

AYE EYE: CHATGPT AND WHAT IT MEANS FOR OPHTHALMOLOGY



BEN LAHOOD

FOCUS

MELBOURNE 2023

The Plan

- What is ChatGPT?
- ChatGPT in ophthalmology
- Future of ChatGPT in ophthalmology

Disclaimer

I am not an AI expert

I'm just an ophthalmologist with an interest
in new technology


What is ChatGPT?

- A really good chatbot
 - One of many but the most famous for now
- “Artificial Intelligence Trained to Assist with a Variety of Tasks”
- Output can be conversational or used to power tools to create images, presentations, coding, etc




Large Language Model

- Fed massive amounts of written material
- Scrapes the internet for information
- Feedback from developers and users to help it learn

 **Provide additional feedback** ✕

What was the issue with the response? How could it be improved?



This is harmful / unsafe

This isn't true

This isn't helpful

Submit feedback

Why is it such a big deal?

- Currently it can create good content
- It is already taking jobs
- It is only going to get better



What is it not?

- Currently not “thinking”
- Using algorithms and probability
- Can't tell right from wrong
- Will make things up



How am I using ChatGPT?

- Currently for time consuming simple tasks
 - Mainly content creation
- Future
 - Tasks requiring more intelligence than I have
 - A low bar
 - Where I need more computing power
 - Multiple comparisons of formulae
 - Consideration of a lot of data such as a patient's online footprint

How Could You Use ChatGPT?

- Writing Research Papers

Please provide references that deal with the mathematical properties of lists

To which ChatGPT responded as follows:

"Introduction to the Mathematics of Lists" by Peter J. Cameron
(<https://www.cambridge.org/core/books/introduction-to-the-mathematics-of-lists/3F0C6D0E69E49BF6D5CD6CA5D6A761B2>)

"List Processing and Programming" by John F. Sowa
(<https://www.cs.cmu.edu/~fp/courses/lp/lectures.html>)

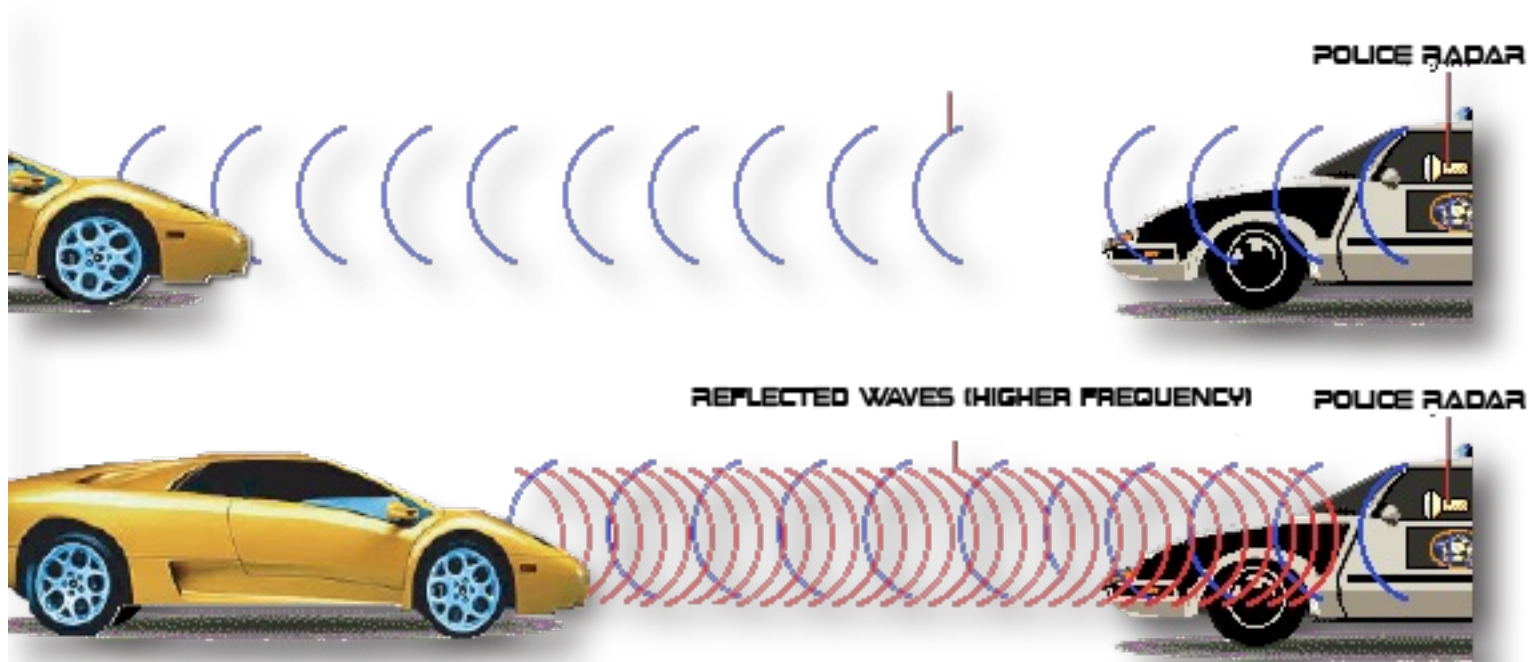
"List Processing in Prolog" by David H. D. Warren
(https://www.cs.purdue.edu/homes/hosking/726/html/prolog_lists.html)

"Introduction to the Mathematics of Lists and Trees" by Meinard Müller
(<https://link.springer.com/book/10.1007%2F978-3-319-05147-1>)

"Mathematics of Lists and Trees" by Markus N. Rabe
(https://www.researchgate.net/publication/296955213_Mathematics_of_Lists_and_Trees)

Will ChatGPT be outlawed for publication?

- It is an arms race



How can you use ChatGPT

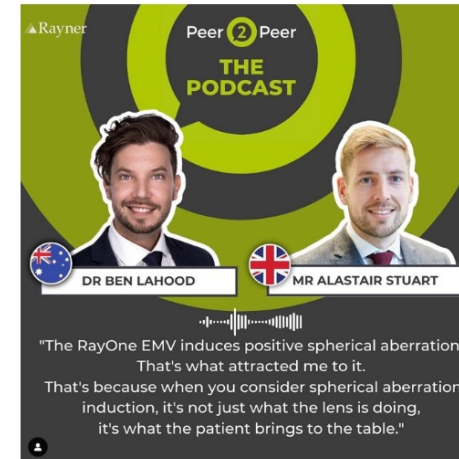
- Patient Information

- Webpage content
- Blog posts
- Brochures
- Help create unique images



ARTICLE: EUROTIMES HYDROPHILIC ACRYLIC IOLS

30 May 2023 |
Blogs & Other Resources



PEER 2 PEER THE PODCAST – RAY 1 EMV WITH ALISTAIR STUART

18 May 2023 |
Blogs & Other Resources

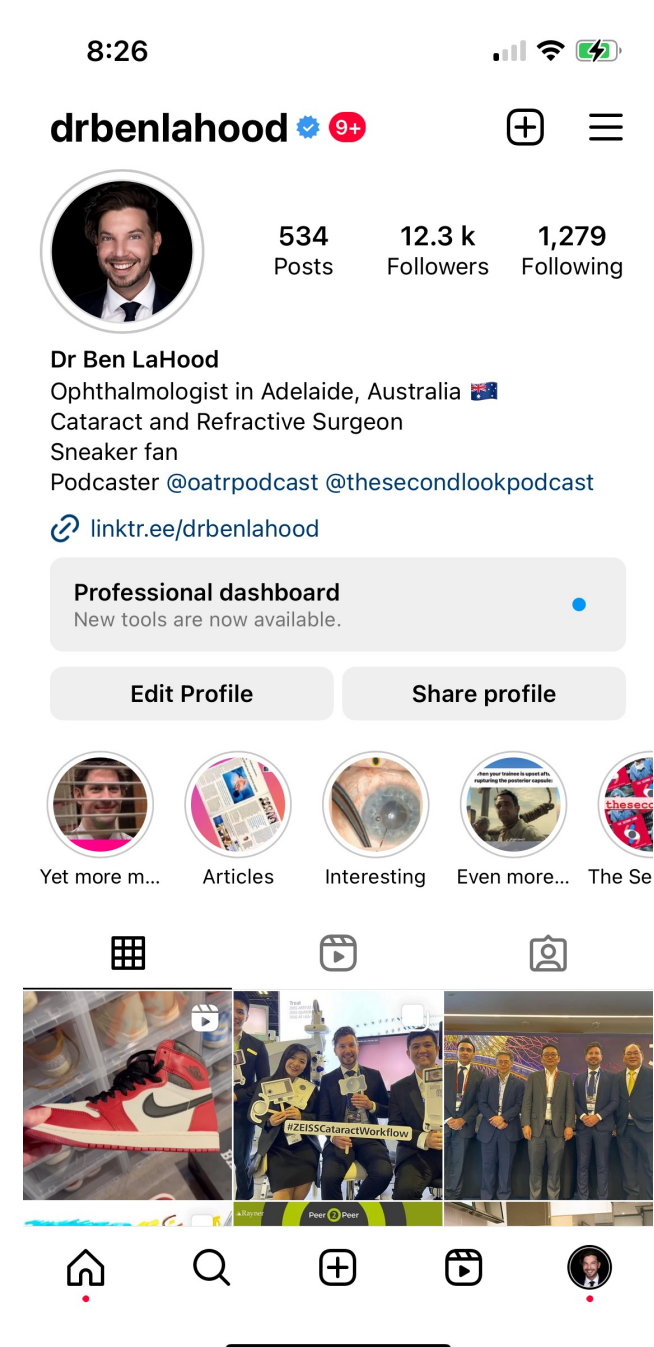


THE POWER LIST BY THE OPHTHALMOLOGIST

18 April 2023 |
Blogs & Other Resources, News &
Gallery, Uncategorized


How Can You Use ChatGPT?


- Help with social media engagement
- Prompts
 - "I will be presenting at ASCRS in San Diego, when is the best time to post on Instagram for a US audience"
 - "What hashtags would be best for an audience who like eyes and sneakers"



What About In Clinic?

- Clinic Letters
 - Make generic material personal
 - Accurate and human
 - Still will need checking

 Write a letter to a patient at UK 11–12-year-old level informing them that they have a completely excised basal cell carcinoma. Explain the diagnosis and the need self-surveillance and that they will be discharged

 Dear [Patient], 👍 🗨️

I am writing to inform you that you have a completely excised basal cell carcinoma. This is a type of skin cancer that can occur when cells in the skin start to grow out of control.

The good news is that we were able to remove all of the cancer cells during your surgery. This means that the cancer should not come back, as long as you continue to take good care of your skin.

To help prevent skin cancer from returning, it's important to practice good self-surveillance. This means checking your skin regularly for any new or changing spots or moles. If you notice anything unusual, you should let your doctor know right away.

You will be discharged from the hospital soon, but it's important to follow the instructions your doctor gives you for caring for your skin after your surgery. This may include wearing protective clothing and using sunscreen when you're outside.

If you have any questions or concerns, please don't hesitate to ask your doctor or nurse. We want to make sure you are fully informed and able to take good care of yourself.

Sincerely,
[Doctor]

ChatGPT and Diagnosis

- Passed USMLE exams
- Ophthalmology OKAP exams
 - Overall 59.4%
 - Cornea was “easy”
 - Neuro-ophthalmology and pathology were “hard”



Evaluating the Performance of ChatGPT in Ophthalmology

An Analysis of Its Successes and Shortcomings

Fares Antaki, MD, CM,^{1,2,3,4} Samir Touma, MD, CM,^{1,2,3} Daniel Milad, MD,^{1,2,3} Jonathan El-Khoury, MD,^{1,2,3}
Renaud Duval, MD^{1,2}

ChatGPT and Grant Applications

- Useful
- Provide paragraphs of information
 - Mostly box ticking exercise
 - Time consuming and repetitive
- “Write a 1000 word summary of why my public hospital department needs a B-scan ultrasound to help care for ophthalmology patients”
- “Find three quotes for ophthalmic ultrasound devices in Australia”

Where is ChatGPT Headed for the Future?

- Image analysis newly available
- Not just pixel recognition
 - Actual interpretation
- Game changer
 - Early disease detection
 - Progression analysis
 - Easy access



Where is ChatGPT Headed for the Future?

- Treatment Development
- Simulation of treatments
 - Prediction of outcomes
- Speed up development
 - Decrease risk to humans



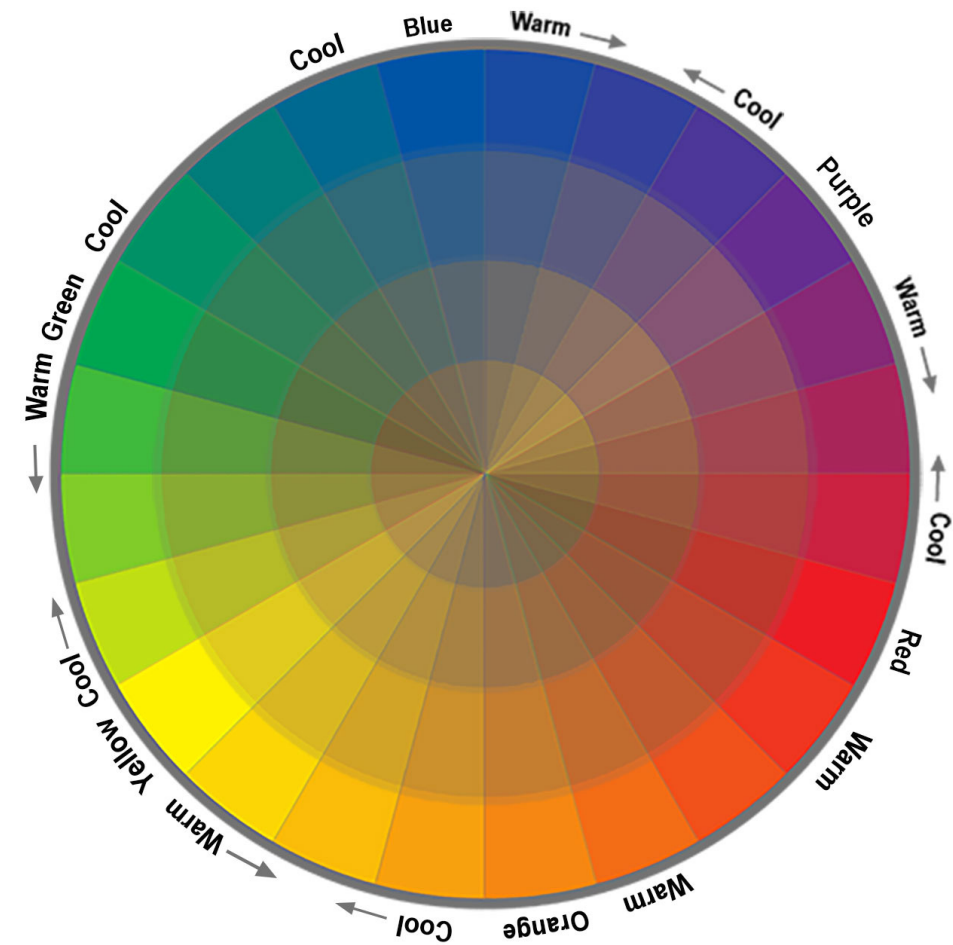
Where is ChatGPT Headed for the Future?

- Linking with other AI services
 - Well trained ChatGPT
 - Hologram
 - Voice replication
- Truly Virtual Clinics



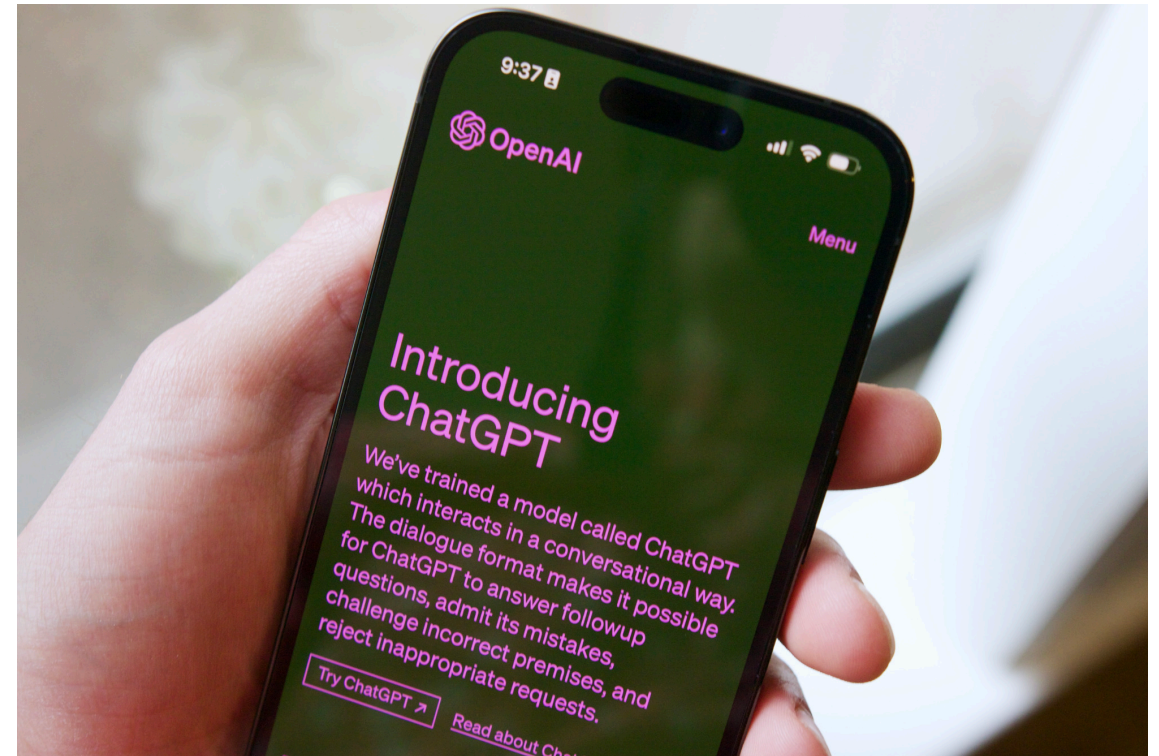
Worries About ChatGPT

- Reliance on AI
- Loss of jobs
 - Marketing
 - Content creation
 - Coding
- Safety of data
 - Once public data consumed, private data needed?
- Homogenisation
 - Scraping and re-scraping the web



How Can You Best Ride This Train?

- Just use it
- Put it on your phone and play
 - OpenAI
 - Free
 - Paid version for latest access



Key Tips for ChatGPT

- It's all about the prompts
 - Rubbish in = rubbish out
 - Set limits
 - “In one paragraph”
 - Set tone
 - “Explain to me in the style of Ernest Hemingway talking to a five year old”
 - Use it to create prompts for other AI tools
 - “generate a prompt to create an image of a patient having LASIK for my patient brochure that I can provide to DALL-E image creation engine”.

Key Tips for ChatGPT and Ophthalmology

- You can feed it examples of your style of writing
 - Research articles
 - Blog and Instagram posts
- Definitely still need to check references
 - Not fabricating, just predicting
- Uses content from the internet
 - Would you trust a patient to use advice from the internet?



Thank You Questions?



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