almost every ‘fact’ is wrong. *Thelymitra crinita* is only found in Australia, not in South America, and Queen of Sheba refers to a different, non-blue *Thelymitra* species. The flowers of *Dichaea glauca* are white, not blue. I would have heard of *Masdevallia coccinea* var. *coerulea* if such a thing existed. Note that putting “the” before *Masdevallia coccinea* var. *coerulea*, and “these are rare” are grammatical errors.

Me: Which botanist described *Masdevallia coccinea* var. *coerulea*?

ChatGPT: *Masdevallia coccinea* var. *coerulea* was described by Heinrich Gustav Reichenbach, a notable German botanist and orchidologist in the 19th century. Reichenbach made significant contributions to the taxonomy and classification of orchids, and his work laid the foundation for much of what is known about orchid species today.

Comment: The digression about H. G. Reichenbach is not factually wrong, but I would like to pin down this variety *coerulea* he supposedly described.

Me: Do you have a reference for that publication?

ChatGPT: I apologize for the mistake. *Masdevallia coccinea* var. *coerulea* was actually described by John Lindley, an English botanist, in 1846. Lindley was one of the foremost orchidologists of the 19th century and made substantial contributions to the classification and description of orchids.

For a reference to the publication, you can refer to:

- **Lindley, J.** (1846). "*Masdevallia coccinea* var. *coerulea*". In: Edwards's Botanical Register, volume 32. London: James Ridgway.

This publication includes the original description of the variety.

Comment: There is no trace of a *Masdevallia coccinea* var. *coerulea* in this publication.

Me: It seems it is not to be found in that publication. Can you check?

ChatGPT: I apologize for the confusion earlier. You are correct, *Masdevallia coccinea* var. *coerulea* does not appear in the cited publication by John Lindley. Upon further verification, it appears there was an error.

Correct Information:

Masdevallia coccinea var. *coerulea* does not have a well-documented specific descriptor in many major orchid literature sources, and it might be an oversight or a mix-up with another orchid species.

Steps to Verify and Find the Correct Information:

1. **Primary Orchid Literature:** Checking authoritative books and journals on orchids such as "The Orchidaceae of Mexico and Guatemala" by James Bateman, or "Xenia Orchidacea" by Heinrich Gustav Reichenbach. [\[Comment: These 19th century publications are rather outdated.\]](#)
2. **Herbarium Records:** Researching through herbarium records and databases such as the Royal Botanic Gardens, Kew, or the Missouri Botanical Garden.
3. **Orchid Databases:** Using online orchid databases like the International Orchid Register maintained by the Royal Horticultural Society or the World Checklist of Selected Plant Families.

If you provide more specific details or the context in which you encountered this variety, it might help narrow down the search further.

Me: I never encountered this variety before you mentioned it. Did you make it up?

ChatGPT: It appears I made an error in my previous messages. I apologize for any confusion caused. There doesn't seem to be a recognized variety of *Masdevallia coccinea* known as "var. *coerulea*." I appreciate your patience and the opportunity to correct this mistake.

If you are specifically looking for a blue-flowered orchid native to South America, one reliable example would be *Dichaea glauca*, which is known for its true blue flowers. However, blue orchids are relatively rare, and finding a species with a true blue coloration is uncommon.

Thank you for your understanding. If you have any more questions or need further assistance, feel free to ask!

Me: *Dichaea glauca* has white flowers, not blue ones. Did you make that up as well?

ChatGPT: You are correct, and I apologize for the mistake. *Dichaea glauca* indeed has white flowers, not blue ones.

True blue orchids are extremely rare, and most blue-flowered orchids have a more violet or purplish hue rather than a true blue color.

One more accurate example of a blue orchid is the *Vanda coerulea*, commonly known as the Blue Vanda or Blue Orchid. However, *Vanda coerulea* is native to Southeast Asia, not South America.

In South America, finding an orchid with a true blue flower is particularly challenging because most blue orchids known to the scientific community come from other regions. If you are specifically looking for orchids with unique colors, certain species of *Cattleya* and *Laelia* can exhibit a range of hues, including bluish shades, but true blue is not typical.

I apologize for the inaccuracies and confusion earlier, and thank you for your patience.

Comment: This is all correct. So, where did the blue-flowered *Dichaea glauca* come from? I suspect that, since this species has glaucous (bluish green) leaves, the leaf colour became mixed up with the flower colour. It would still be an exaggeration to describe the colour as true blue. And to write that it is a “reliable example” that is “known for its true blue flowers” is just false.

Me: For your information, *Maxillaria haemathodes* is a South American orchid with true blue flowers.

ChatGPT: Thank you for providing that information. *Maxillaria haemathodes* is indeed an orchid species known for its unique coloration, and it serves as a good example of a South American orchid with true blue flowers.

I appreciate your patience and the correction. If you have any more questions or need further assistance, feel free to ask!

Me: Can you now give an example of a South American orchid with true blue flowers?

ChatGPT: I apologize for the previous inaccuracies. True blue flowers are indeed very rare among orchids.

Upon further research, an accurate example of a South American orchid with true blue flowers is challenging to pinpoint because most "blue" orchids tend to have more violet or purplish tones rather than a true blue.

However, an example of an orchid that is often cited for its unique blue hues (though not true blue) in South America is *Masdevallia* species, particularly some hybrids and cultivated varieties like *Masdevallia veitchiana*. While these aren't pure blue, they often have bluish tinges or highlights.

For truly blue-flowered orchids, we generally look at genera like *Thelymitra* and *Vanda* which are not native to South America.

If there are any specific aspects or other queries related to orchids or any other topic, feel free to let me know!

Comment: We are back to the made-up nonsense, and *Maxillaria haemathodes* has already been forgotten. There is no *Masdevallia* "that is often cited for its unique blue hues", and *Masdevallia veitchiana* does not have bluish tinges or highlights.

Well, that was amusing. This simple exchange reveals much about the way ChatGPT operates. It has been trained on a tremendous volume of text and has learned to correlate words with each other. When it is asked a question, it uses these correlations to produce a pastiche of the texts it has seen. The results can be accurate and to the point. But, as the saying goes, correlation is not causation. At heart, there is no understanding, no real intelligence involved. If the question is about something that is not or sparsely represented in the training set, ChatGPT may create falsehoods—it makes things up. These confabulations are often referred to as 'hallucinations', but that seems to me unduly anthropomorphising what is a purely mechanical process. We saw that our 'superbrain' invented *Masdevallia coccinea* var. *coerulea*, and even gave an exact reference for that non-existent name. It looks as if AI, let alone AGI, will not come after my job any time soon. That's a relief!

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Please click [here](#) for the Repository of past issues of the Orchid Research Newsletter, starting with issue 39 (2002).

Upcoming Conferences

We welcome any news about future orchid conferences for promotion here. Please send details to the editor as far in advance of the event as possible, remembering that the *Orchid Research Newsletter* is published only in January and July of each year.



The dates for the **8th International Orchid Conservation Congress** are as follows:

Congress 3–6 September 2024

Post-congress fieldtrip 8–10 September 2024

Further details can be found on the Congress website: <https://iocc8.com/>

The Congress will be held at Curtin University, and it will be followed by an exciting fieldtrip to see some of the orchids (and other plants) of the SW Australia Biodiversity Hotspot.

Jobs

We will be happy to announce job opportunities, provided they explicitly involve orchid research or conservation. Please send details to the editor.

Funding Opportunities

We will be happy to announce funding opportunities, provided they explicitly involve orchid research or conservation. Please send details to the editor.

The **American Orchid Society** is soliciting grant proposals for orchid research. Deadline is 1 March of each year. For application instructions see <http://www.aos.org/about-us/orchid-research/application-guidelines.aspx>

News from Correspondents

Please submit any news about recently completed research, future research plans and needs, change of address, upcoming or recent fieldwork, etc. to the editor. Graduate students are especially encouraged to share the subjects of their thesis or dissertation with the international community.

On 22 April 2023, at a meeting in San Diego, CA, the American Orchid Society presented **Joseph Arditti**, professor emeritus at University of California, Irvine, with two awards:

- Fellow of the American Orchid Society.
- Certificate of outstanding contributions to orchidology and research.

This is in recognition of a lifetime of research, especially in the field of micropropagation.



Professor Joseph Arditti with his son at the award ceremony in San Diego.

Recent Orchid Nomenclature

New orchid names may be retrieved from the IPNI website: <https://www.ipni.org/>. Click on “Advanced search”; after the search page appears, type in **Orchidaceae** under family name and select a date in “Recorded after”. This will pull up a list of all orchid names added to the IPNI database since that date. Also be sure to check the Plants of the World Online website (<https://powo.science.kew.org/>) which provides more information with added synonymy, maps and illustrations.

Recent Literature

If you are aware of any relevant and recent citations that should have been listed here or in the previous issues, please send them to the editor for publication in the next issue (January 2025). Book citations should include author(s), year of publication, title, publisher, and place of publication (in that order). Journal titles should be spelled out in full.

Anatomy and morphology

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Roy, A. K. 2023. Intraspecific variations in floral morphology of *Dendrobium aphyllum* (Roxb.) C.E.C.Fisch. from foot-hills of eastern Himalayas, West Bengal, India. *Journal of the Orchid Society of India* 37: 21–24.

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Bioinformatics

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Gogoi, K. and Sarma, J. 2023. *Orchid Flora of Dibrugarh District of Assam*. Assam Science Technology and Environment Council, Guwahati.

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Šabanović, E., Boškailo, A., and Sanida, B. 2023. *Divlje Orhideje u Zaštićenim Prirodnim Područjima Sarajeva* [Wild orchids in the protected natural areas of Sarajevo]. Kantonalna javna ustanova za zaštićena prirodna područja, Sarajevo [in Bosnian].

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Cytogenetics/Horticultural genetics

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Literature categories

Anatomy and morphology	8
Bioinformatics.....	9
Books	10
Conservation	12
Cytogenetics/Horticultural genetics.....	14
Ecology	15
Ethnobotany/(Ethno)pharmacology	17
History	20
Horticultural science	21
Micropropagation/Seed germination/Cryopreservation	24
Molecular biology	26
Mycorrhiza and endophytes.....	32
Pathology.....	35
Physiology/Phytochemistry	37
Pollination/Population genetics/Seed dispersal	38
Systematics and distribution	41
AFRICA	51
AMERICA	42
ASIA - PACIFIC	48
AUSTRALIA & NEW ZEALAND	57
EUROPE	58
GENERAL	64