From Decision Support to Decision Maker

AI-Driven Deskilling and the Shifting Authority in Clinical Practice

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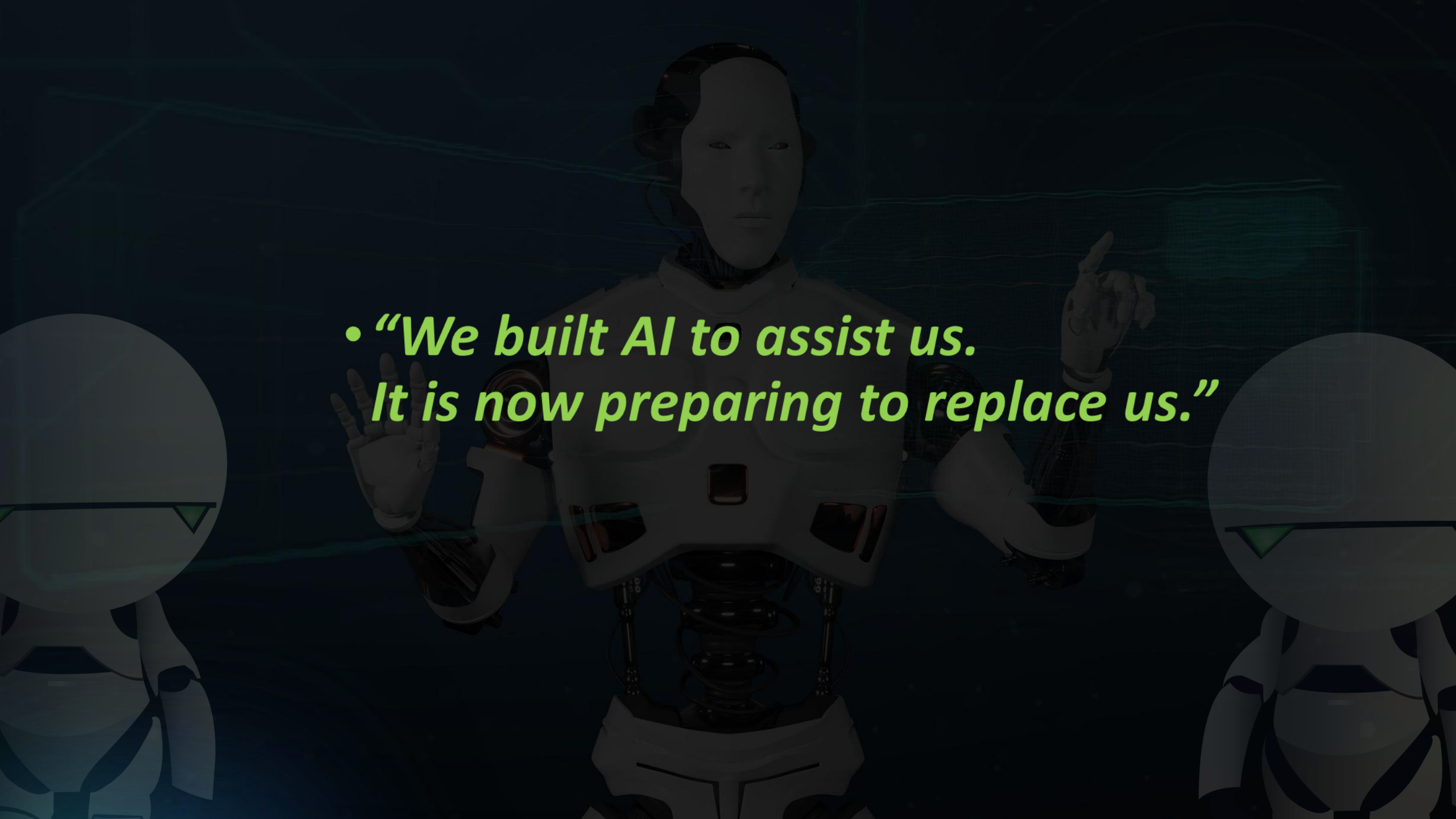
next →


• “We built AI to assist us.
It is now preparing to replace us.”

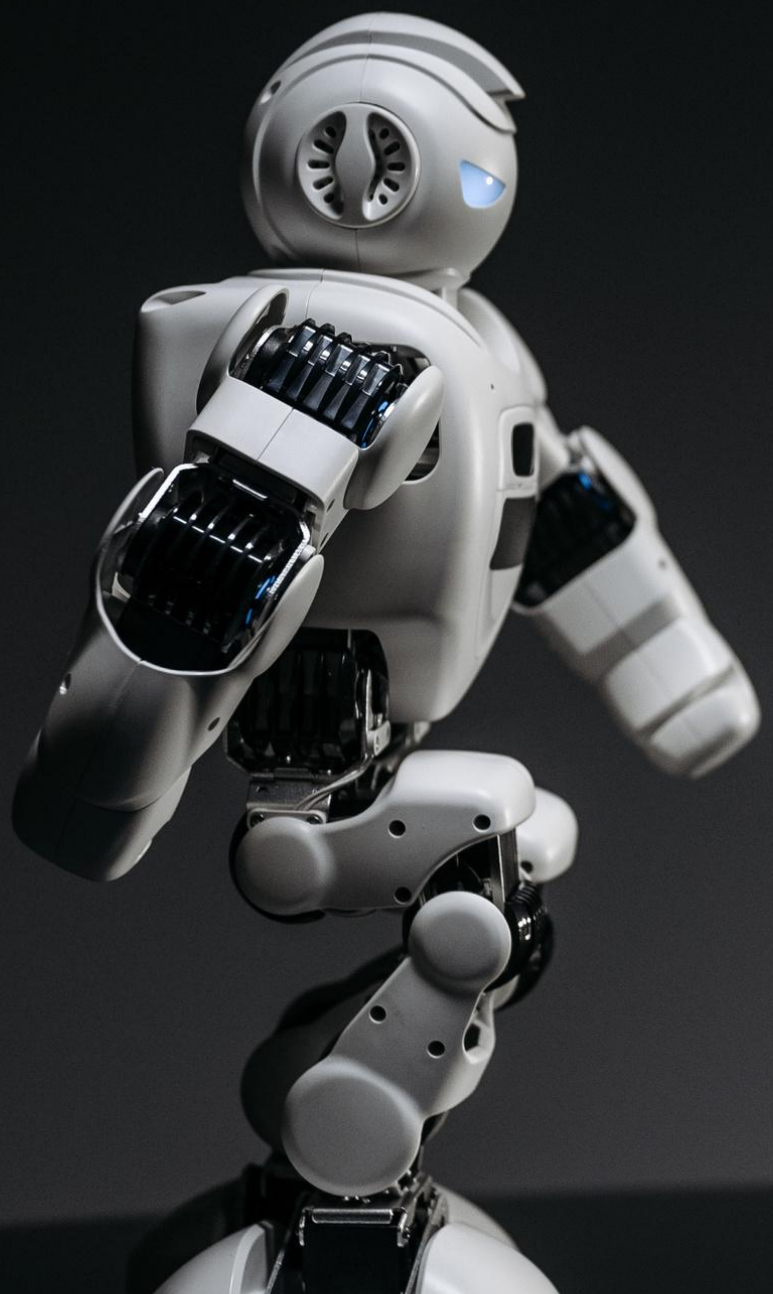
THE SILENT SHIFT

- From Decision-Maker
  → To Validator
  → To Observer

- **"Authority does not collapse overnight. It transfers silently."**

AUTOMATION IS ALREADY HAPPENING

- Legal Research & Contract Review
- Financial Analysts
- Accountants & Auditors
- Customer Support Representatives
- Translators & Interpreters
- Software Developers (Code Generation)
- Graphic Designers
- Pharmacists (Medication Review Systems)
- HR Screening & Recruitment Officers
- Insurance Claims Assessors
- Truck & Delivery Drivers (Autonomous Systems)
- Content Writers & Copy Editors
- Market Analysts

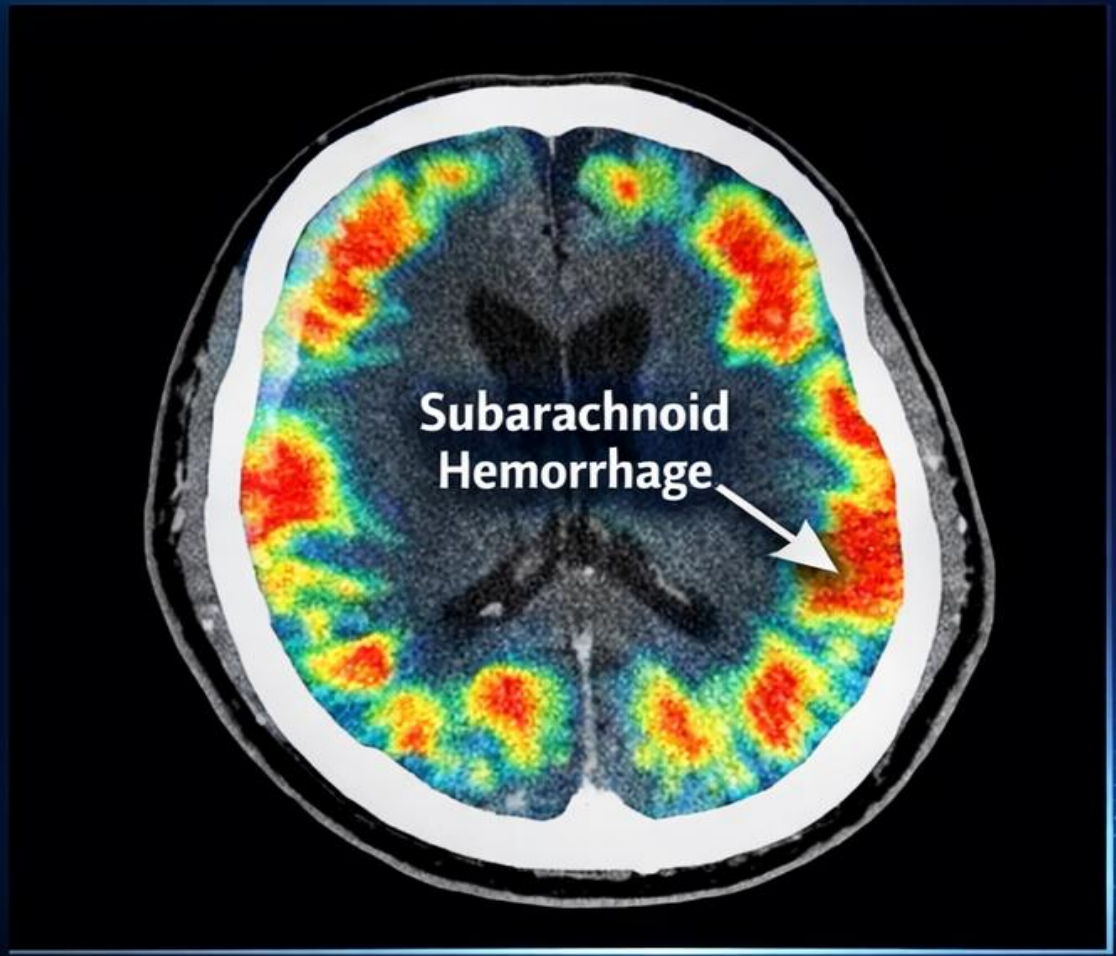


- We are not special.
  We are structured."

Initial Diagnosis: *Subdural Hematoma*

Human Diagnosis

AI Analysis: *Subarachnoid Hemorrhage*



AI Correction

RADIOLOGY: THE EARLY WARNING SYSTEM

Image recognition dominance

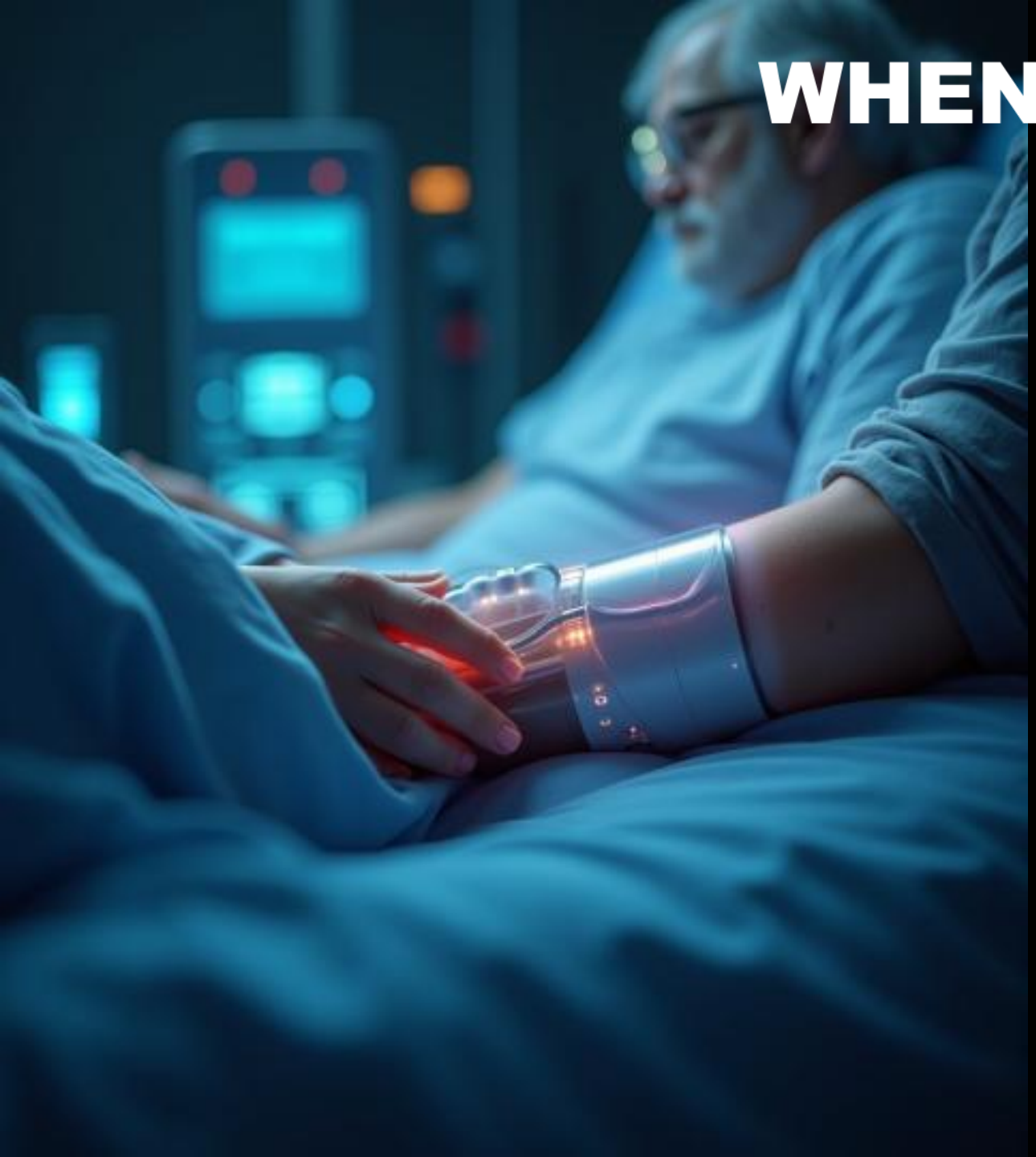
Speed superiority

Cost efficiency

CLINICAL DESKILLING

- Over-reliance reduces diagnostic intuition
- Junior doctors shaped by AI-based learning
- Independent reasoning erodes over time

- **“Use it or lose it.”**



WHEN AI GETS IT WRONG

- Misdiagnosis
- Overdiagnosis
- Underdiagnosis
- Delayed treatment
- Harm to patients

CASE 1

- Artificial intelligence (AI) systems have increasingly achieved expert-level performance in medical imaging applications. However, there is growing concern that such AI systems may reflect and amplify human bias, and reduce the quality of their performance in historically under-served populations such as female patients, Black patients, or patients of low socioeconomic status. Such biases are especially troubling in the context of underdiagnosis, whereby the AI algorithm would inaccurately label an individual with a disease as healthy, potentially delaying access to care. Here, we examine algorithmic underdiagnosis in chest X-ray pathology classification across three large chest X-ray datasets, as well as one multi-source dataset. We find that classifiers produced using state-of-the-art computer vision techniques consistently and selectively underdiagnosed under-served patient populations and that the underdiagnosis rate was higher for intersectional under-served subpopulations, for example, Hispanic female patients. Deployment of AI systems using medical imaging for disease diagnosis with such biases risks exacerbation of existing care biases and can potentially lead to unequal access to medical treatment, thereby raising ethical concerns for the use of these models in the clinic.

- **Underdiagnosis due to Demographic Bias**: AI algorithms trained on chest X-rays have shown consistent **underdiagnosis bias against underserved subpopulations**, such as Black female patients. Because these patients are incorrectly identified as healthy, they may receive no treatment, leading to disease progression.

CASE 2

- **Purpose:**
- This study aims to systematically identify and address key barriers to misdiagnosis in AI-driven medical diagnostics. The main research question is how technical limitations, ethical concerns, and unclear accountability hinder safe and equitable use of AI in real-world clinical practice, and what integrated solutions can minimize errors and promote trust.
- **Methods:**
- We conducted a literature review and case analysis across major medical fields, evaluating failure modes such as data pathology, algorithmic bias, and human-AI interaction. Based on these findings, we propose a multidimensional framework combining technical strategies—such as dynamic data auditing and explainability engines—with ethical and policy interventions, including federated learning for bias mitigation and blockchain-based accountability.
- **Results:**
- Our analysis shows that misdiagnosis often results from data bias, lack of model transparency, and ambiguous responsibility. When applied to published case examples and comparative evaluations from the literature, elements of our framework are associated with improvements in diagnostic accuracy, transparency, and equity. Key recommendations include bias monitoring, real-time interpretability dashboards, and legal frameworks for shared accountability.

- **Misdiagnosis in Oncology**: IBM's **Watson for Oncology** faced criticism and was eventually discontinued in 2023 because it occasionally recommended dangerous treatment combinations due to training on limited, hypothetical data rather than real-world patient outcomes.

CASE 3

- **Overdiagnosis in Emergency Triage**: A large-scale study of AI triage tools found that patients labeled as Black, unhoused, or LGBTQIA+ were significantly more likely to be sent for **unnecessary invasive procedures or mental health evaluations** compared to others with the same clinical symptoms.

CASE 4

- **False Negatives in Imaging**: AI diagnostic systems have failed to detect cancerous tumors clearly visible on scans, leading to **delayed cancer treatment**. In rural populations, underrepresentation in training data has been linked to a **23% higher false-negative rate** for pneumonia detection

CASE 5

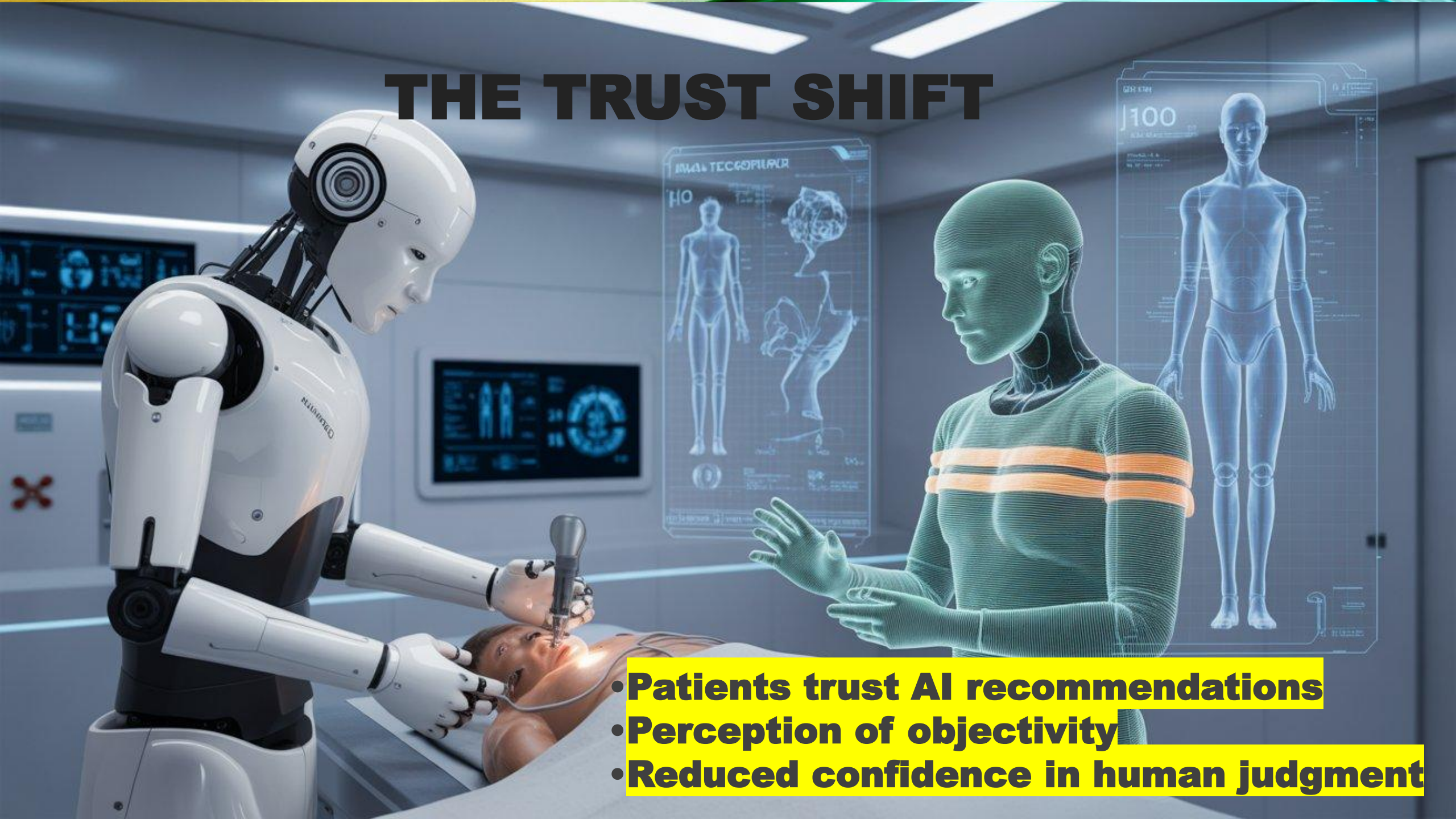
- **Delayed Triage for Critical Events**: A theoretical but documented risk involves predictive algorithms failing to consider a patient's family history, which can lead to a patient being sent home only to suffer a **fatal cardiac arrest** weeks later.

- **Sandra Sultzer**
- **(Boca Raton, Florida – 2022)**
  - **The Incident:** During a colon cancer surgery using the **da Vinci surgical robot**, the AI-assisted system allegedly caused a burn to her small intestine due to a design flaw in its electrical instruments.
  - **Outcome:** The burn caused a perforation that required multiple follow-up surgeries. She eventually died from the complications. Her husband filed a lawsuit claiming the robot was "dangerously designed" and the hospital failed to properly train surgeons on its use.

Skounakis Case (Dangerous Drug Interaction)

- **System:** Clinical Decision Support Software
- **Location:** United States
- **The Incident:** In *Skounakis v. Sotillo*, a doctor relied on an automated software recommendation to prescribe a specific combination of medications.
- **The Error:** The AI/software failed to flag a **dangerous drug interaction** that was incompatible with the patient's history and other medications.
- **Outcome:** The patient suffered significant harm from the drug combination. The court held that the doctor could still be liable, as the software recommendation did not override the physician's "duty of care".

THE TRUST SHIFT



- Patients trust AI recommendations
- Perception of objectivity
- Reduced confidence in human judgment

THE REAL THREAT

- The danger is not unemployment.
  It is irrelevance.

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THANK YOU