With all the new gadgets, is AI going to replace me?

FMF
Family Medicine Forum
Forum en médecine familiale

THE COLLEGE OF FAMILY PHYSICIANS OF CANADA
LE COLLÈGE DES MÉDECINS DE FAMILLE DU CANADA

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Presenter Disclosure

- Presenter: Rahim Valani

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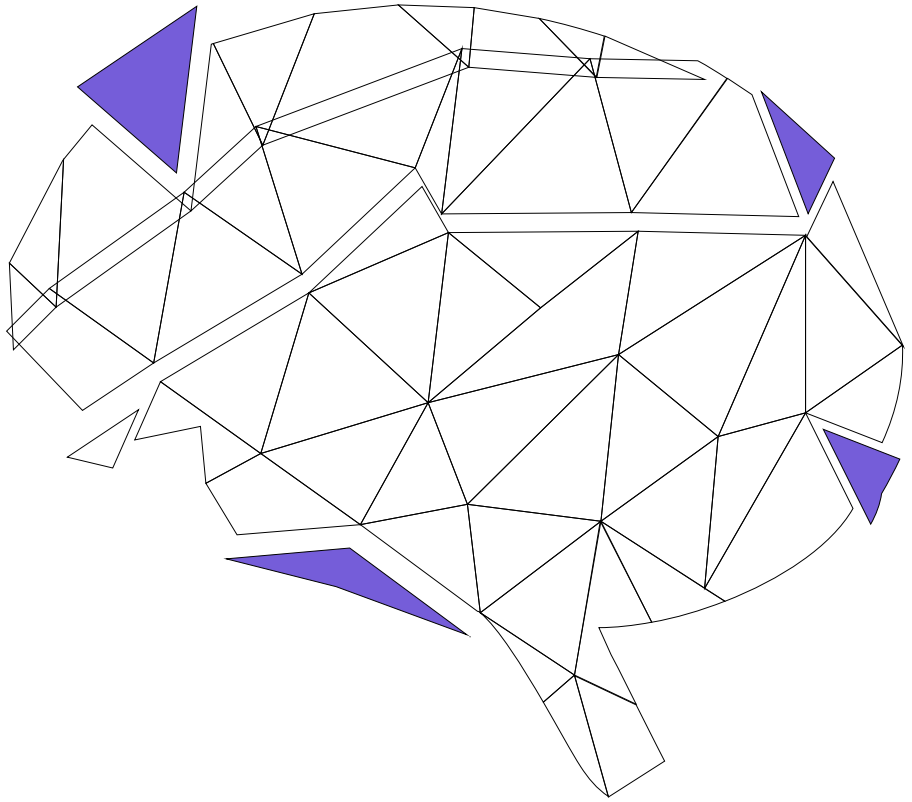
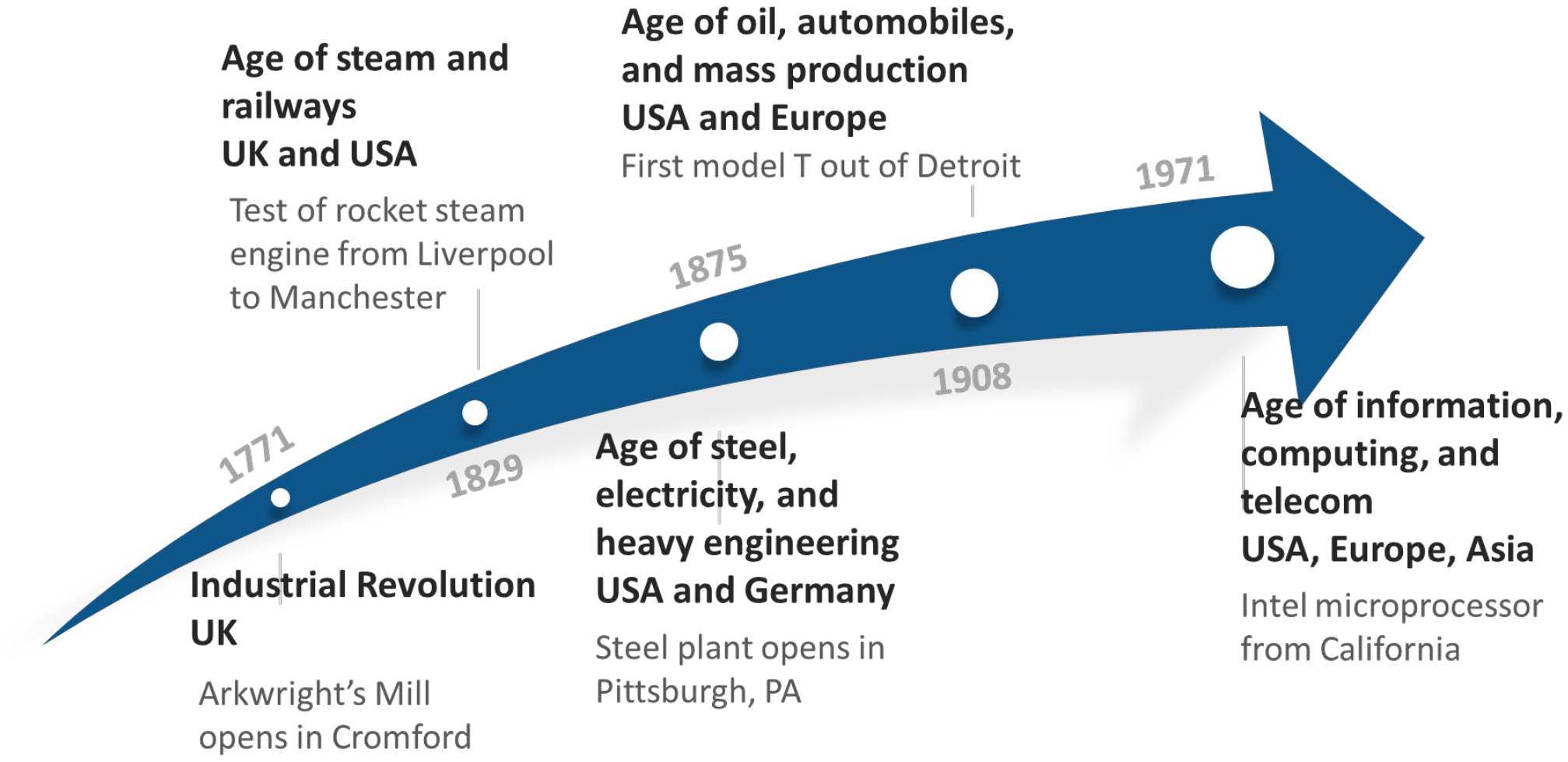
OBJECTIVES

- Role of AI in clinical practice
  - What is it?
  - What is the role of technology / AI in providing optimal care?
    - From curiosity to implementation
  - What is the future of AI?
    - Strategies to integrate AI effectively and responsibly into practice
    - Sample tools in practice



What is AI?

Successive Evolutions



Fun facts

- It would cost $12.50 to generate 1 million tokens (the equivalent text of Lord of the Rings) using GPT-4o
  - …. And it can do it in 30 minutes!
  - Cost in 2024: $30
- ?50% of social media content is generated by AI
  - ~71% of social medica images are AI generated
  - ~ 52% of reels are AI generated
- Pre-GPT, companies would develop a 3 year strategic plan
  - …now its 1 year

Service	Input ($/MM tokens)	Output ($/MM tokens)
Gemini-2.5 Pro (Google)	15	7.5
Claude Opus 4.1 (Anthropic)	15	75

What if…

- A student applied to medical school and asked Chat-GPT to write the essay on the application?
- You use an AI platform to write your patient report?
- You ask AI for help in making a diagnosis?

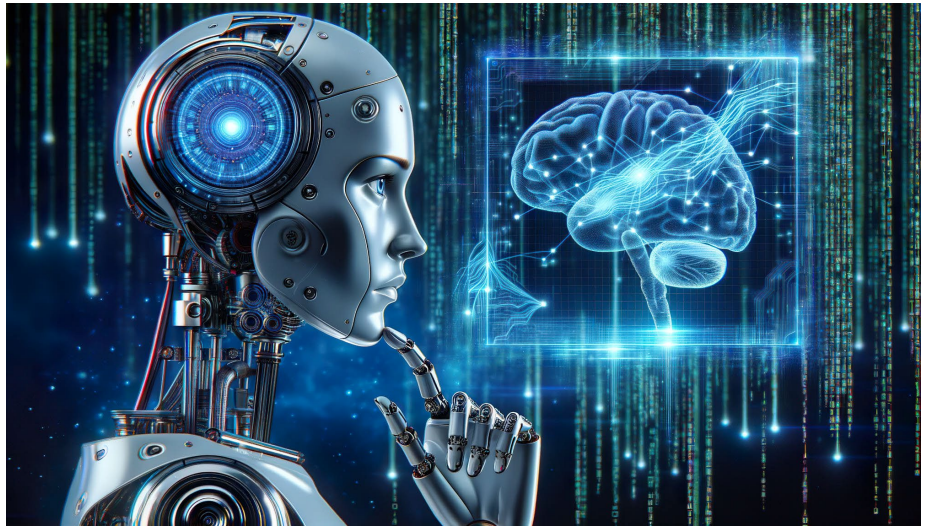
Image created from Chat GPT

Before we begin

- What is AI?
  - It is not Artificial Intelligence!

https://www.inc.com/partners-in-leadership/4-strategies-to-burst-your-filter-bubble-and-influence-others.html

AI in a nutshell



- AI is built on ML and LLM
  - Think of it as a really large regression
  - AI is the transformation while ML is the engine
- No enterprise context
  - Can use proprietary data to fine tune it
- The potential is great
  - From mundane repetitive tasks for chat bots to integration of systems
- Do not need a new programming language!
- Need to embrace it – you cannot run from it
- Its going to be a new science
  - Change from PubMed and Google search to “prompt engineering”
  - Netscape moment

https://scitechdaily.com/will-artificial-intelligence-soon-become-conscious/

Buzz words

- Large language models (LLM)
  - Basically a large data set from which you are asking the model for a solution
  - 3 parameters: accuracy, efficiency, and token limits
- Retrieval augmentation
  - You want to reference something when the LLM provides a response
  - The output is therefore context aware based on your own information
- Zero shot learning
  - Solving without requiring new training – don't need new data as it has already been tested
- Tokens
  - Tokenization is the process of splitting the input and output texts into smaller units that can be processed by the LLM AI models
  - 1 token is approx. 4 characters

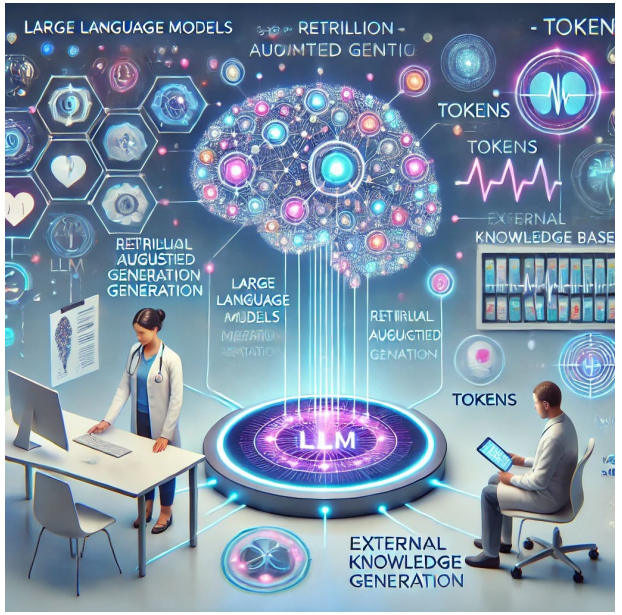
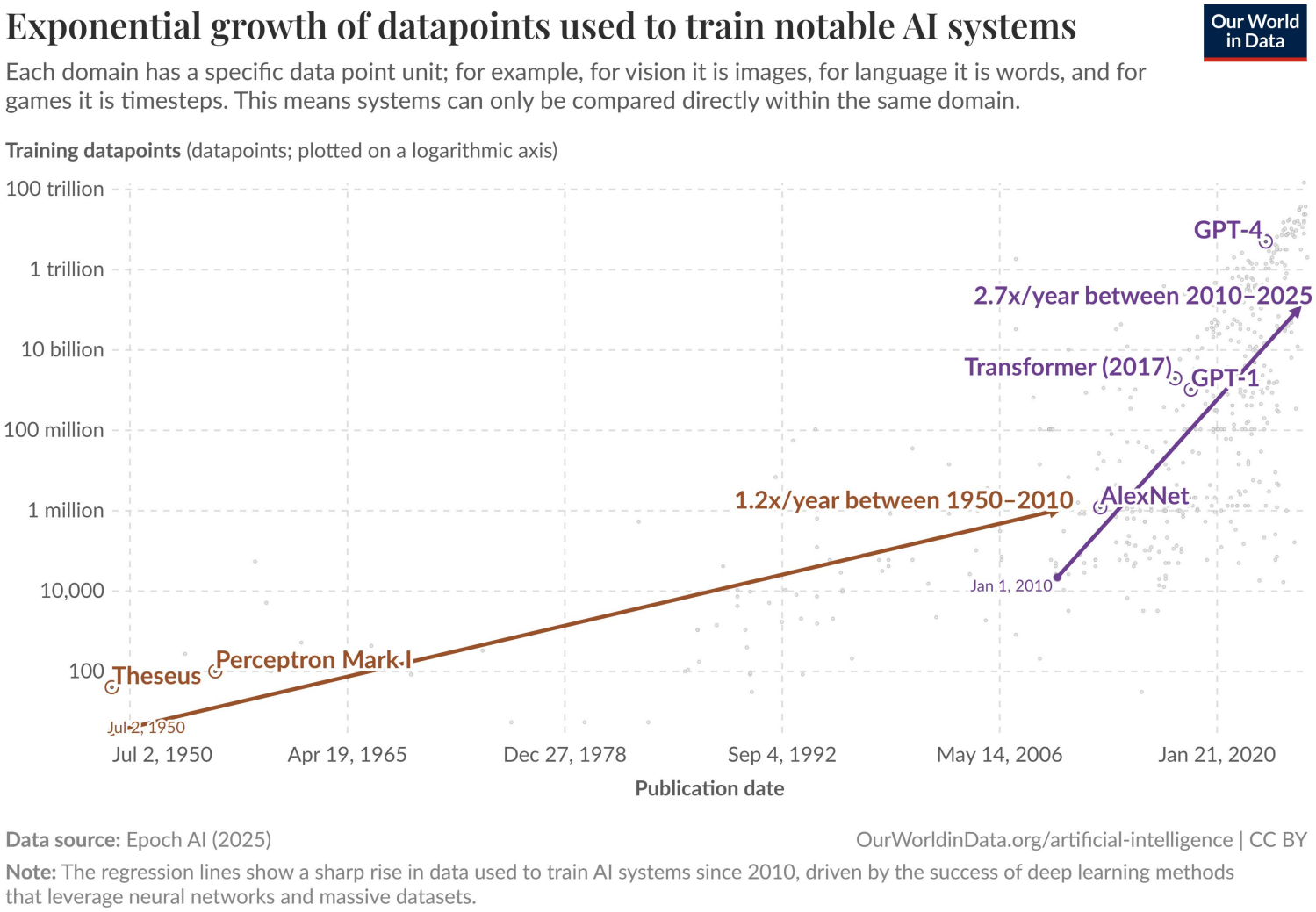


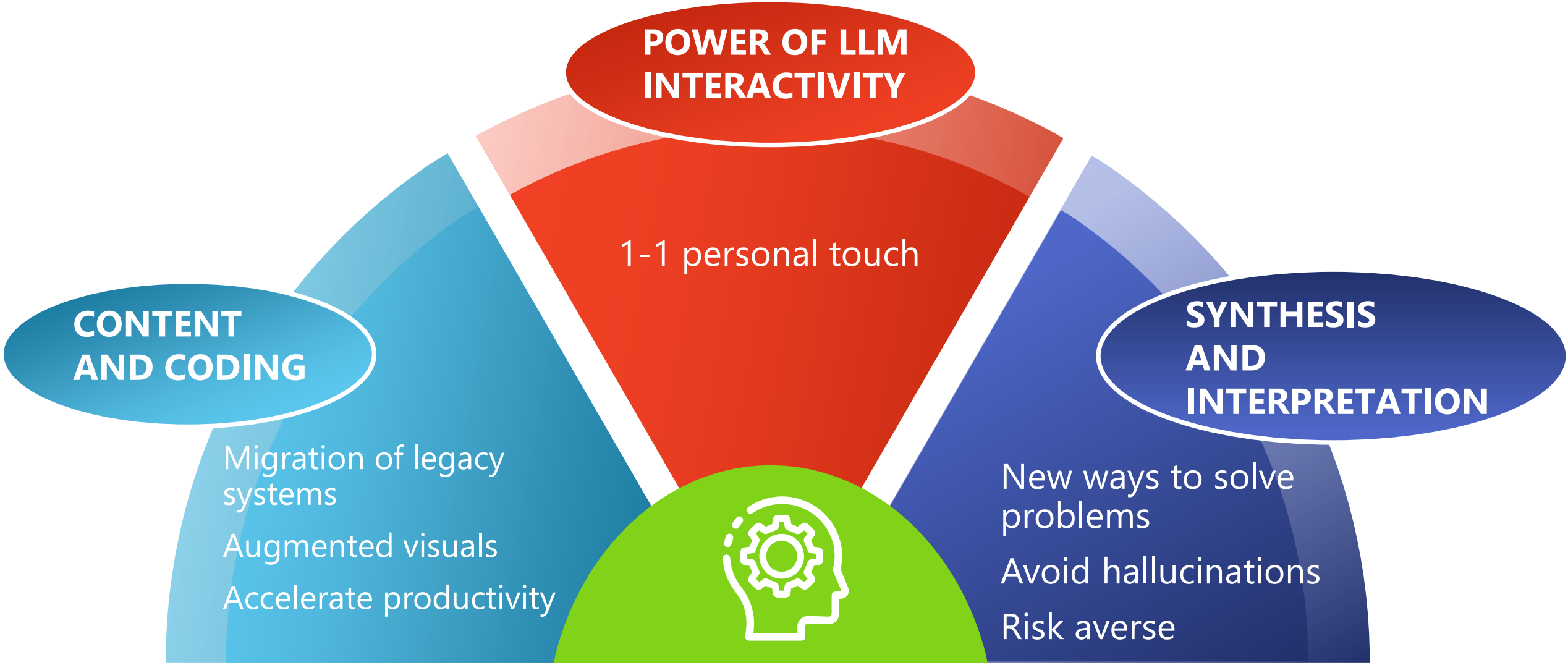
Image created from Chat GPT

Tokens



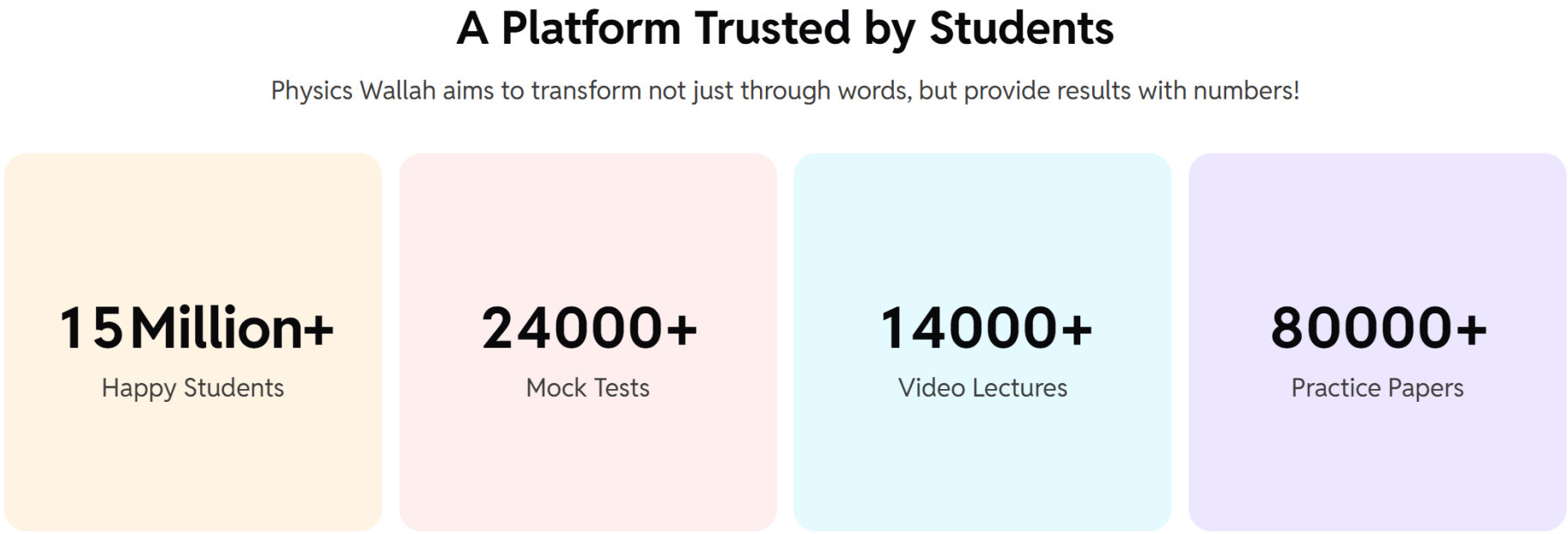
Epoch AI (2025) – with major processing by Our World in Data

Sample cases with AI



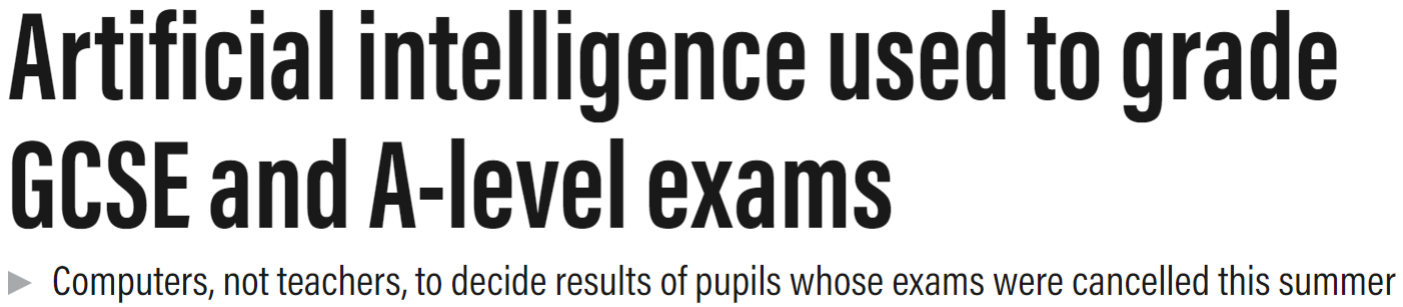
AI use – curriculum development

- Case of physicswallah
  - 55 days to production
  - Over 10 MM students today



https://www.pw.live/

AI use – marking exams



Artificial intelligence used to grade GCSE and A-level exams

► Computers, not teachers, to decide results of pupils whose exams were cancelled this summer

- Being used to mark national exams in the UK
- Argument:
  - Consistency of marking
  - Can appeal if there is a gross error

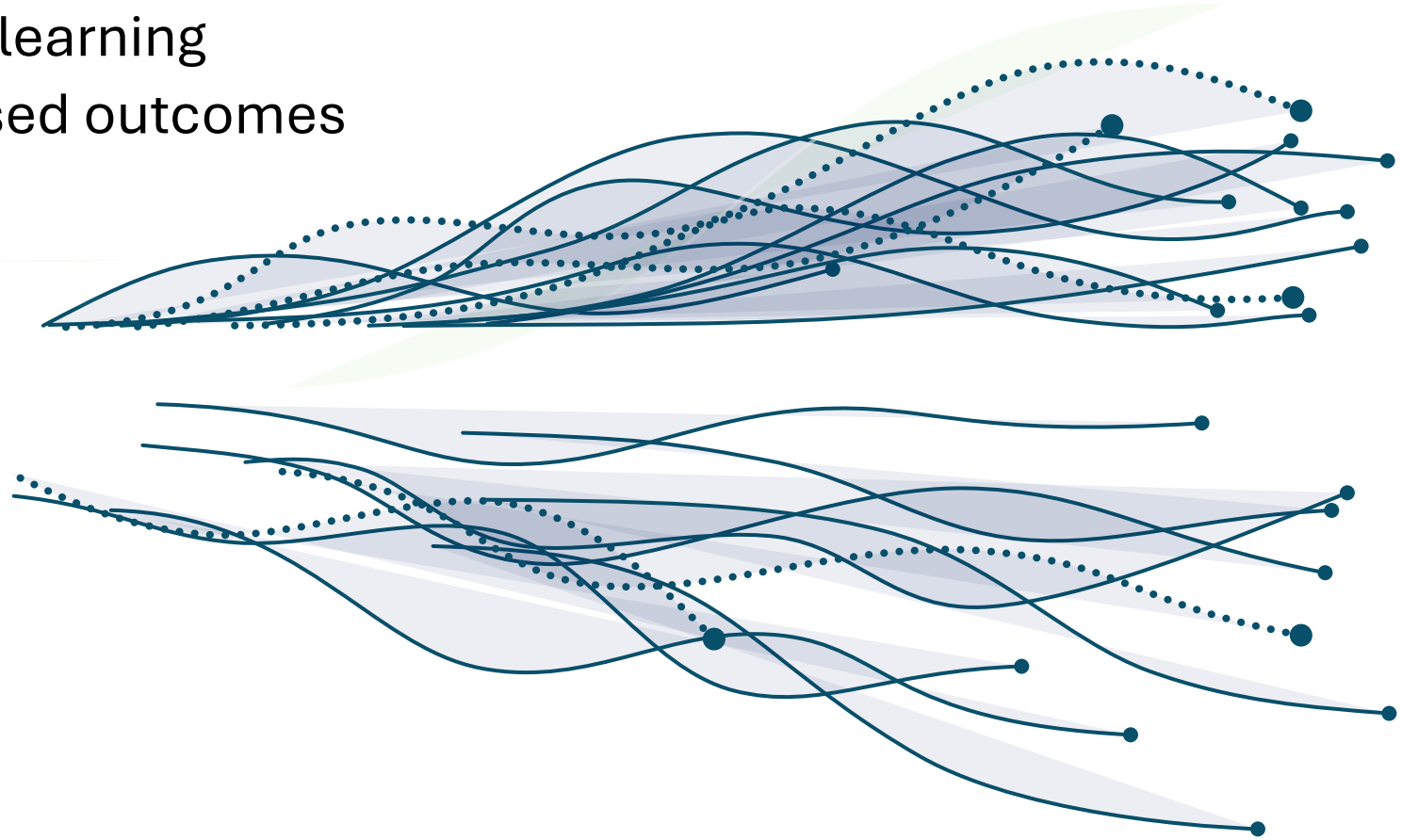
https://www.thenationalnews.com/

AI use – healthcare decision making

- Pre-pandemic, the NHS used AI for:
  - Diagnosis – 34% (largely in cancer)
  - Automation – 29%
  - Population health – 17%
  - Remote monitoring – 14%
- Large move in radiology with the creation of 5 centres of excellence
- Optimizing OR times
- Patient discharge papers

What has changed with AI

- Move from traditional model to PBL / CBL
  - From lectures to small group learning
  - Transition to competency based outcomes



- With AI:
  - Marking exams
  - Additional resources
  - Performance metrics

What is the role of technology / AI in providing optimal care?

AI in our context

- Why AI?
  - High administrative burden
    - can we offload this?
  - EHR vendors and the big players (Microsoft / Nuance, Dragon) are making these tools available
  - Use of your own or collective data sets that enrich evidence based and context specific practice
    - Lose out on population based information if locked
  - CFPC move to understand its use

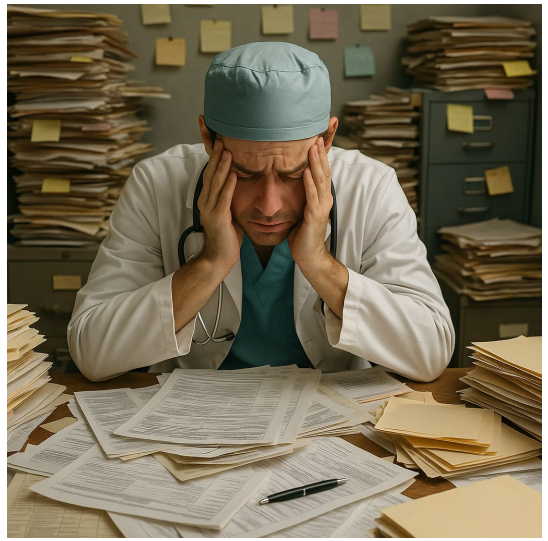


Image created from Chat GPT

CFPC

- The CFPC supports AI R&D for family medicine and primary care, conducted according to the principles outlined in this statement considering practice environment, ethics, and social context.
- Further to these principles, AI R&D should be congruent with:
  - The Patient's Medical Home (PMH) vision,
  - The Family Medicine Professional Profile, and
  - The Quintuple Aim.

CFPC Statement on Artificial Intelligence for Family Medicine

AI in medicine

- The impact is expected to show up in doctor-patient interactions, physicians' paperwork load, hospital and physician practice administration, medical research, and medical education.

- *Most of these effects are likely to be positive, increasing efficiency, reducing mistakes, easing the nationwide crunch in primary care, bringing data to bear more fully on decision-making, reducing administrative burdens, and creating space for longer, deeper person-to-person interactions*.

Machine healing. Harvard Gazette. 2025.

Where can I use AI?

- Rember, most of these are assistive at this stage
  - Generative – write notes, letters, patient handouts
    - Decrease administrative burden
  - Scribe – record the interaction and draft the SOAP notes / consult letter
    - Improve efficiency and more patient “face” time
  - Decision making – help with diagnoses, making don’t miss lists
    - A safety net to double check things and get a second opinion
  - Triaging – which patient do I need to see tomorrow versus next week / month?
    - Better patient satisfaction
  - Assist with billing

Case 1

- Pt calls in for an appointment
- They feel they have a UTI
- No fever or systemic symptoms

- Process:
  - Book appointment
  - See patient
  - Review records (complicated, comorbidities, resistance issues in the past)
  - Prescribe medication
  - Enter details in EHR

Image created from Chat GPT

Case 1

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  - Enter details in EHR

- AI assisted process:
  - AI intake collects the information (symptoms)
  - Note drafted based on presumptive diagnosis of UTI
  - Clinician confirms this and approved the scribed note
  - Patient instructions printed out and prescription sent to pharmacy

Elderly patient – ask AI to develop a handout that is at a Grade 6 level

AI generated patient handout

- I am a family physician. I have an elderly patient who is diagnosed with a simple urinary tract infection. I have given her a prescription for Clavulin, and she does not have any allergies to medications. This is the first line of treatment based on the most up to date clinical practice guidelines. Please help me write a patient education handout for her to inform her of the diagnosis, the treatment I am giving, and when to be concerned for which she should return back to the clinic or go to the emergency department. The patient has a grade 6 level of education so please make the note so that she can understand it.

Patient handout

- You can modify it as per your discretion
- Ensures it is at the level the patient understands

Urinary Tract Infection (UTI)

Patient Education Handout

What is a UTI?

A urinary tract infection (UTI) happens when germs (bacteria) get into the bladder or urinary tract. The bladder is the part of your body that holds urine. When you have a UTI, it can make it painful or hard to pass urine.

Common Symptoms

• Burning or pain when you pee
• Needing to pee often, even if only a small amount comes out
• Feeling like you have to pee right away
• Pee that smells bad or looks cloudy
• Pain or pressure in your lower belly

Your Treatment

Your doctor has prescribed an antibiotic called **Clavulin (amoxicillin-clavulanate)**. This medicine helps your body get rid of the bacteria causing the infection.

How to Take Your Medicine

• Take the medicine exactly as your doctor told you, usually twice a day.
• Take it until it is all gone, even if you start to feel better.
• You can take it with food to help prevent stomach upset.
• Drink lots of water to help flush out the infection.

What You Can Do to Feel Better

• Rest and drink plenty of fluids (water is best).
• Avoid caffeine, alcohol, and spicy foods — they can make symptoms worse.
• Go to the bathroom as soon as you feel the need — don't hold it in.
• Wipe from front to back after using the toilet.

When to Come Back or Get Help Right Away

Go back to the **clinic** or **emergency department** if you have:
• Fever or chills
• Pain in your back or side
• Nausea or vomiting
• Blood in your urine
• Trouble passing urine or not peeing at all
• Symptoms that don't get better after 2–3 days of taking your antibiotic

Case 2

- Pt in for follow up of their diabetes and hypertension

- Process:
  - Book appointment
  - See patient
  - Review records (last lab values, consult reports)
  - Prescribe medication
  - Arrange for any further or updated consultation
  - Enter details in EHR

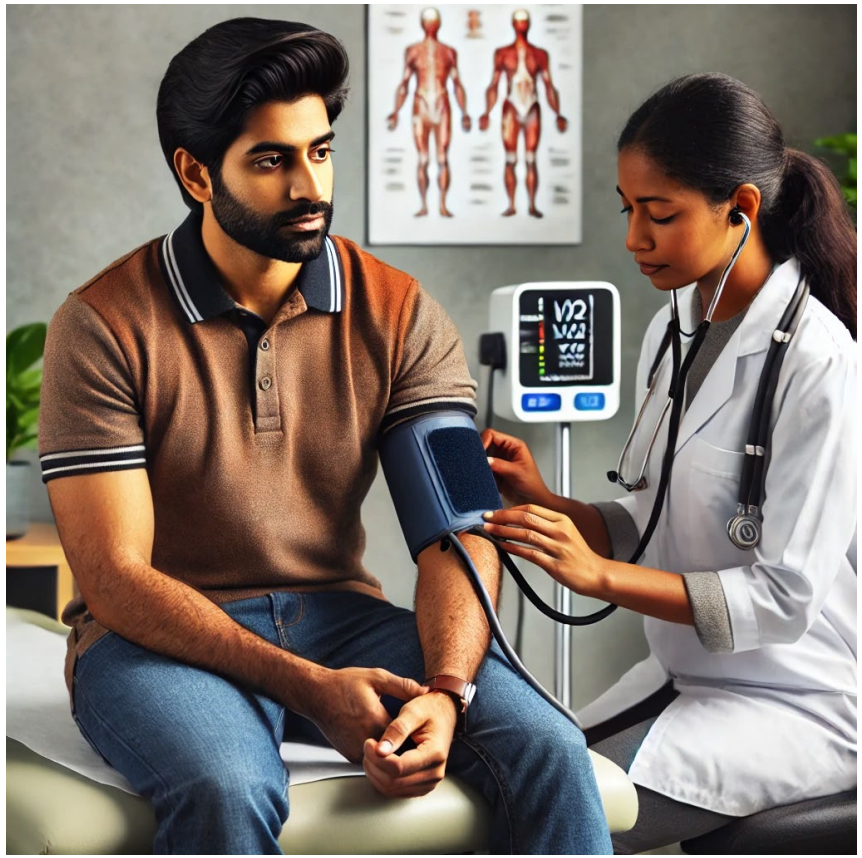


Image created from Chat GPT

Case 2

- Pt in for follow up of their diabetes and hypertension

- Process:
  - Book appointment
  - See patient
  - Review records (last lab values, consult reports)
  - Prescribe medication
  - Arrange for any further or updated consultation
  - Enter details in EHR

- AI assisted process:
  - AI develops a structured note for the visit and prompts you to follow up on specific issues
    - Diet
    - Vision – eye exam completed?
    - CV risk assessment
  - System pulls up trends for the HgA1c, creatinine, lipid profile, and makes recommendations
    - Diet, labs, follow up
  - Clinician reviews this and approves the scribed note
  - Patient instructions printed out, all specialists notified of visit and labs, and prescription sent to pharmacy

Immigrant family – ask AI to translate to patient's native language

AI generated clinic notes

- Augmented listening - conversation is summarized and put in a format of your liking
  - It can learn from your prior notes as well to ensure it sticks with your style
- It may have challenges with strong accents

- Estimated 90 vendors so far
- Examples of vendors :
  - Heidi health
  - Freed AI
  - DeepScribe

I am not endorsing any of these vendors. They are placed here as examples.

Case 3

- Pt presents with persistent cough, fatigue, and weight loss
- Known smoker

- Process:
  - Book appointment
  - See patient
  - Review records
  - Consider CXR
  - Enter details in EHR

Image created from Chat GPT

Case 3

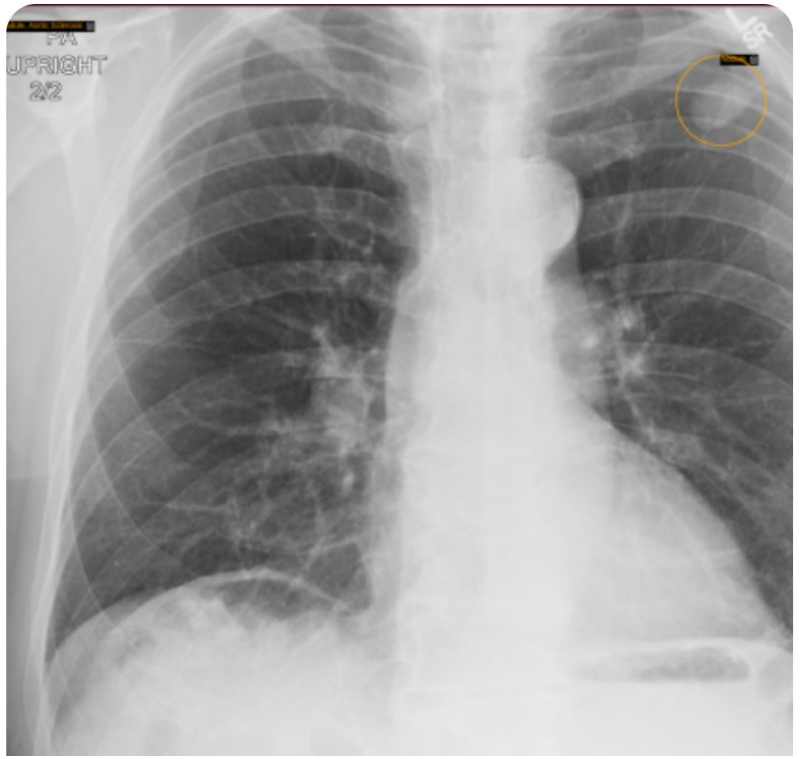
- Pt presents with persistent cough, fatigue, and weight loss
- Known smoker

- Process:
  - Book appointment
  - See patient
  - Review records
  - Consider CXR
  - Enter details in EHR

- AI assisted process:
  - AI intake collects the information (symptoms) – flags as potential cancer
    - CXR requisition sent to patient
  - Patient triaged as urgent
  - Review of CXR – urgent referral to lung assessment clinic
    - Note generated by summarizing clinical information in EHR

AI aids for clinical diagnosis

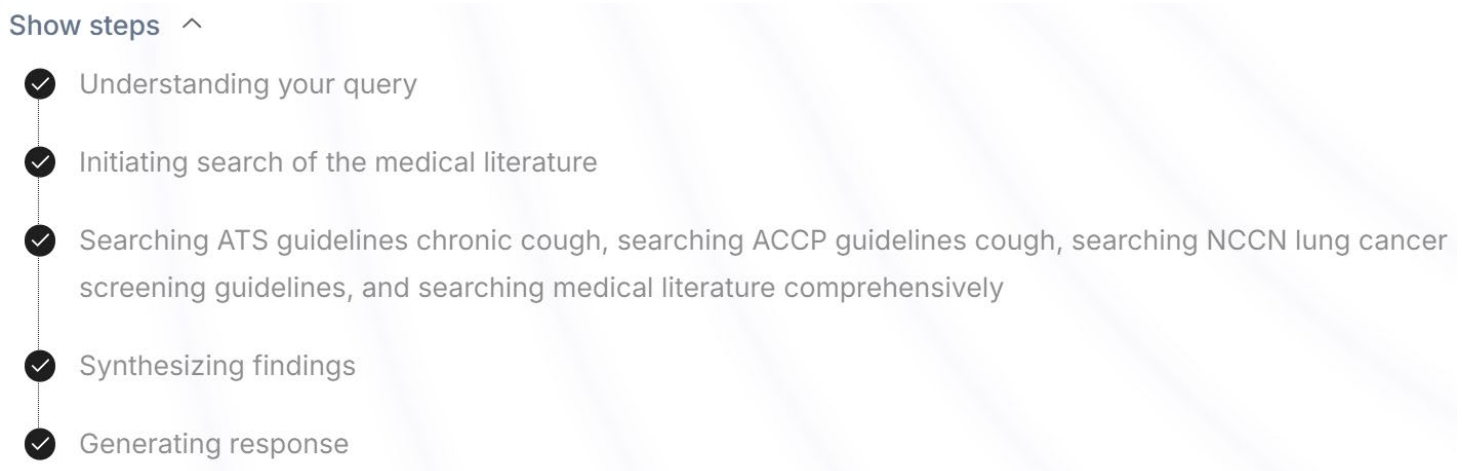
- Plain film interpretation
  - Aidoc, Qure.ai, Oxipit
- Clinical decision support
  - IBM Watson, GlassHealth



https://oxipit.ai/cxr-suite/

An example

- I am a smoker. IU have been having a persistent cough. I have lost 20 pounds in 5 weeks. No travel recently. What should I be worried about?



Why am I hesitating?

- Is it wrong to use ambient listening?
  - If Siri and Alexa are doing it, then is it any worse?
- What if the model is wrong?
  - Hallucinations, incomplete resources / guidelines
- What is the medico-legal risk? (CMPA)
  - Potential risks:
    - Civil liability
    - Privacy and data protection
    - Human rights
    - Intellectual property
- “I am too old to learn this!” or “I don’t have the time for this”
- Too many barriers
  - Implementation in my clinic
  - Privacy concerns
  - Where is the data stored?

CMPA. The medico-legal lens on AI use by Canadian physicians. 2024.

Privacy issues

- Federal
  - Personal Information Protection and Electronic Documents Act (PIPEDA)
- Provincial
  - Healthcare specific:
    - Ontario - Personal Health Information Protection Act, 2004
    - New Brunswick - Personal Health Information Privacy and Access Act, 2009
    - Newfoundland and Labrador - Personal health information act, 2008
  - Personal health information (PHI) can only be used if consent permitted
  - The custodian stays responsible even if vendor uses AI
- Check with the vendor where the data resides
  - Canada?
  - Encryption
- Avoid using PHI
  - Locked system? – limited data then

AI in practice

- It is not here to replace you
  - Switch from Dr. Goolge to Chat GPT
  - You can use it for a second opinion
- Your residents will know it, rely on it, and expect you to supervise it
- Let the patient know that you are using a scribe or a generative process for the notes / consults
- Review the notes
  - You will need to edit
  - You will need to add areas around clinical reasoning
- At the end of your note, good practice would be to add:
  - “This document was drafted by AI tool ABC. It was reviewed by Dr. XYZ on November 1, 2025. Should you find any errors,…”

AI cannot replace humans

- Tacit knowledge that cannot be replicated by any regression
- Unrecorded information is not included
- Process knowledge is hard to write down as a recipe

https://gamespad.io/what-are-ai-tokens-a-comprehensive-guide/

Leveraging AI

HOW TO LEVERAGE AI

How can I use it?

Identify processes to improve efficiency

Improved Experiences

Better patient care?
More time with the patient?

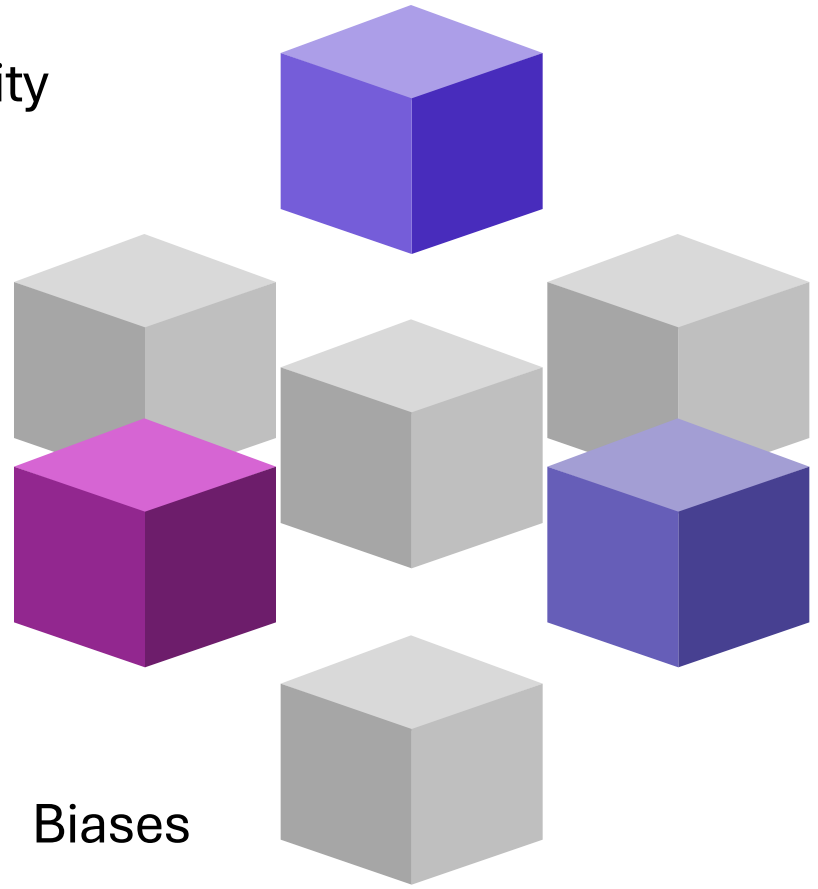
Outcomes Evaluation

Use as an aid in clinical decision making

Is it the final frontier

Hallucinations

Accuracy and validity



Over-reliance

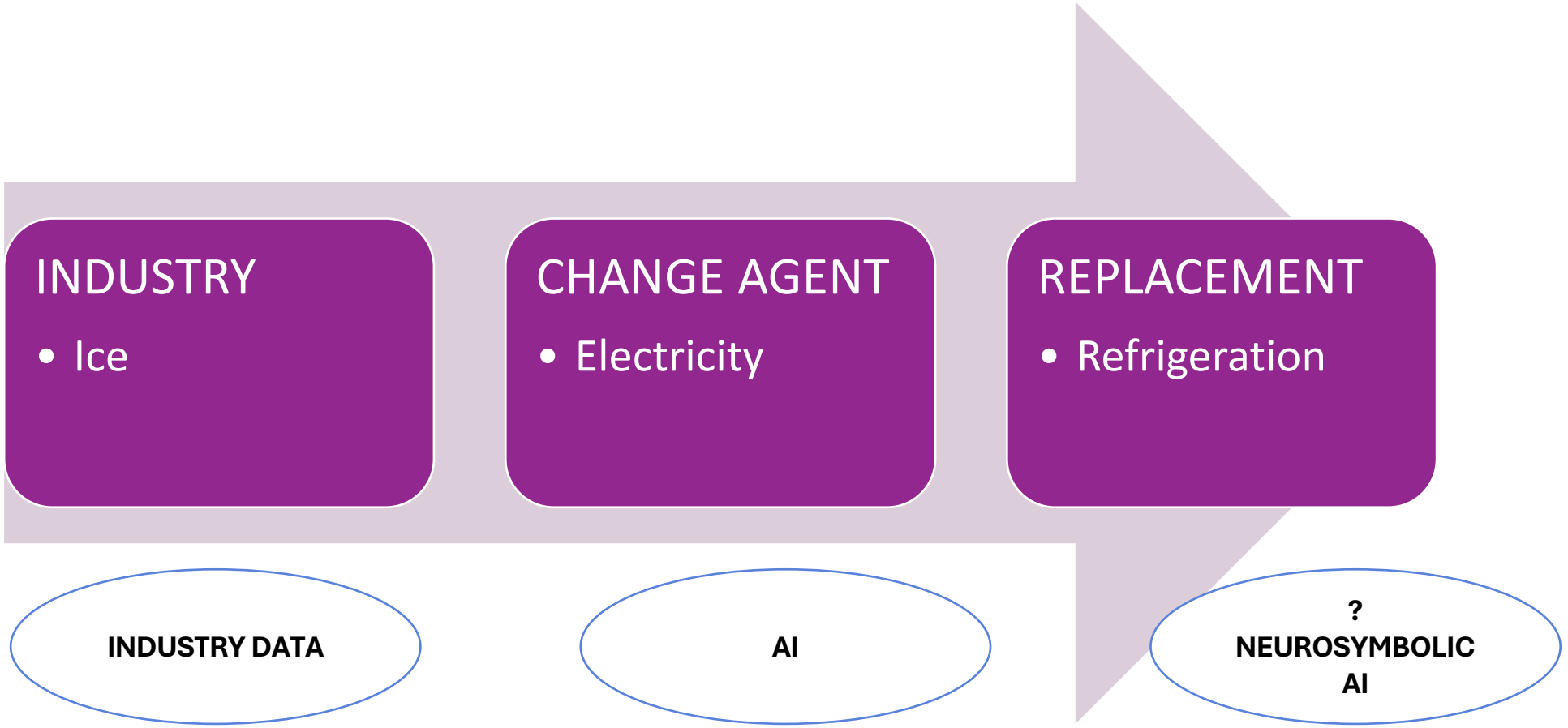
Manipulation

GIGO

Biases

What is the future of AI?

Where are we going?

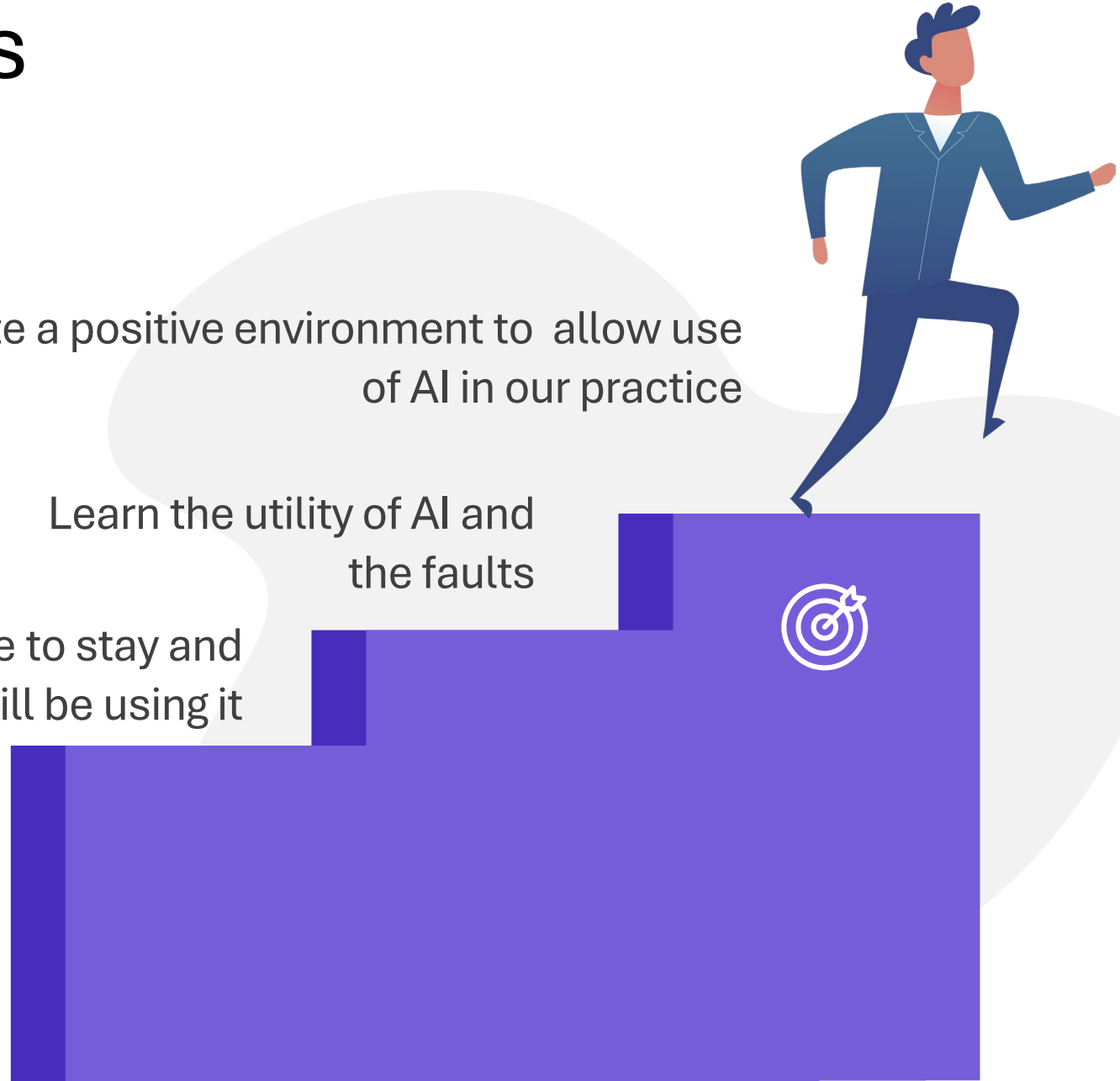


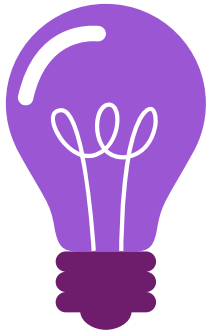
Next steps

Create a positive environment to allow use of AI in our practice

Learn the utility of AI and the faults

Embrace AI – it is here to stay and everyone will be using it



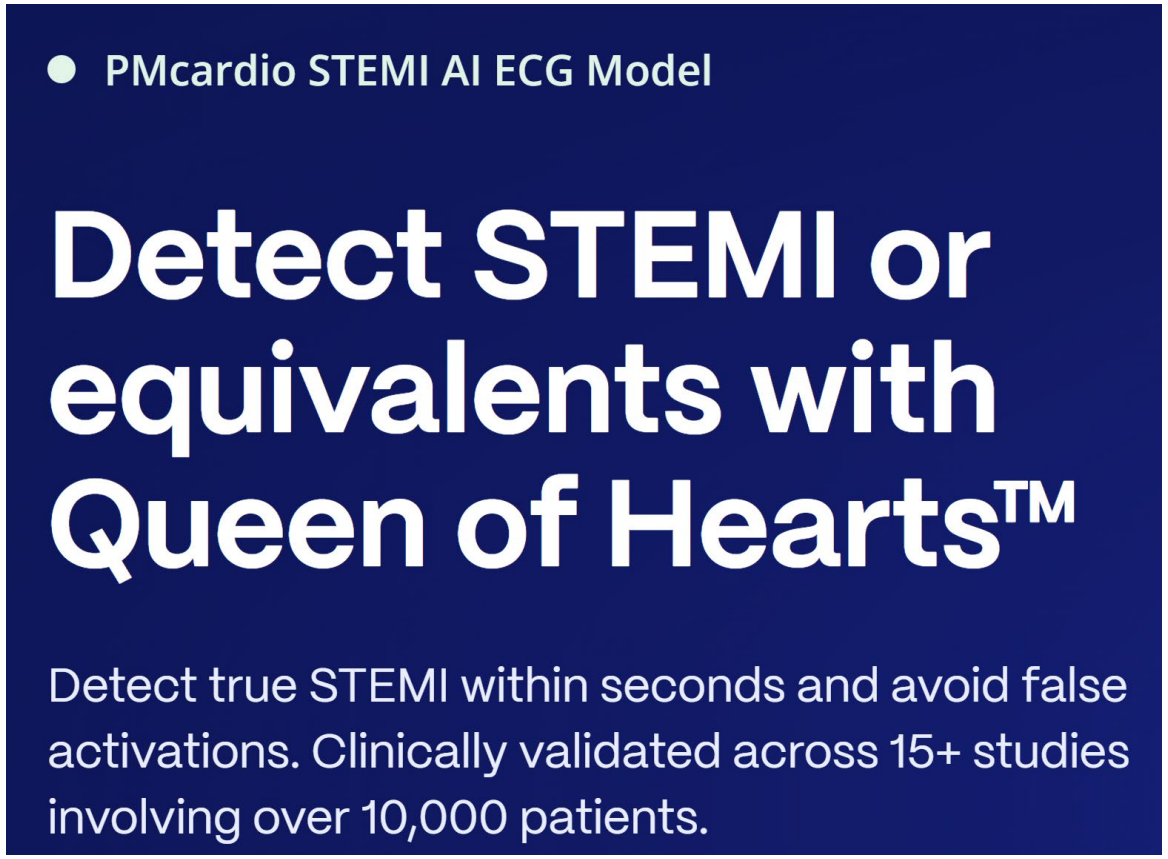


Opportunities

What is the future of AI?

NONE OF THE PRODUCTS ARE ENDORSED

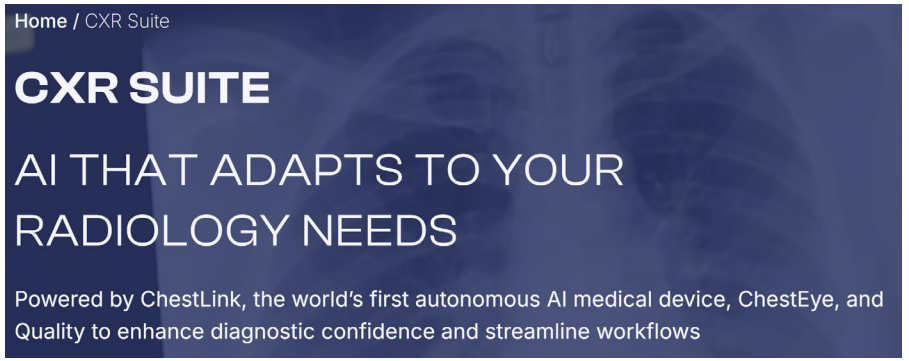
Example 1 – EKGs



Example 2 - Xrays

Save time, improve efficiency

- **Automate up to 40%** of radiologists' workflow for healthy chest X-rays using our autonomous reporting tools.
- **Trust 99.9% sensitivity** in detecting normal chest X-rays for safe, confident clinical outcomes.

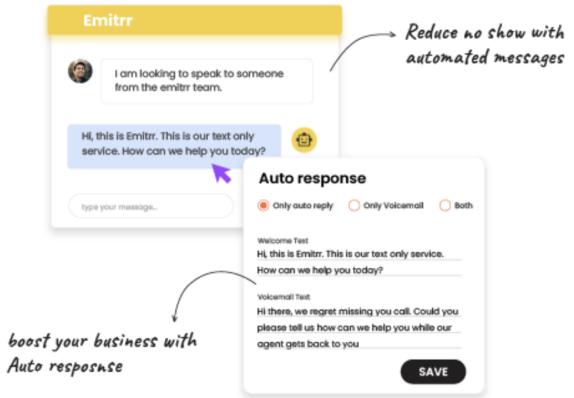


Example 3 – clinical decision making

Example 4 – administration / staffing

How to Send a Reminder Text Effortlessly with Emitrr

- Track appointment status and schedule follow-ups
- Never let any slot go empty
- Clients can reschedule or cancel via text
- Send customized reminders anytime & reduce no-shows



Schedule Appointment Reminders with Smart Scheduling

- Personalize your messages by using tags
- Schedule according to time zones, holidays, & more
- Reduce revenue losses by filling sudden open slots
- Automatically assign open slots to other customers

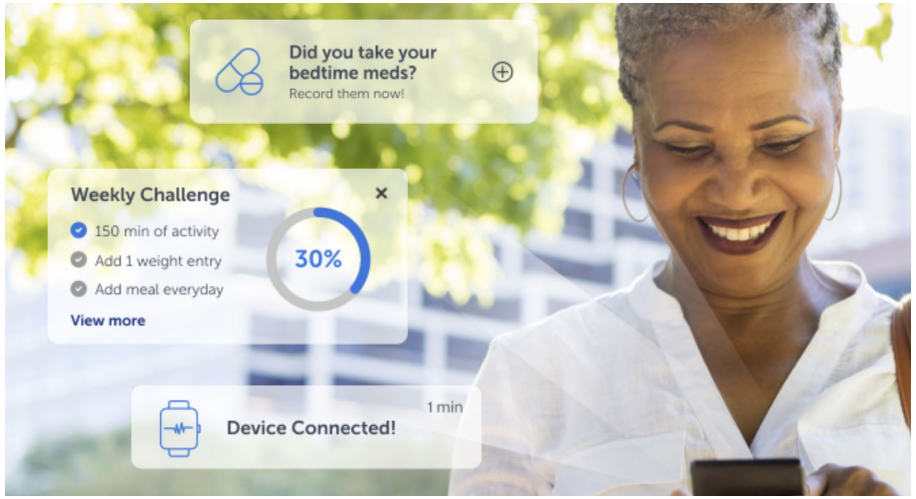
Example 5 – chronic disease patient care

Supporting multiple chronic conditions and comorbidities

Type 1 & Type 2 Diabetes* • **Hypertension** • **Heart Failure** • **Weight & Obesity Management** • **Prediabetes** • **Mental Wellbeing**

Using the app, users can:

- Connect compatible devices, including BGM, CGM, blood pressure cuffs, weight scales, and activity trackers.
- Manually record glucose numbers, blood pressure and weight
- Track sleep, meals and exercise
- Receive real-time, personalized AI coaching messages
- Learn from library of articles and videos
- Share data and clinical insights with their connected care team



1.9% Points
A1C Improvement*1

7.2-12 mmHg
Blood Pressure Reduction*2

welldoc®

CONCLUSION

- AI is powerful indeed, and it is here to stay – so embrace it!
- Can be used in many areas of clinical practice:
  - Decrease administrative burden
  - Improve patient face time
  - Clinical care safety nets
- Use it now as the students are savvy with it and will continue to move forward with it

THANK YOU

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THANK YOU!

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