

XXX IFSO WORLD CONGRESS

“Advancing Multimodal Obesity Care”

24–27 August 2027

ifso2027.org



IFSO
PARIS 2027

See you in

PARIS



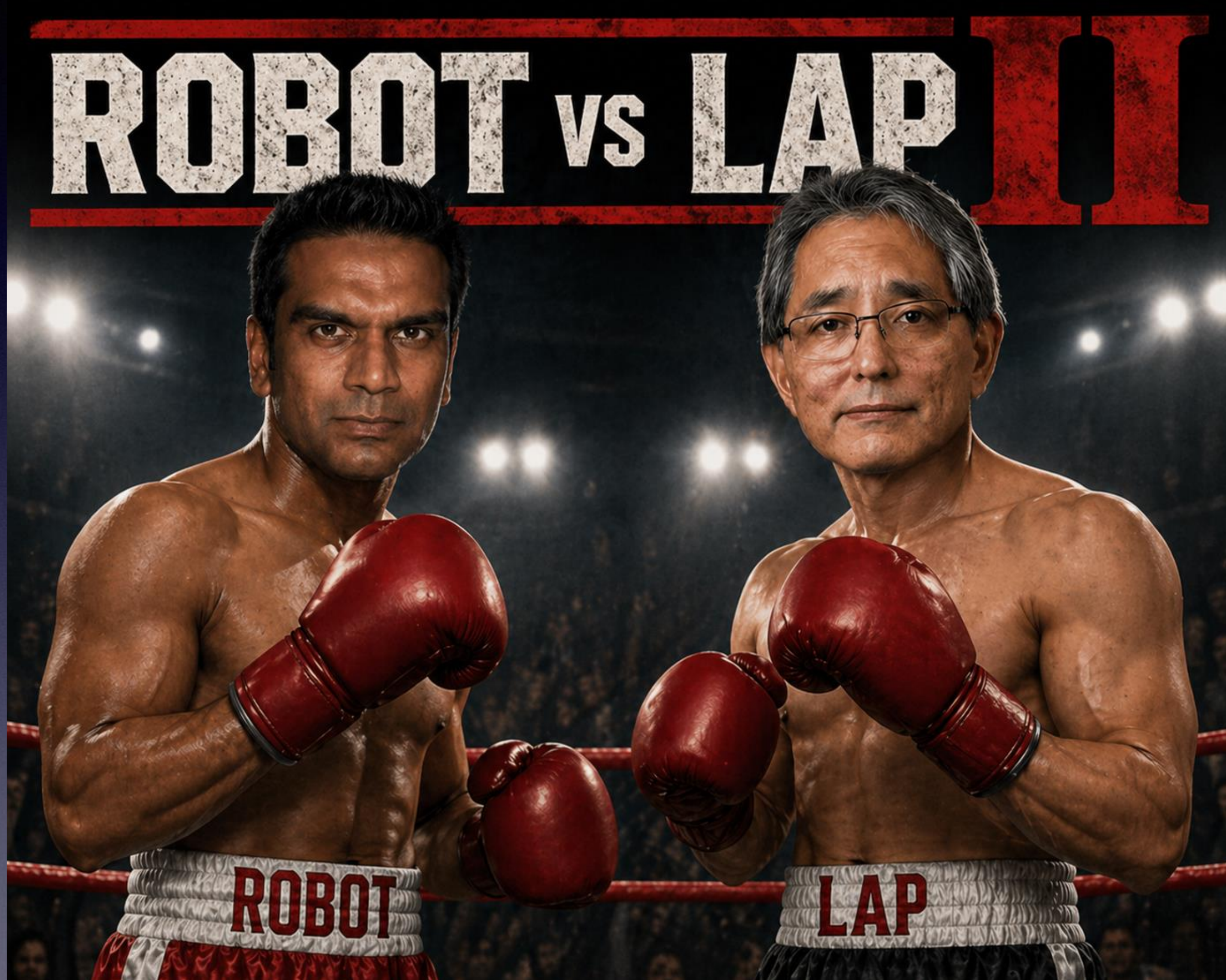
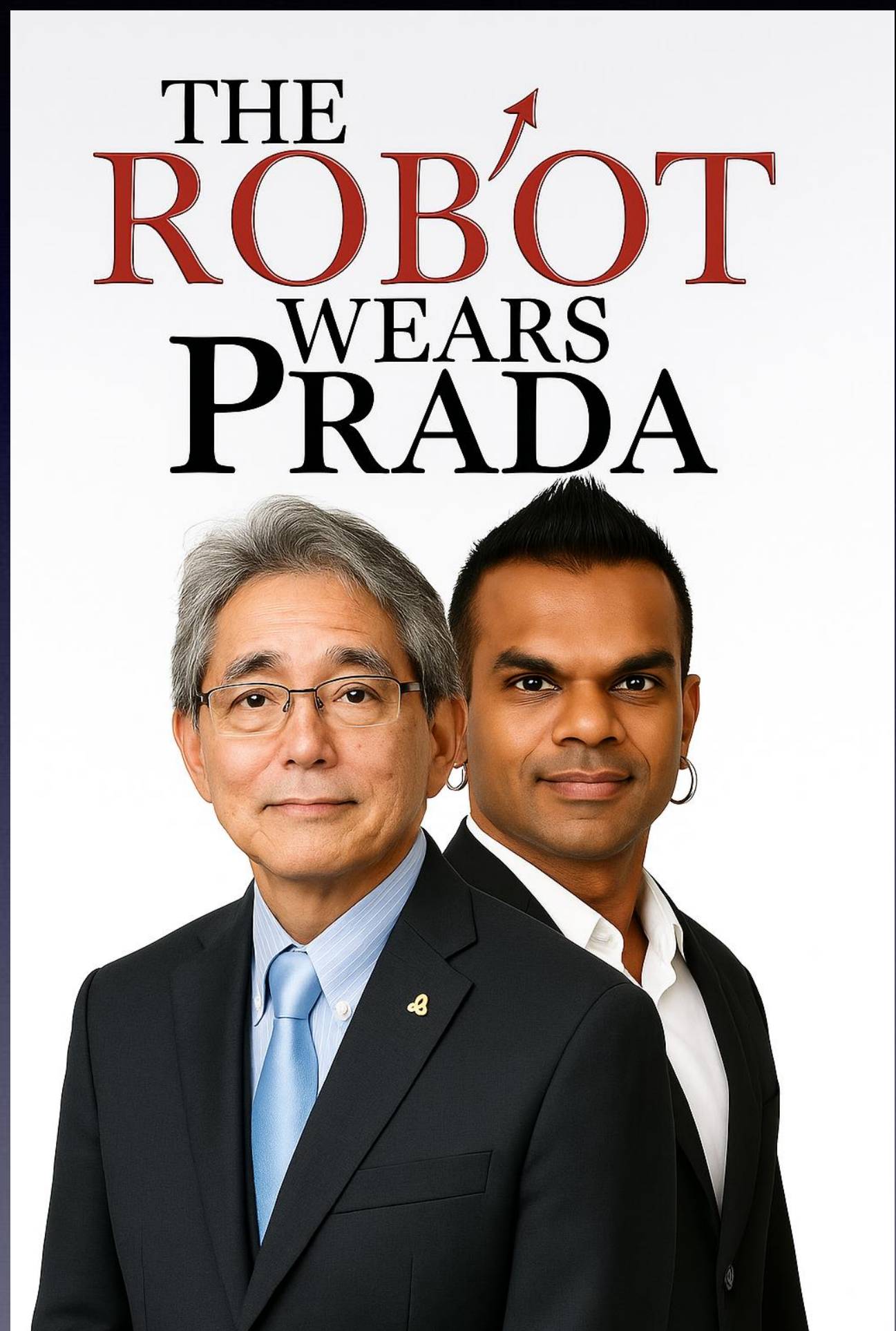
Laparoscopic Surgery will continue to be the STANDARD
AUTOMATED ROBOTS WILL **NOT** PERFORM BETTER
SURGERY THAN HUMANS IN 5 YEARS

Disclosure: I used AI to help with this presentation

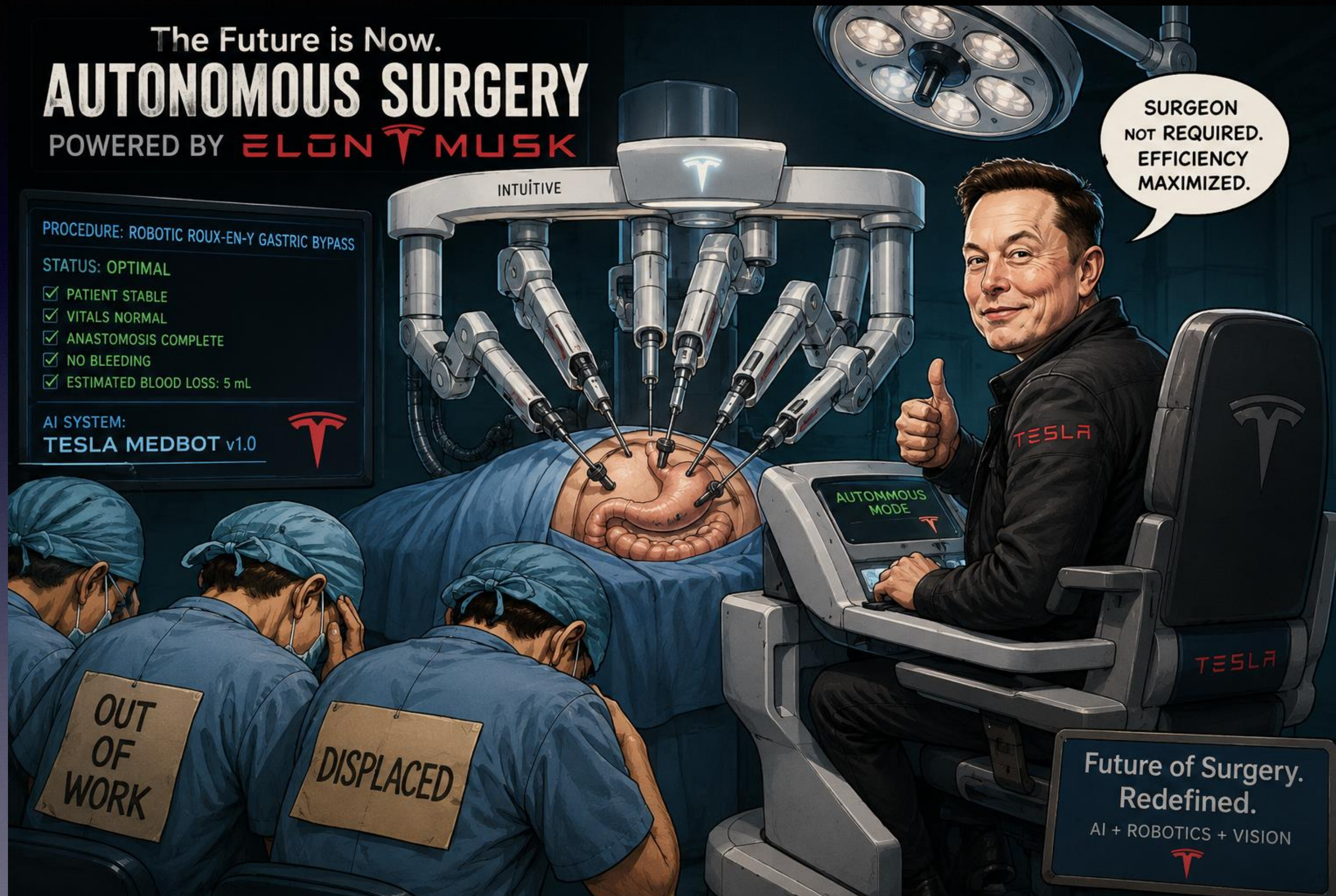
Kelvin D Higa, MD, FACS
Clinical Professor of Surgery, UCSF
Director Bariatric and Minimally Invasive Surgery Program:
Fresno Heart and Surgical Hospital



No clinical evidence that current robotic systems improves surgical outcomes.



“Surgeons will be obsolete in 3 years.”



Some theoretical advantages of AI robotic technicians

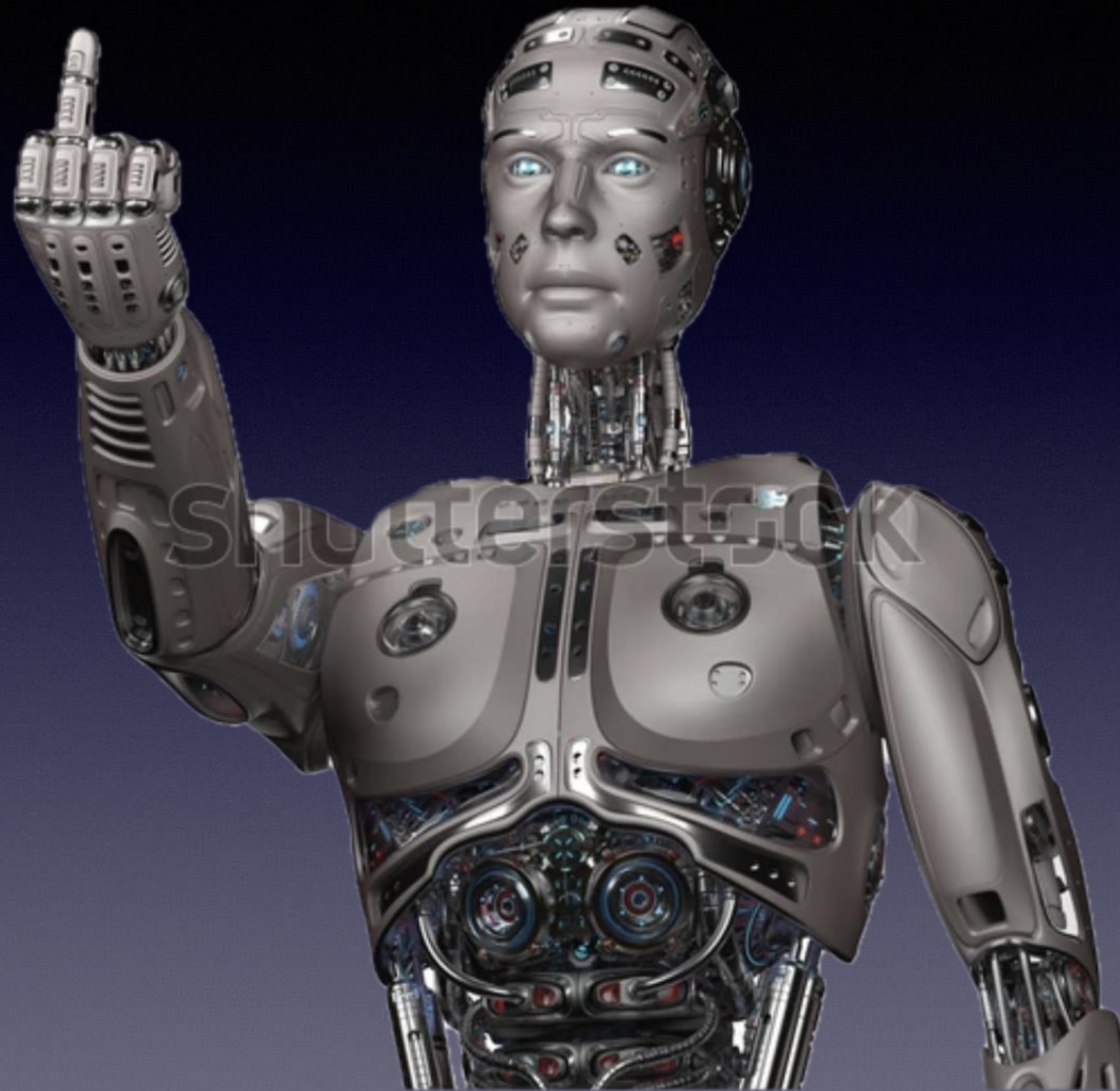
Human Surgeon vs. Robotic Surgeon (Elon's Framework)

Capability	Human Surgeon	Autonomous Robotic Surgeon
Hand stability	Subject to tremor (2–3 mm variance)	Micron-level precision
Fatigue	Increases error rate	No fatigue
Training time	10–15 years	Instant software updates
Learning model	Linear, individual experience	Shared global experience
Sensory input	Visible light only	Infrared, UV, X-ray
Consistency	Variable	Perfectly repeatable

Why Elon Thinks Robots Win Technically

Advantage	Why It Matters in Surgery
Shared experience	Every complication is learned once, globally
Multi-spectral vision	Detects structures invisible to human eyes
No emotional noise	No distraction, stress, or cognitive load
Speed + precision	Enables procedures humans physically cannot perform

Sorry, Elon. This time you are wrong!



Human brain: 20 watts

Equivalent computer: 30 megawatts

THE HUMAN BRAIN



~86 BILLION NEURONS

~100–1,000 TRILLION SYNAPSES

Spikes, chemicals, electrical signals, timing

Learns continuously throughout life

Highly recurrent, dynamic, adaptive

~20 WATTS
(about the power of a small light bulb)

THE BRAIN DOES IT ALL AT ONCE

- ✓ Senses the world
- ✓ Predicts what will happen
- ✓ Makes decisions
- ✓ Controls movement
- ✓ Learns and adapts
- ✓ Does it all with only ~20 watts

POWER CONSUMPTION & EFFICIENCY COMPARISON			
SYSTEM	COMPUTATIONAL SCALE (approx.)	POWER CONSUMPTION	COMPUTATIONAL EFFICIENCY* (operations per joule)
 HUMAN BRAIN	$\sim 10^{15} - 10^{17}$ events / sec (synaptic activity)	~20 WATTS (0.02 kW)	$\sim 10^{15} - 10^{16}$ events / joule
 AI SERVER (DGX H100)	$\sim 2 - 4 \times 10^{16}$ FLOPS (FP16/FP8) (per server)	~10,200 WATTS (10.2 kW) ($\approx$ 500 human brains)	$\sim 10^{12}$ FLOPS / joule
 EXASCALE SUPERCOMPUTER (EL CAPITAN)	$\sim 1.8 \times 10^{18}$ FLOPS (FP64) (1.8 exaflops)	~30,000,000 WATTS (30 MEGAWATTS) ($\approx$ 1.5 million human brains)	$\sim 6 \times 10^{10}$ FLOPS / joule
TO ACHIEVE $\sim 10^{17}$ OPERATIONS / SEC AT THE EFFICIENCY OF EL CAPITAN: $\approx$ 1.7 MEGAWATTS (1,700,000 WATTS)			THE HUMAN BRAIN DOES SOMETHING COMPARABLE USING ONLY ~20 WATTS
BIOLOGICAL INTELLIGENCE IS $\sim 10^3 - 10^5$ TIMES MORE ENERGY-EFFICIENT DEPENDING ON HOW COMPUTATION IS DEFINED.			
*Efficiency measured as operations (or computationally-equivalent events) per joule.			

Biology turns routine plans into open-ended problems

Factories standardize the object and environment. Every patient has unique challenges.

Distorted anatomy

Scar tissue or tumor

Unexpected bleeding

**Moving, deformable
tissue**

Equipment failure

**Conversion to open
surgery**

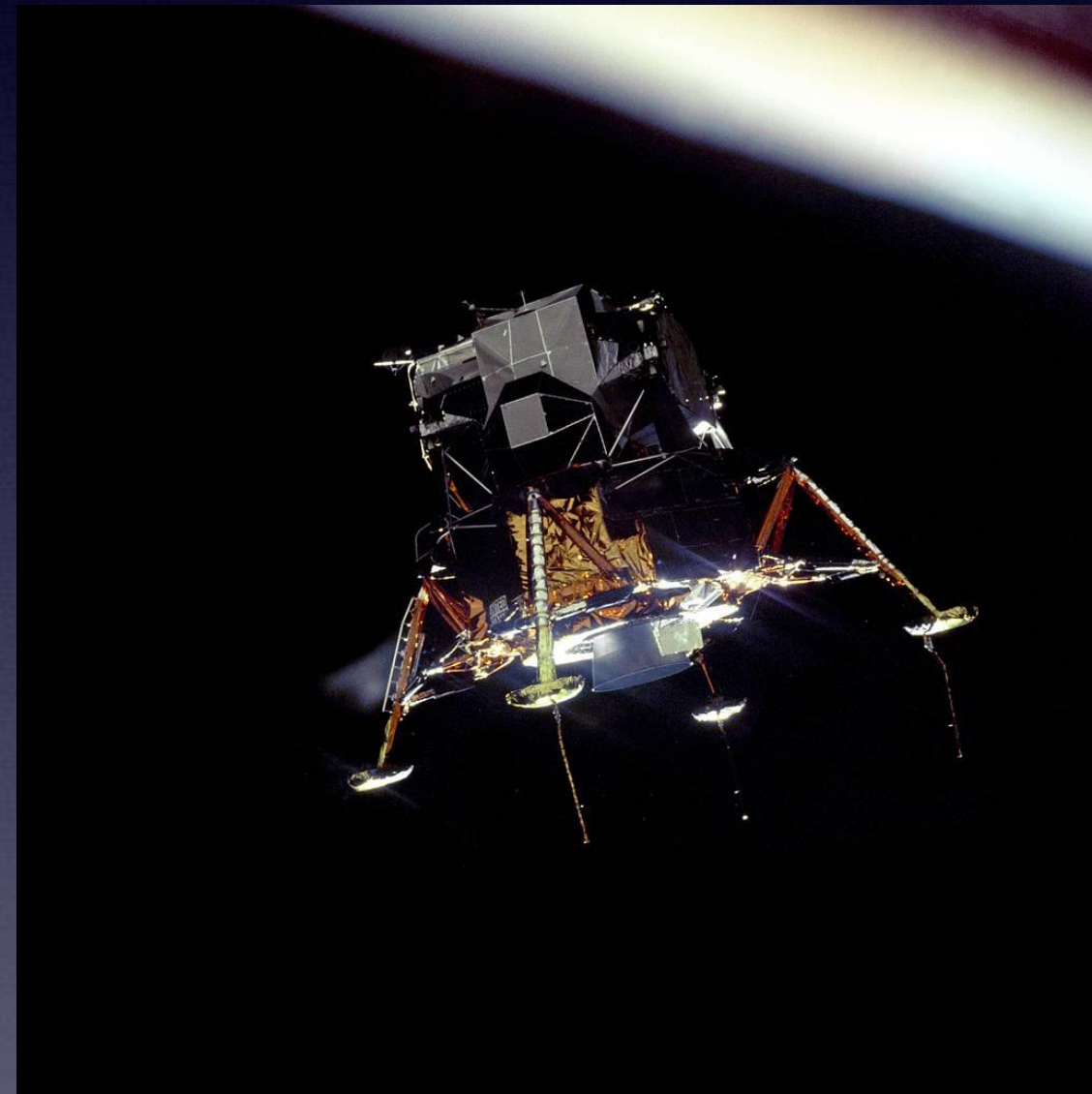
The decisive skill is not performing repetitive tasks.

It is the ability to adapt to human anatomy and to invent unique solutions to unforeseen problems.

"Miracle on the Hudson"



Apollo 11 Lunar Landing

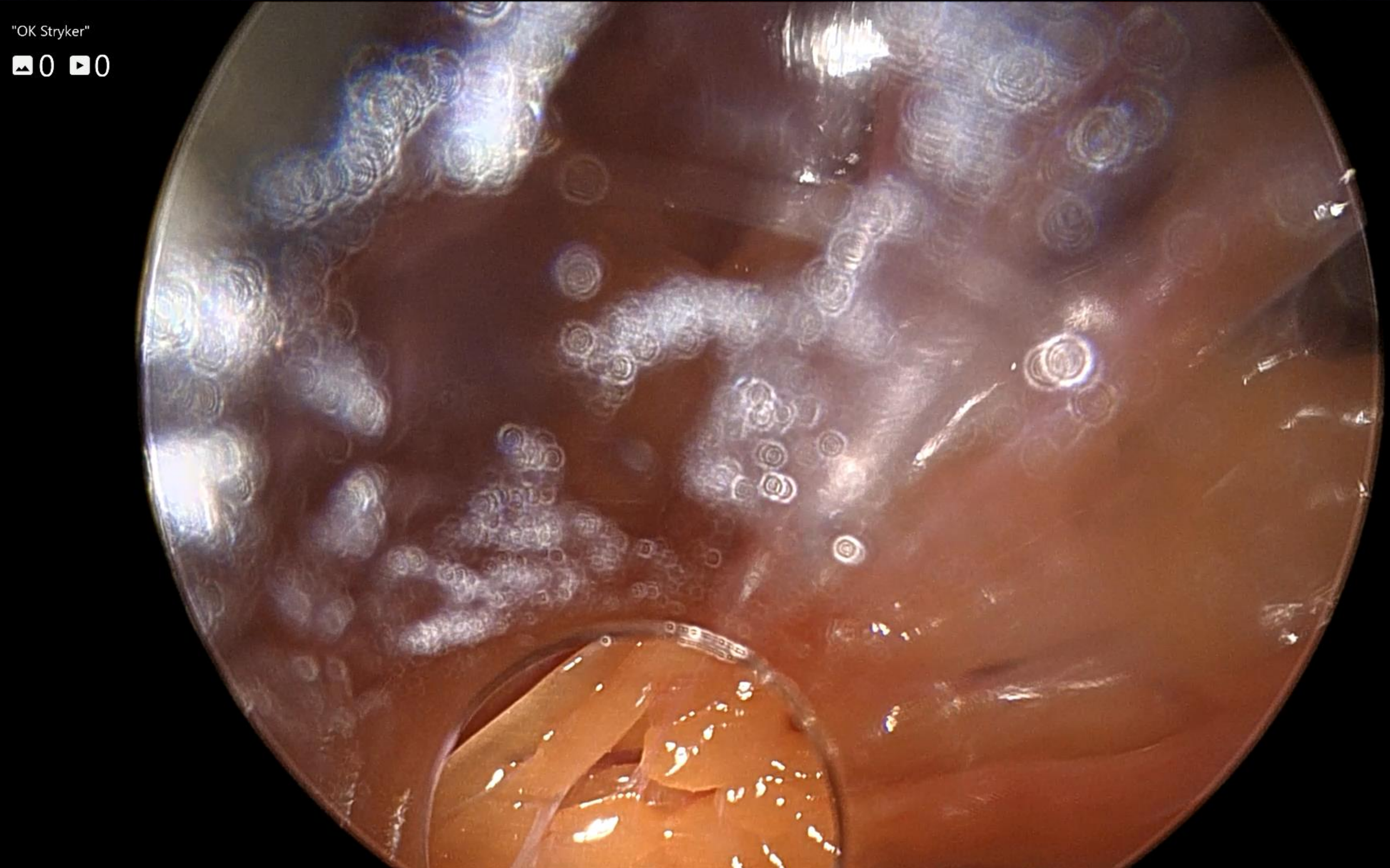


1983 Soviet Nuclear False Alarm



AI Hallucination

- Modern generative AI systems do not "know" facts; they predict the most statistically probable next word based on patterns in their training data.
- When data is sparse or the algorithm prioritizes fluency over accuracy, the system confidently invents highly plausible but completely fictional information.



"OK Stryker"
0 0

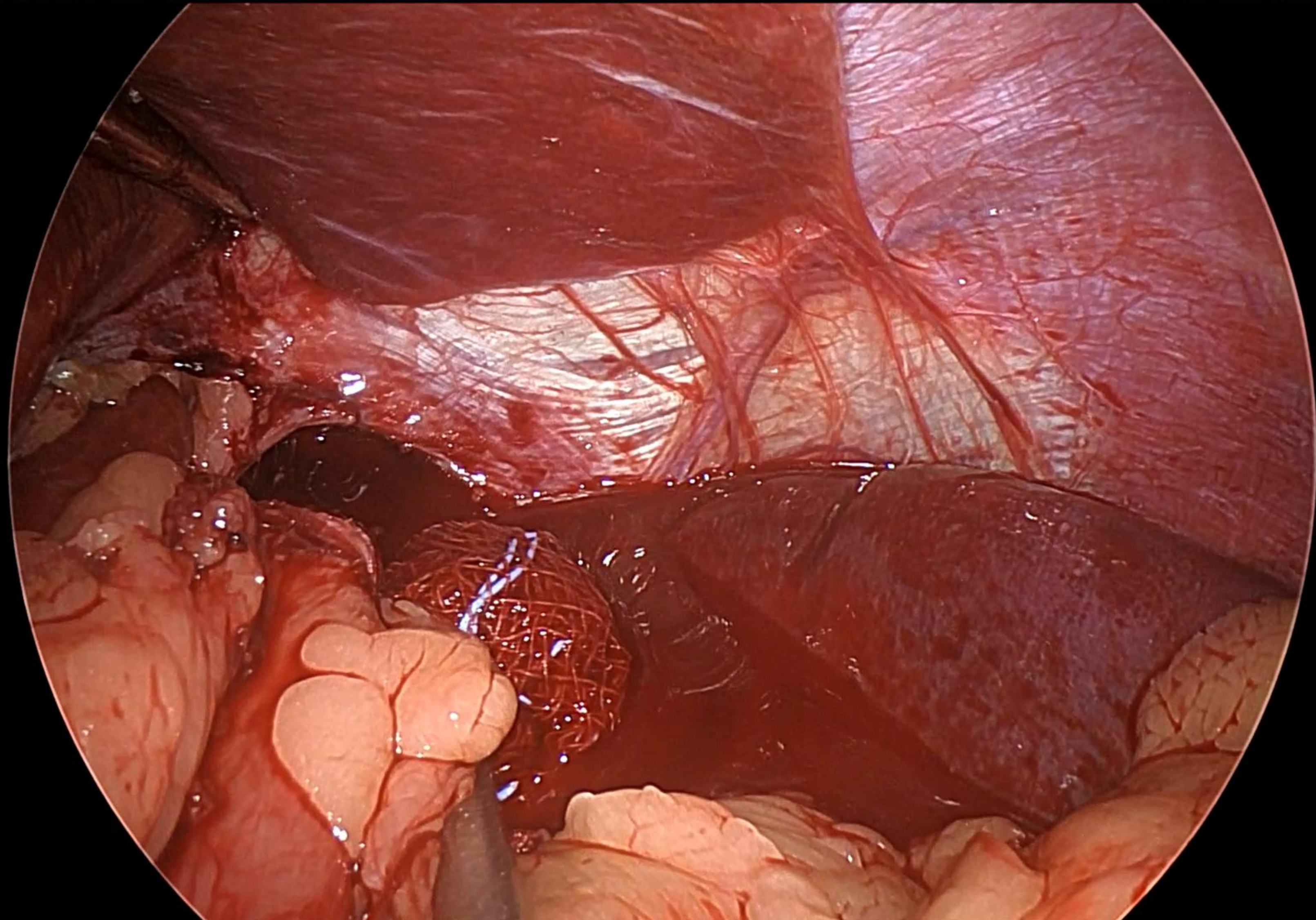
INSUFFLATOR
15
A Pressure
2
Actual Flow



Fresno Medical Education Program

Advanced Laparoscopic Surgery Associates Medical Group

"OK Stryker"



INSUFFLATOR

15

A Pressure

9

Actual Flow



Fresno Medical Education Program

Advanced Laparoscopic Surgery Associates Medical Group

The rescue paradox keeps surgical expertise in the room

The need for rescue is essential. Surgeons can never be replaced.

1

**Automation
handles routine
steps**



2

**A rare failure or
surprise occurs**

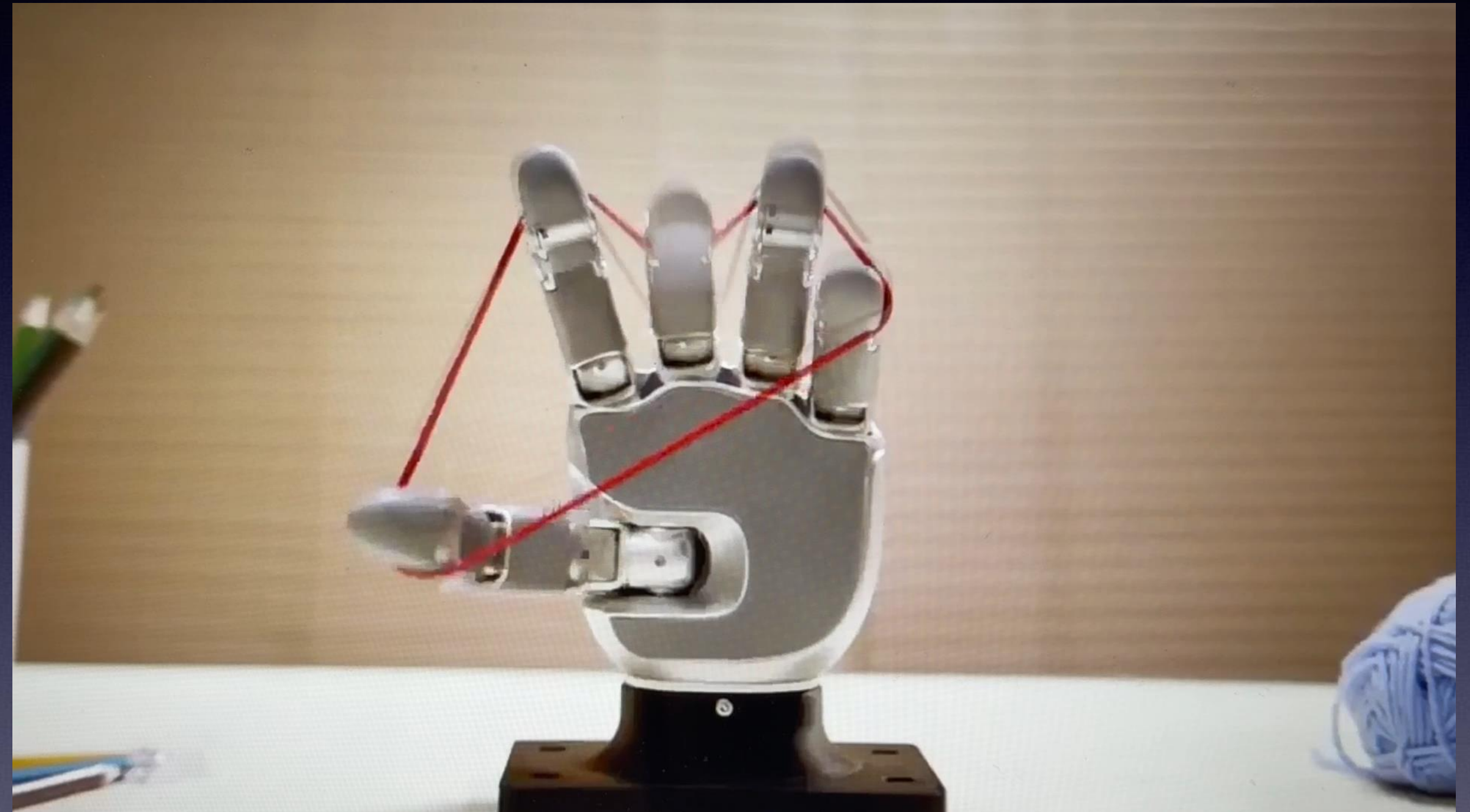


3

**A trained surgeon
must diagnose and
rescue**

Why AI and Robotics will NEVER replace Surgeons

- Tasks can be automated
- Surgery will always require human oversight.
 - Judgement
 - Adaptability
 - Compassion
 - Accountability
 - Ingenuity



Why don't we start with AI+Robots making Robots?

BUILDING THE FUTURE
OPTIMUS ASSEMBLES INTUITIVE SURGICAL
Precision robotics. Intelligent manufacturing.
Better tools for better care.

OPTIMUS - PRODUCTION UNIT 1

- AI-POWERED VISION**
High precision part recognition
- ADAPTIVE MANIPULATION**
Force control and alignment
- QUALITY ASSURANCE**
Real-time inspection and validation
- CONTINUOUS LEARNING**
Improving with every build

INTUITIVE SURGICAL

SYSTEM ASSEMBLY: da Vinci 5

STATUS: OPTIMAL

OPTIMUS + AI
Revolutionizing Manufacturing

INTUITIVE SURGICAL
Pioneering Minimally Invasive Surgery

BETTER CARE
Improving Lives Worldwide

Is this really our future?



This is a Surgeon

