

**Date**

Tuesday 13 August

**Time**

2:00pm - 3:30pm

**Location**

Eureka Room 3 

**Target audience**

- › Participants interested in gaining an appreciation of the rapidly evolving AI landscape in healthcare

# AI: Our clever health future or a clinical complexity – you decide!

In this workshop we will explore the pros and cons of AI in healthcare and will engage in audience participation through the use of SLIDO to enable all views from panellists and attendees to be captured.

**Learning objectives**

- › Appreciate the capabilities of AI to assist in healthcare
- › Understand the barriers and challenges of AI in healthcare
- › Understand the issues of AI ethics in healthcare
- › Appreciate the role of governance and ethics principles for AI



**A/Prof Paul Cooper**

Chair

Health Informatics Management, **School of Medicine, Deakin**



**Prof Wendy Rogers**

Speaker

Professor of Clinical Ethics, Philosophy Department and



**Prof Iven Mareels**

Speaker

Lab Director, **IBM Research Australia**  
 



**Rajesh Vasa**

Speaker

Deputy Director, **Deakin Software & Technology Innovation Lab**

**Dr. Rahil Garnavi**

Senior Technical Staff Member,  
 Master Inventor,  
 Research Manager (Multimodal Analytics),  
 IBM Research Australia.

[rahilgar@au1.ibm.com](mailto:rahilgar@au1.ibm.com)



The content reflects my personal point of view, coming  
from working at IBM 😊

## **What is AI?**

AI transforms data to insight, makes predictions based on (all available) data

## **What is the present economic value of AI?**

AI reduces the cost of prediction, and the cost to make better decisions, faster and with less risk. AI augments our human cognitive ability.

## **How to trust AI?**

Trust is essential to adopt AI widely, to reap AI's true economic potential.

Fair. Explainable. Secure. Accountable.

# Evolution Of AI

is presently being accelerated by GPUs, data and democratically available “software tools”

General AI

Broad AI

2050?

1950

Narrow AI

Single-task  
single-domain

Superhuman  
accuracy

Large amounts  
of labeled data  
(supervised learning)

TODAY

Learning with reasoning

Multi-task  
multi-domain  
multi-modal

Learning with  
much less data  
using existing models  
= present research in AI

(Super)Human AI

But in 1950  
A. Turing predicted  
to see this  
by 2000!

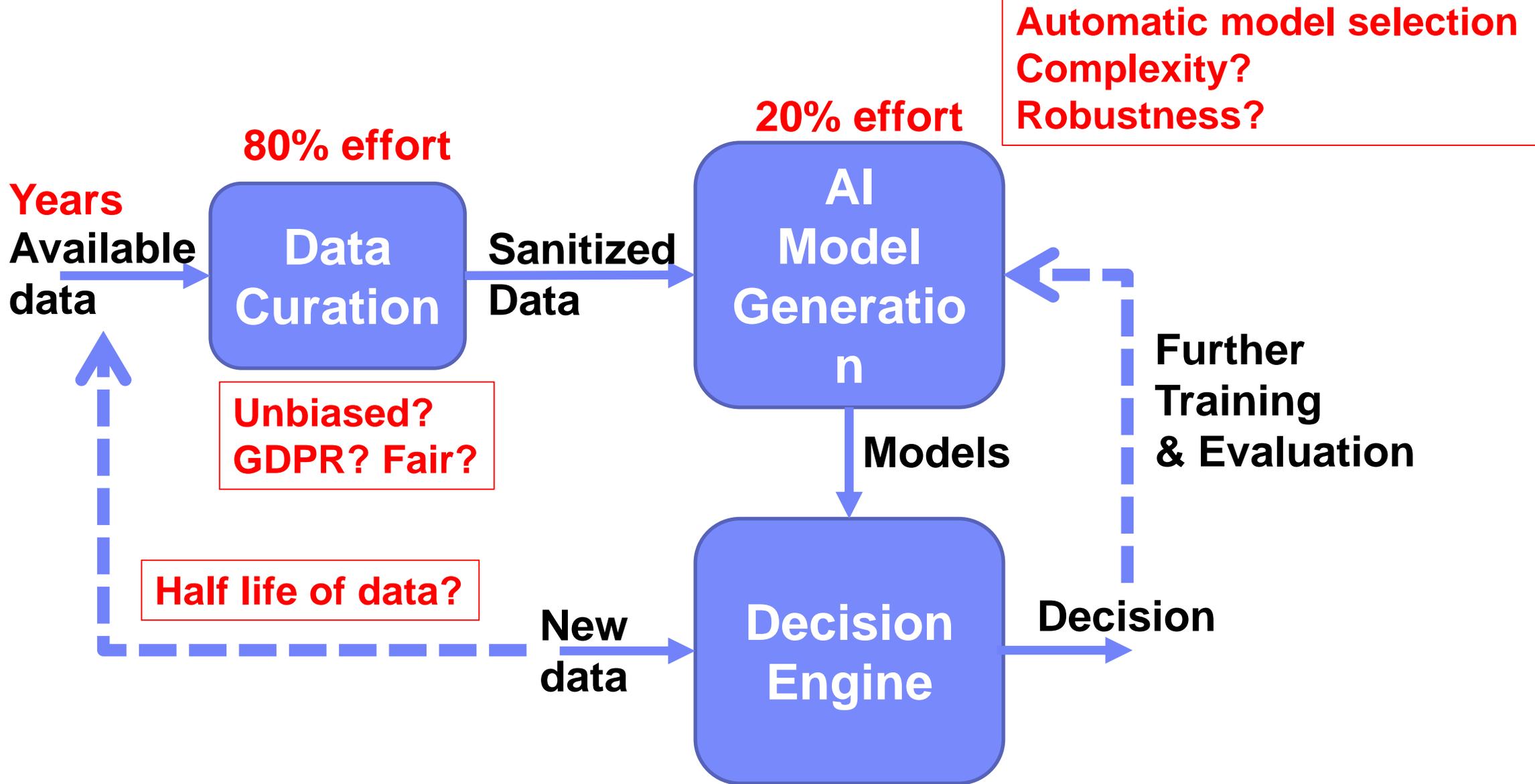
# Appreciate the Capabilities of AI to Assist in Healthcare

- AI models are excellent in single domain “inference” tasks, when and where large well annotated data sets are available, in which case, human and superhuman execution is feasible
- **Economic incentive + healthcare outcome improvement AI’s (ultimate) promise is to realise better healthcare more affordably**
- e.g. melanoma detection in skin images, detecting epilepsy in EEG, automation in insurance claim processing

# Understand the barriers and challenges

- Well annotated data sets are expensive
- Curating data is 80% of the work in an AI-model workflow
- Present AI tools appear as “magic black boxes”, we need more “explain why”  
i.e. understand the reasons behind AI-model outcomes
- Most healthcare problems are multi-modal
- Data have a half life, as new data are collected, requiring maintenance of AI models, and constant supervision & evaluation

# (Narrow) AI Workflow



**95%**

**of companies believe that AI is key to their competitive advantage**

**80%**

**of available data inaccessible, untrusted or unanalyzed**

**80%**

**do not understand the data required for their AI**

**5% - 15%**

**of companies have AI incorporated into offerings and processes**

**60%**

**see compliance as a barrier, and lack trust in AI outcomes**

**65%**

**do not fully trust their own organizations analytics**

# Understand the Issues of AI Ethics in Healthcare

- **Developing AI tools is data dependent**
  - Are the data ethically obtained for the purpose of AI development?
  - Are the available data representing the true “clinical” population?
  - Has GDPR been implemented?
- **AI-models are inference tools**
  - Are the tools used ethically? Do patients have a right to choose which clinical tools are applied? Or is this a right that belongs to the practitioner? What about insurance companies? Government? Regulator?

# To Reach AI's Full Potential & Promise, AI Must Be Trustworthy

- **Fairness**

AI Fairness 360 an open source toolkit to evaluate how fair AI models are, 30+ fairness metrics, 10+ “bias” mitigation approaches, tools to test data, learning, report on use...

- **Explainability (using adversarial AI to probe AI tools)**

Compliance with regulatory environments requires we understand AI produced predictions/insight. To this end identify the key “arguments for & against” the AI insight

- **Security (can AI be hacked?)**

(IBM uses AI) to detect weaknesses & sensitivities; to ensure robustness, to simplify models, to impose “rules” (do and do not)

- **Accountability**

Certified provenance of data, algorithms and rules. Certified analyses and tests. A regulatory framework for AI and AI workers, with open access and regular reporting of AI performance.

**Thank you!**