

AI improving the effectiveness of MBS

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Why AI is the Singularity?

Artificial Intelligence



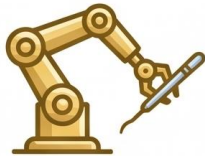
Language & Reasoning



Computer Vision



Predictive Analytics



Robotics & Automation

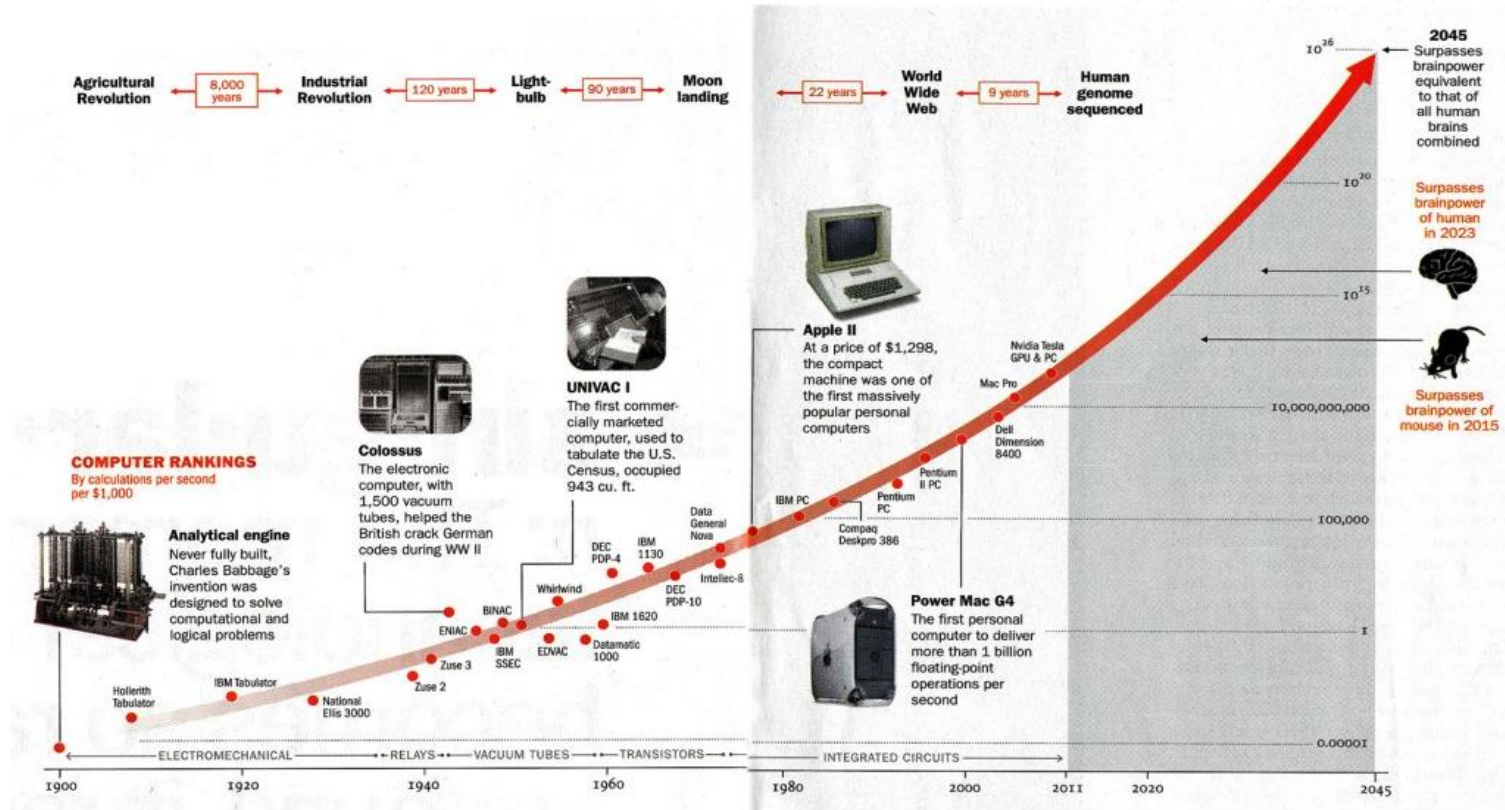


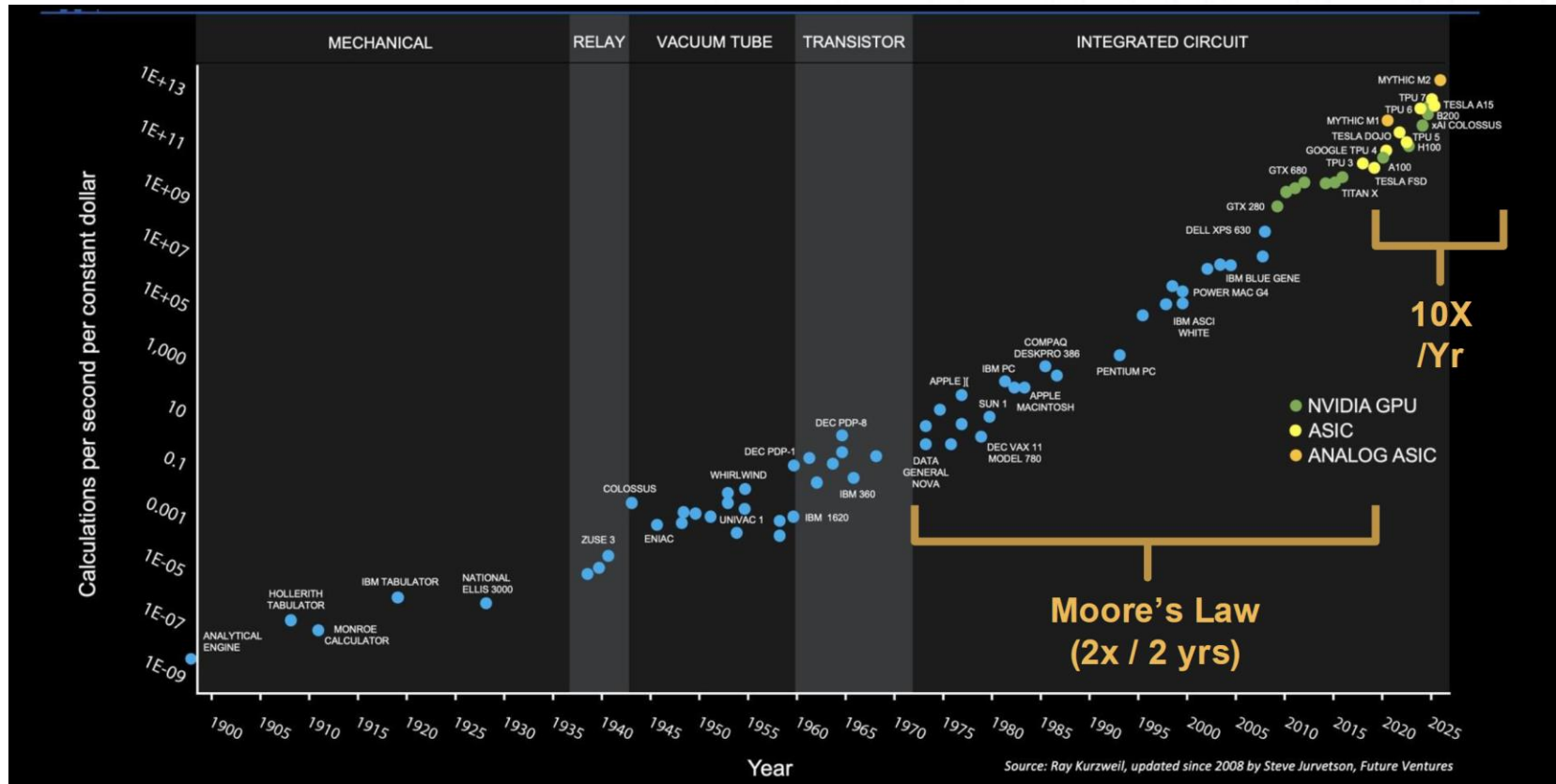
Generative AI



Autonomous Agents

Moore's Law

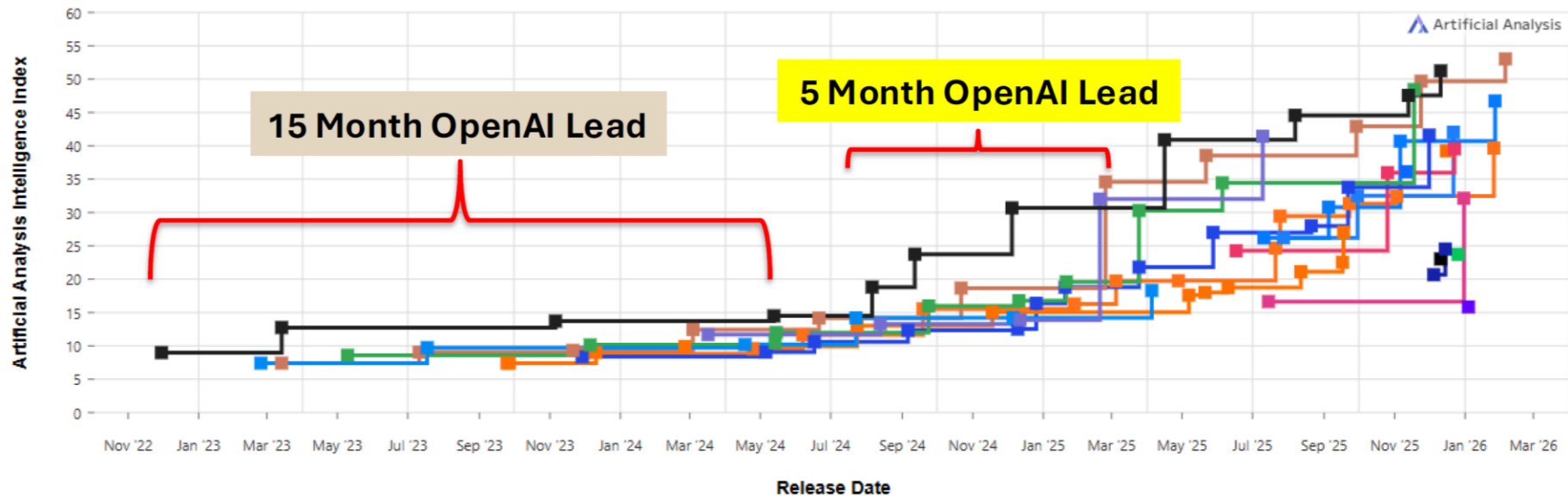




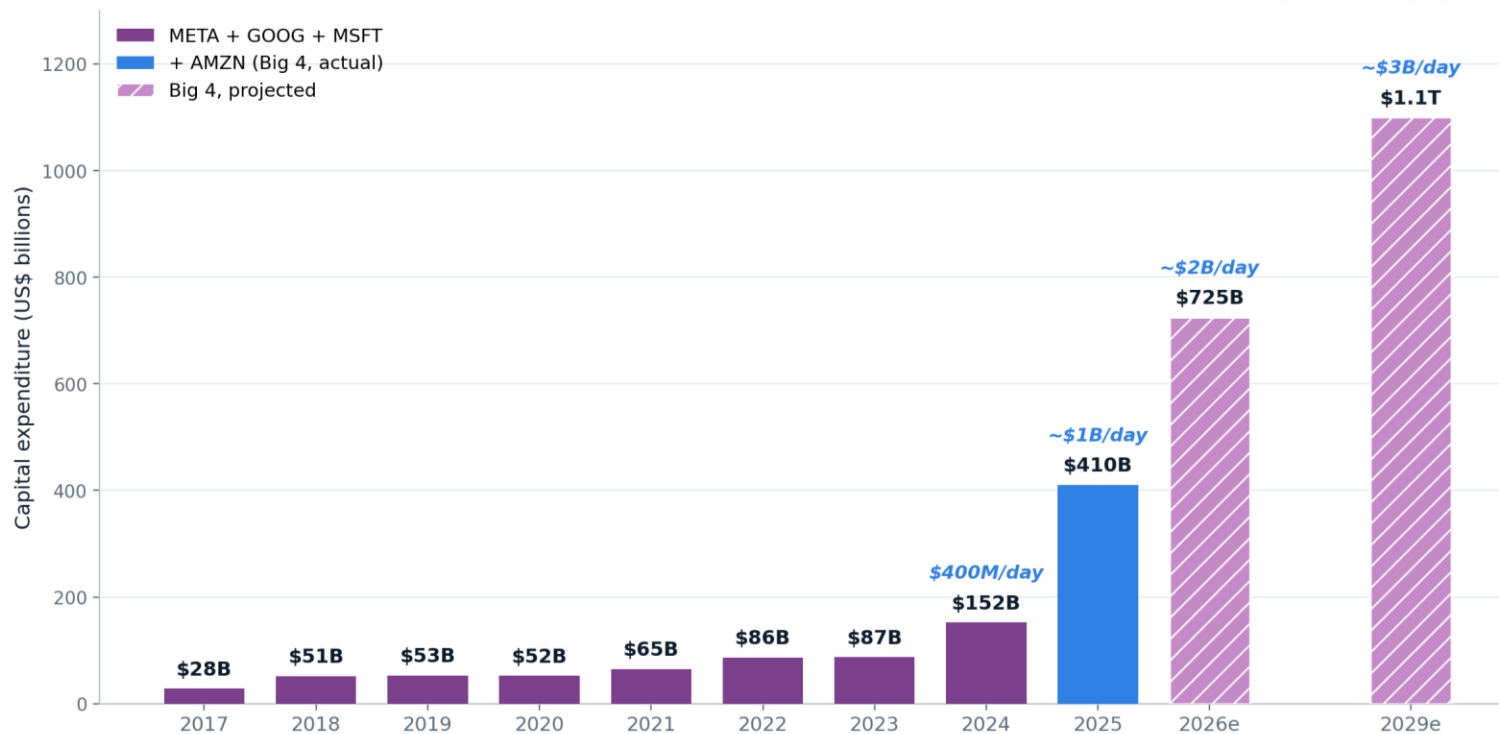
Frontier Language Model Intelligence, Over Time

Artificial Analysis Intelligence Index v4.0 incorporates 10 evaluations: GDPval-AA, τ^2 -Bench Telecom, Terminal-Bench Hard, SciCode, AA-LCR, AA-Omniscience, IFBench, Humanity's Last Exam, GPQA Diamond, CritPt

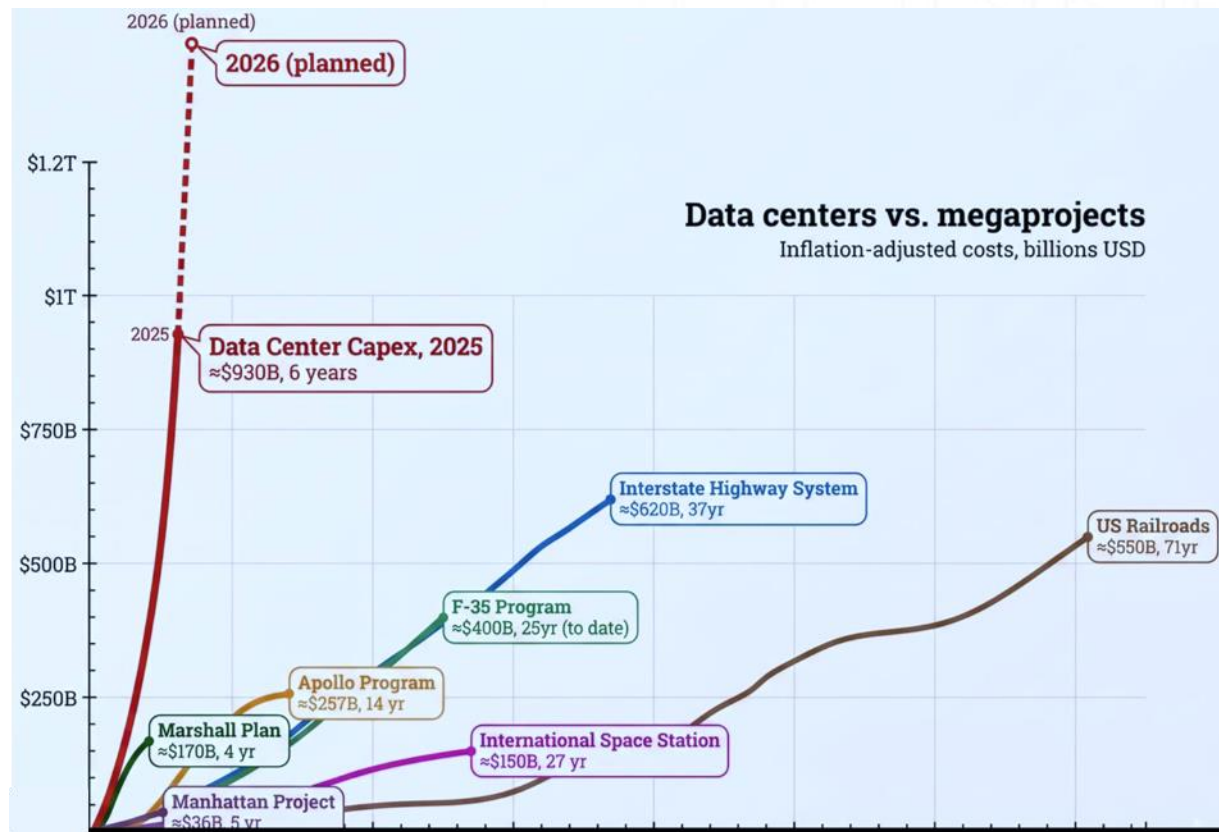
Alibaba Anthropic DeepSeek Google Kimi Korea Telecom KwaiKAT LG AI Research MBZUAI Institute of Foundation Models Meta
MiniMax Mistral Naver OpenAI TII UAE xAI Xiaomi Z AI



AI Hyperscalers Infrastructure Spending Explosion



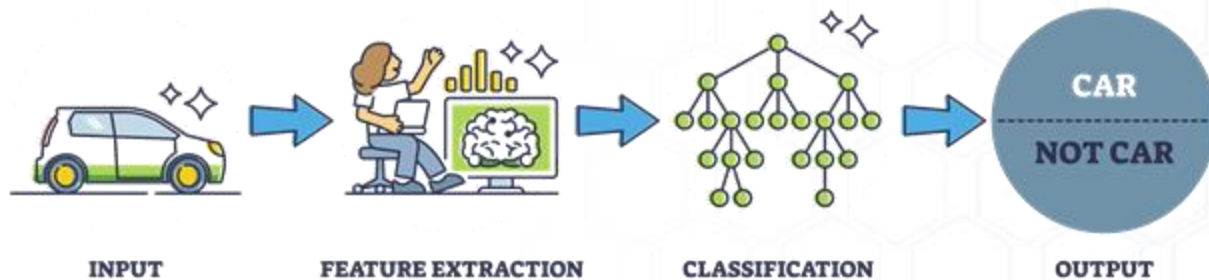
AI vs other human Megaprojects



AI Training

How do AI Models Work?

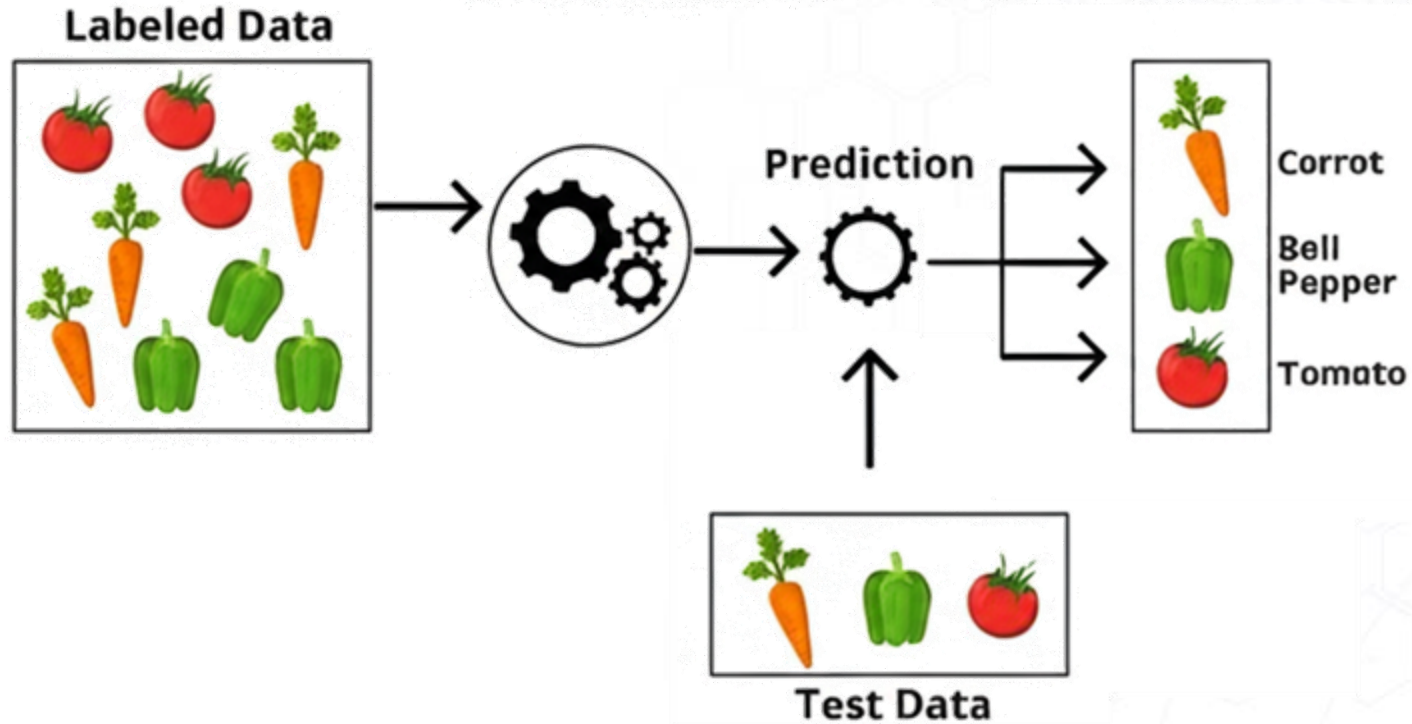
MACHINE LEARNING

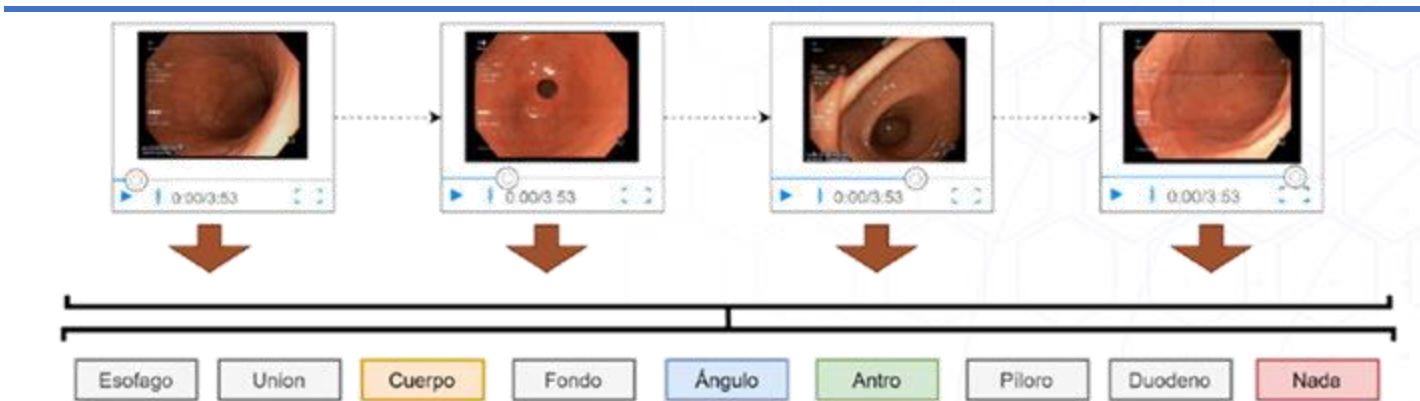
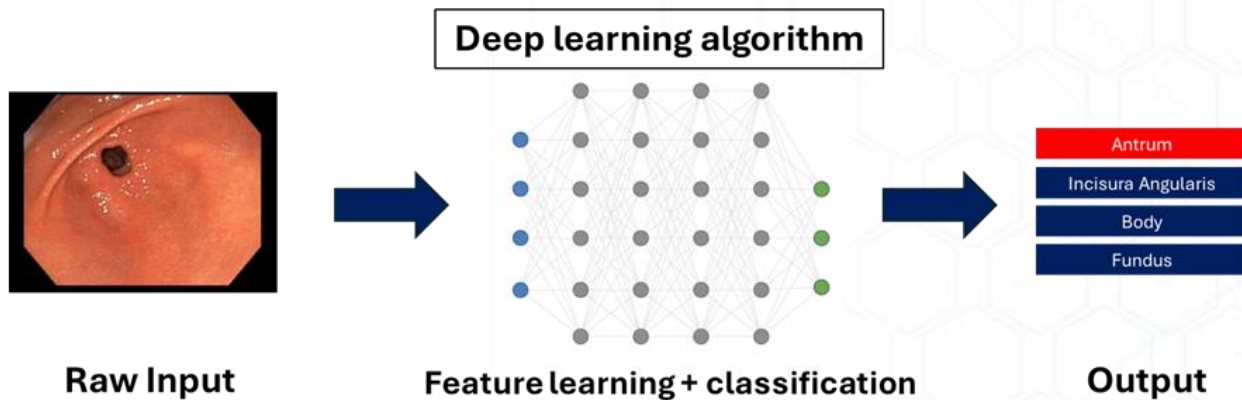


DEEP LEARNING



How do Models Learn?





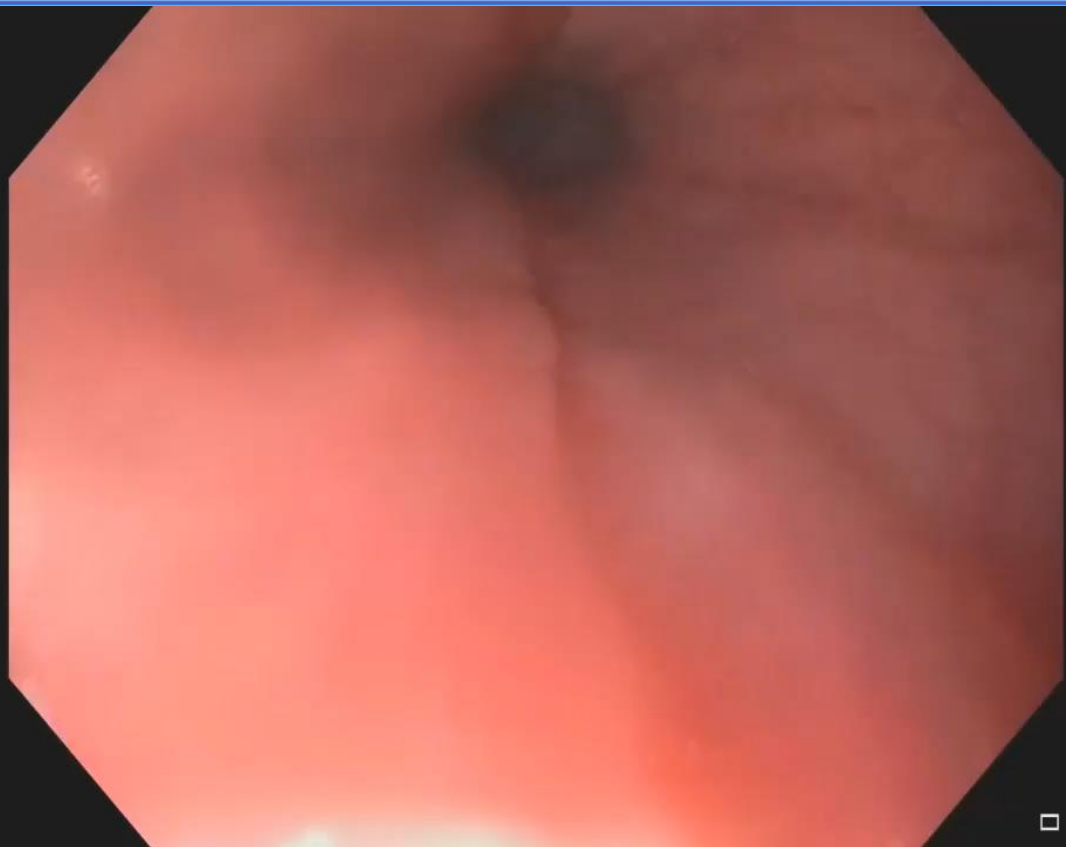
Our AI endoscopic detection model

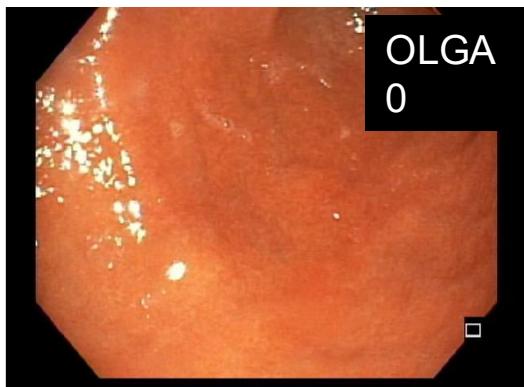
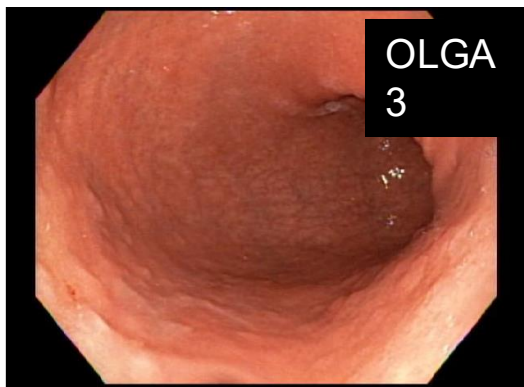
ID:
Name: **Esophagus: 86.71%**

Sex: Age:
D.O.B.:
13/01/2022
15:52:59

■■■/---(0/1)
Eh:A1 Cm:1

Comment:

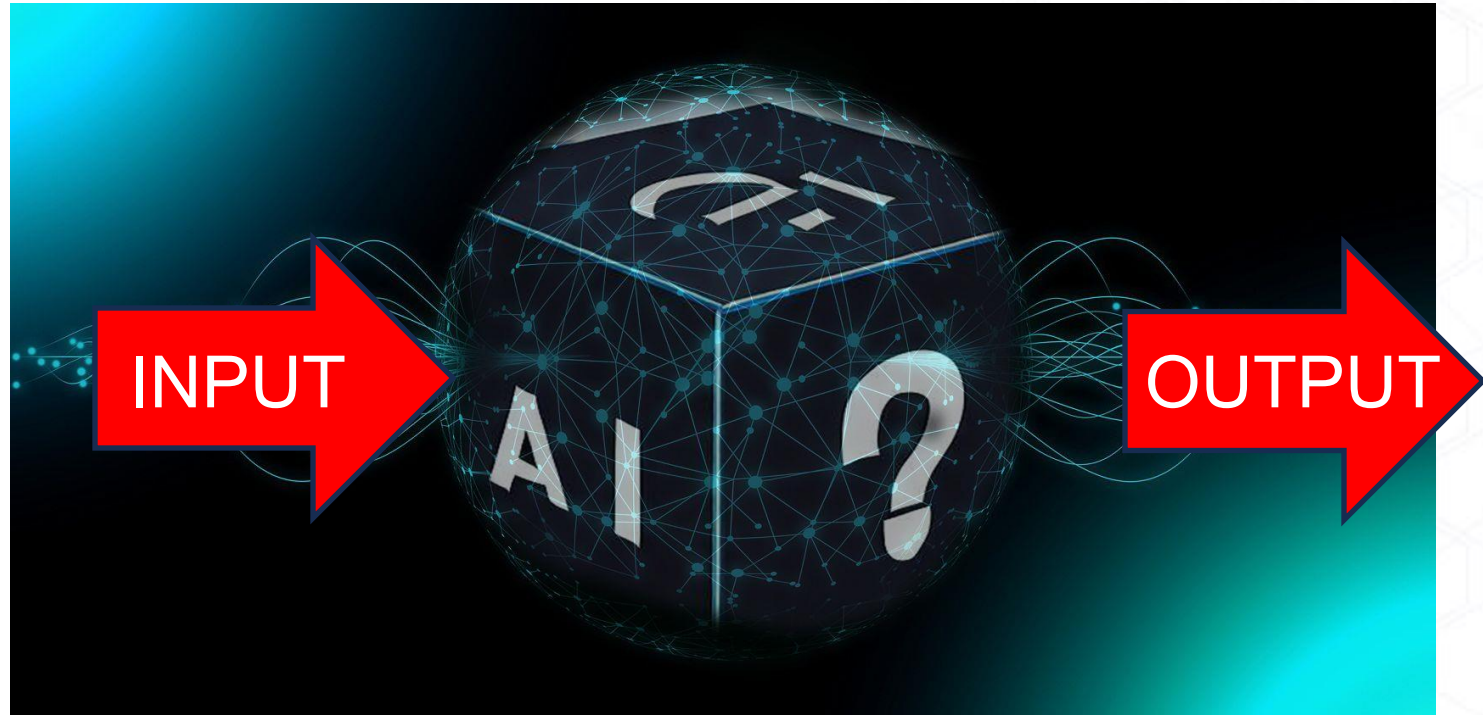




ViT - (TF2-TF1-TF2):
accuracy: **91.49%**

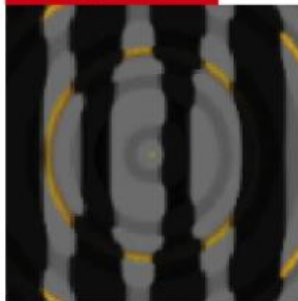
	Pred. Riesgo	Pred. No Riesgo
Endo. Riesgo	12	1
Endo. No Riesgo	3	31

AI main Limit: BLACK BOX



Scientists have evolved images that look like abstract patterns — but which DNNs see as familiar objects.

King penguin



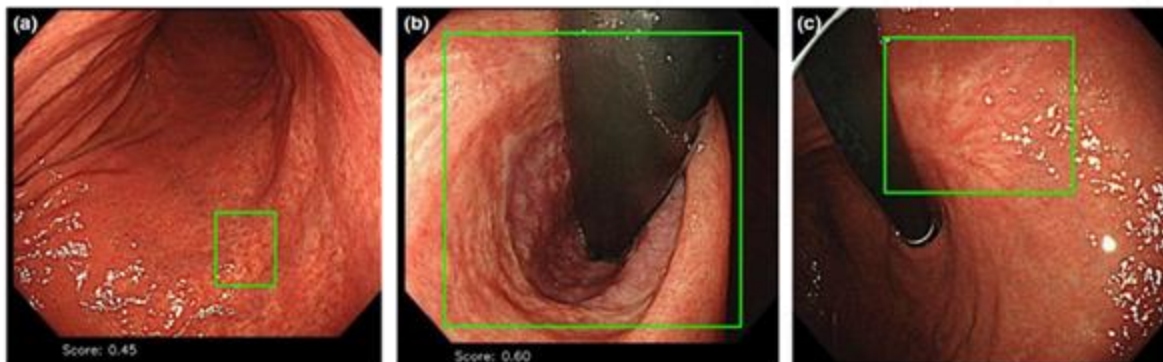
Starfish



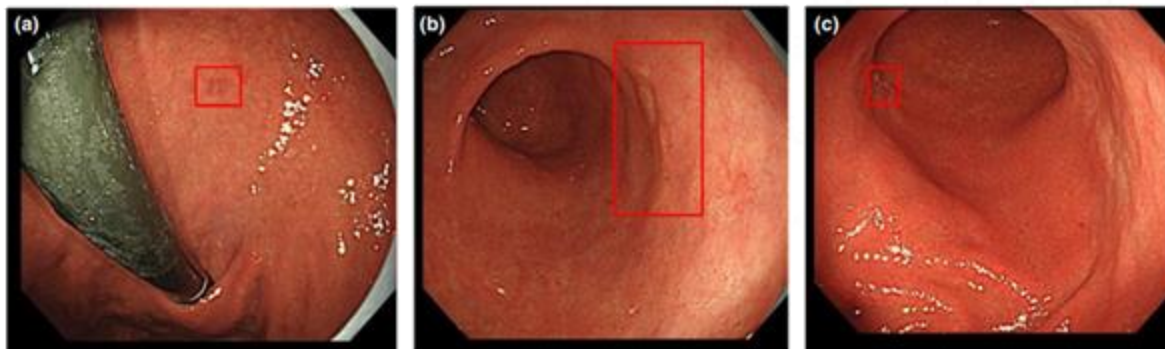
©nature



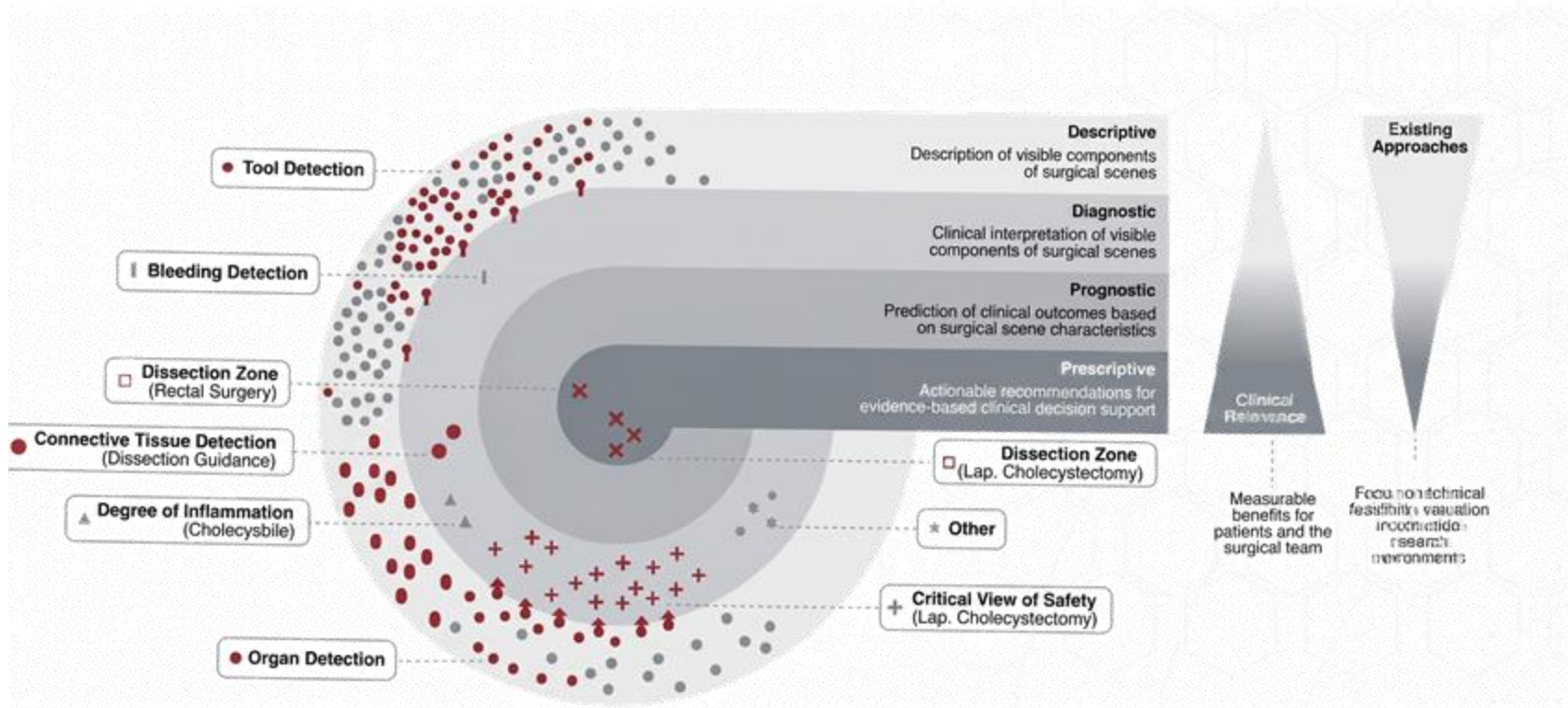
Falsos Positivos

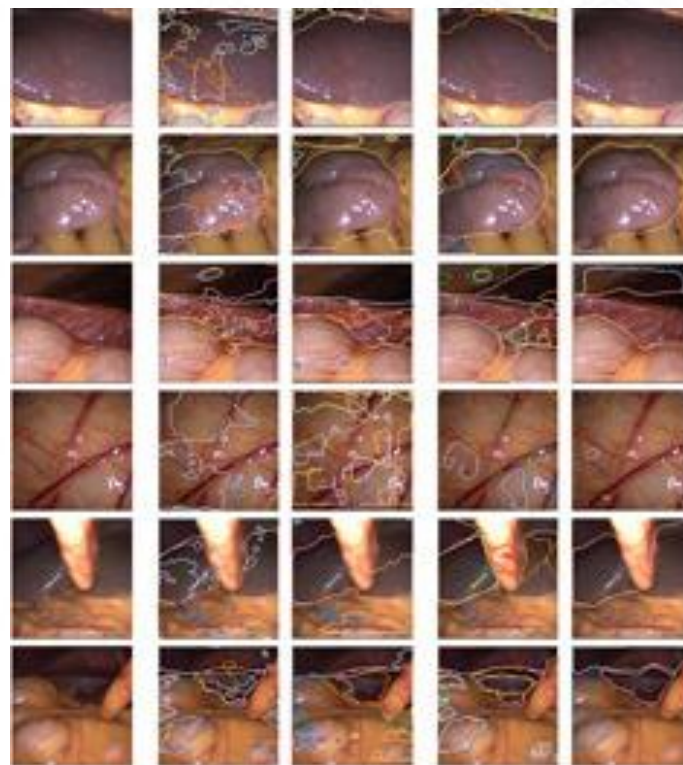
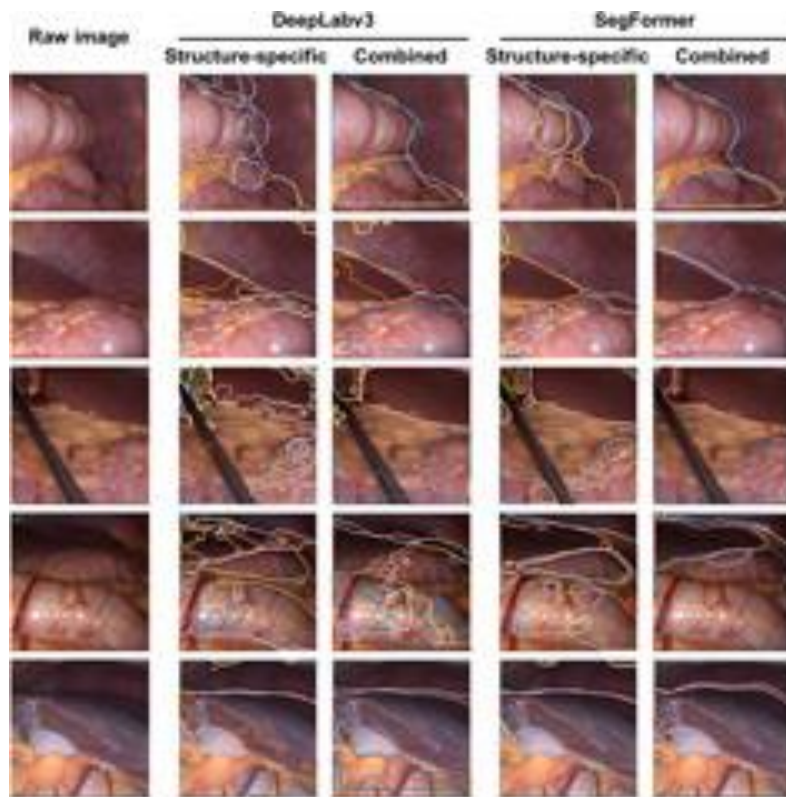


Falsos Negativos

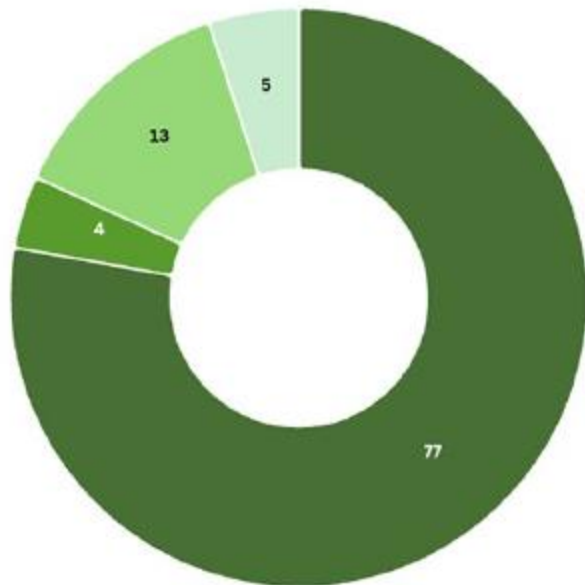


AI in Surgery



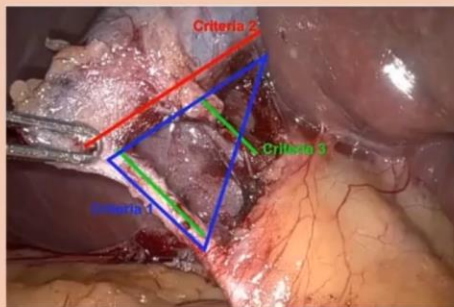


- Abdominal wall
- Colon
- Inferior mesenteric artery
- Intestinal veins
- Liver
- Pancreas
- Small intestine
- Spleen
- Stomach
- Ureter
- Vesicular glands



- No significant discrepancy
- omission of key steps from the operative report that were seen on video (false negative)
- inclusion of key steps in the operative report that were not seen on video (false positive)
- any error that implies a meaningful difference in technique

INTRAOPERATIVE COMPUTER VISION: THE CRITICAL VIEW OF SAFETY



Mechanism

Deep CNNs trained on thousands of surgical video frames operating at near real-time

Objective

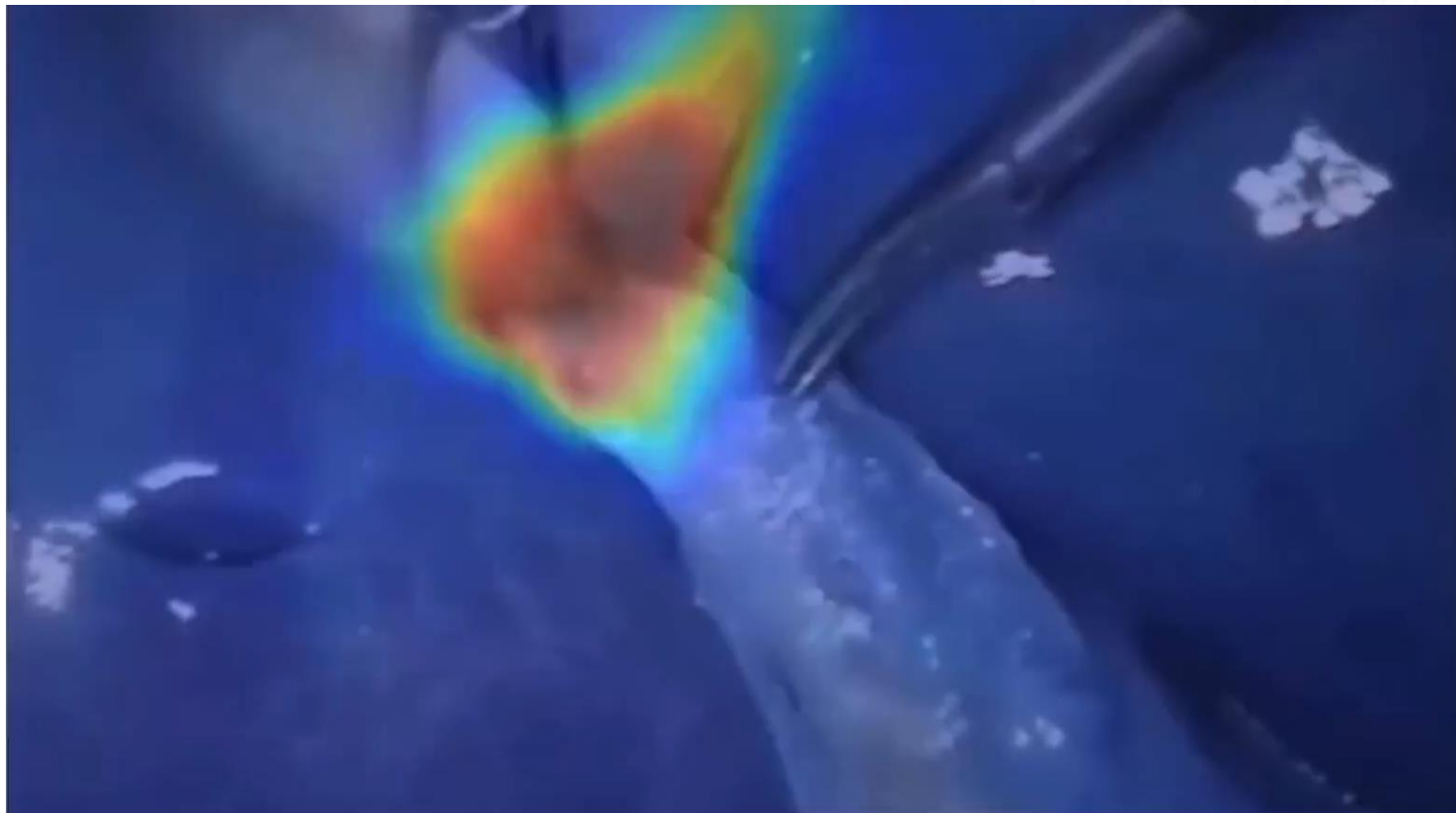
Automatically confirm the Critical View of Safety criteria prior to clipping and transection

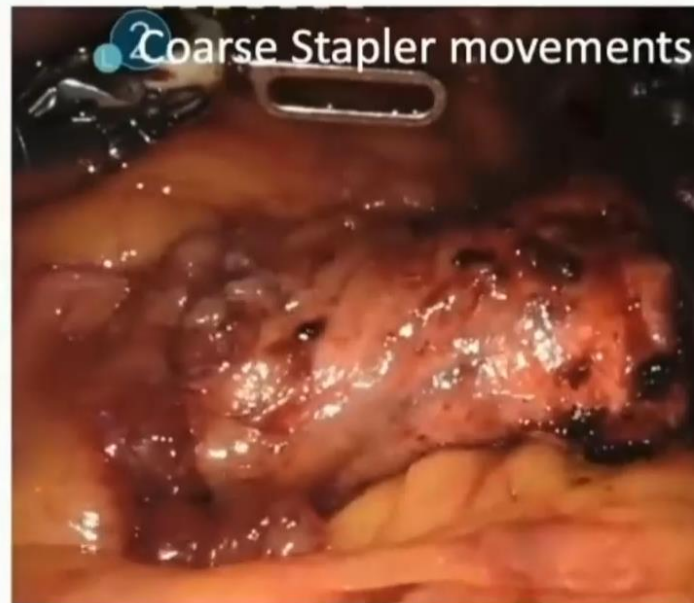
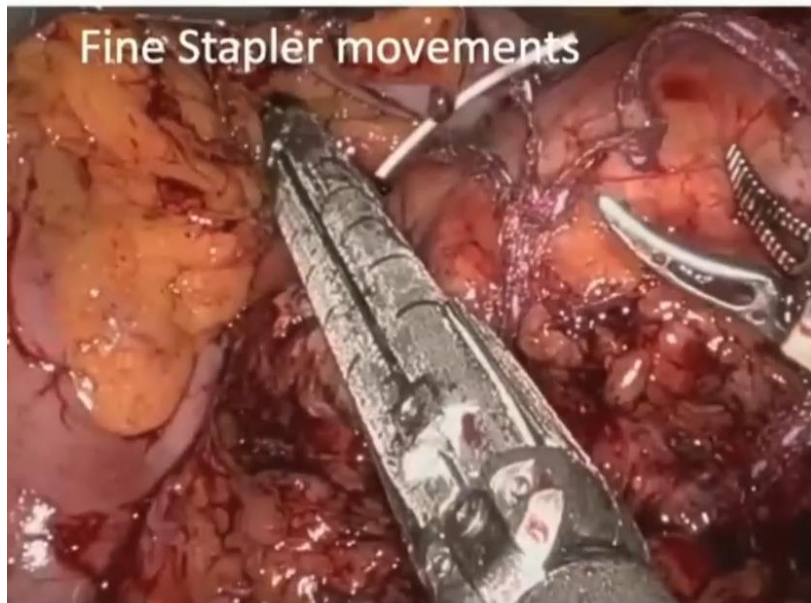
Clinical impact

Continuous and objective safety monitor, mitigating the risk of common bile duct injuries

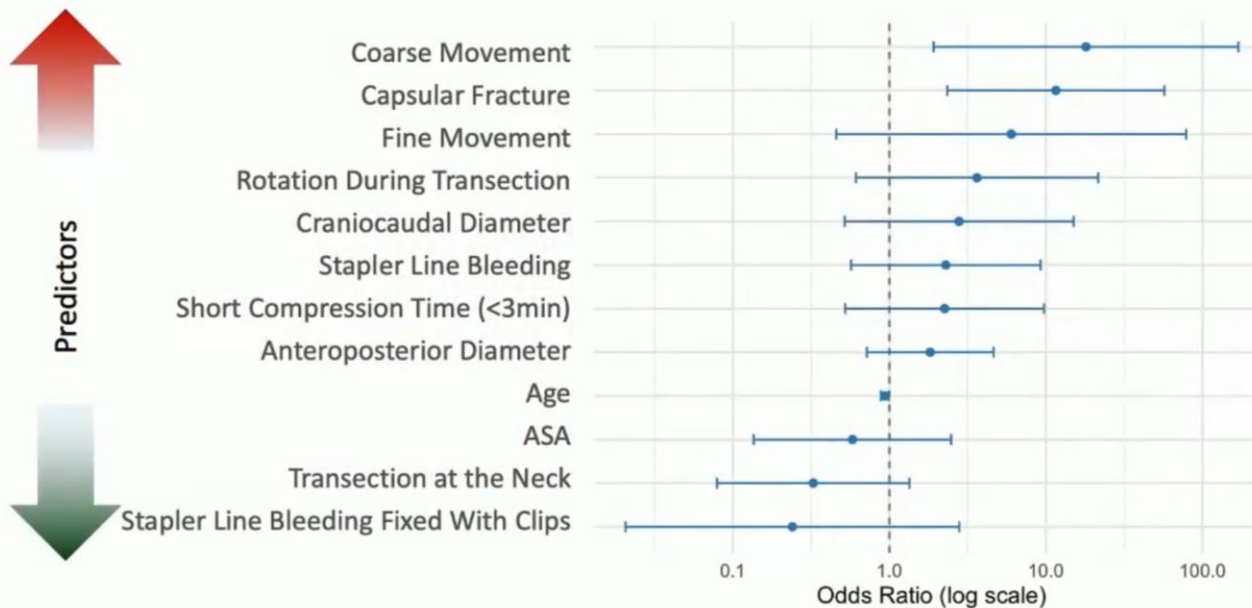


SAGES



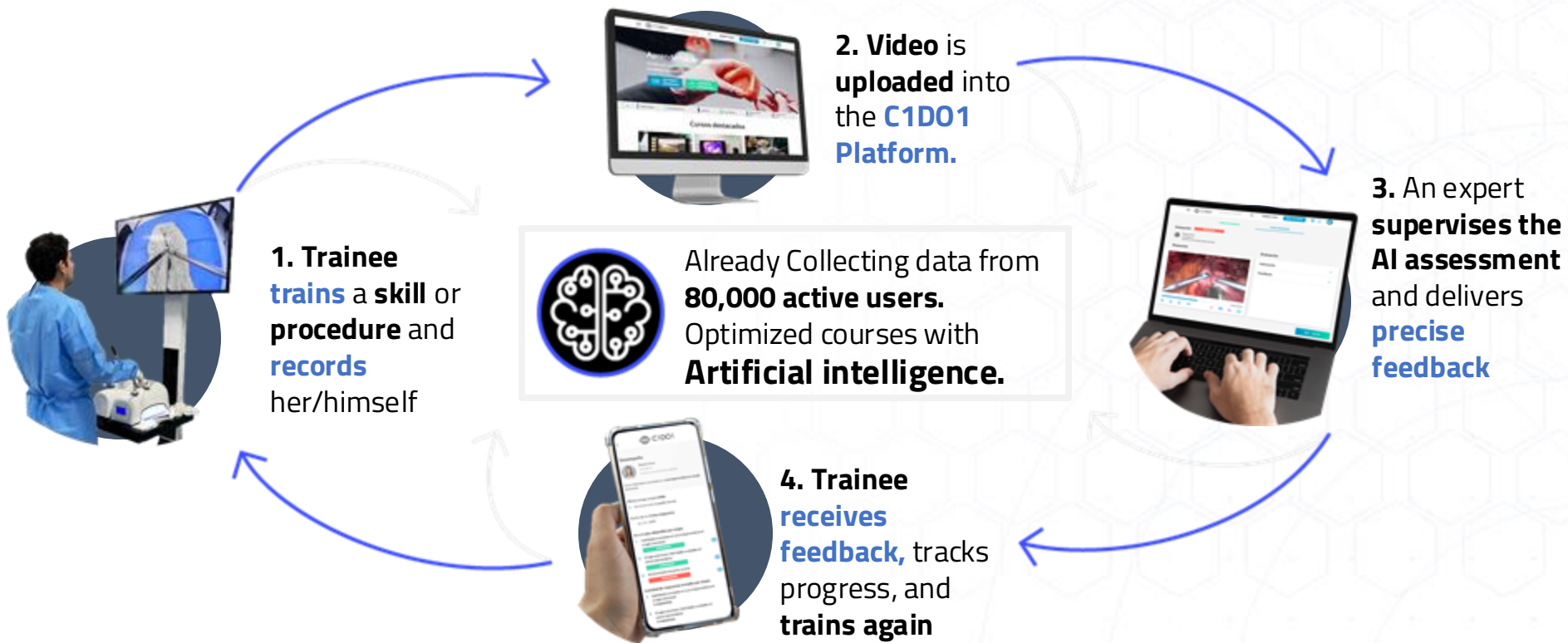


Fistula Predictors



AI video analysis: Training and feedback





AI video analysis: Training and feedback

The screenshot displays a web-based interface for evaluating a surgical training simulation. The main video window shows a robotic arm performing a vascular anastomosis on a simulated model. The interface includes a top navigation bar with a 'Back' button and the title 'Evaluating Maximiliano corvalan'. Below the video, a timeline at the bottom indicates the current position at 22:56 / 25:02. On the right side, a 'Feedback' panel provides detailed analysis. It lists two 'Identified critical points' with corresponding 'Suggestions' for improvement. The first critical point at 20:39 notes that the surgical field is clear, which is essential for precise stitch placement. The second critical point at 21:10 suggests maintaining excellent field visibility. The third critical point at 22:56 notes that the right robotic arm grasps the needle correctly but suggests minimizing pauses between actions to improve efficiency and rhythm. A 'Leave your feedback' section at the bottom right allows for additional input, with a 'Continue to assessment' button and a WhatsApp icon. The video player controls at the bottom include a play button, a progress bar, and various playback controls.

< Back

Evaluating Maximiliano corvalan

> Back to tutorial

Exit assessment

Evaluating Maximiliano corvalan

Feedback

Assessment

20:39 Sugerido por IA

IA Teach1

Identified critical point

The surgical field remains clear, allowing a clear view of the suture line and vessel edges.

Suggestion

You maintain excellent field visibility; this is essential for precise placement of each stitch.

21:10 Sugerido por IA

IA Teach1

Identified critical point

The right robotic arm grasps the needle for the next stitch, with a slight pause before the action.

Suggestion

Needle grasping is correct, but try to minimize pauses between actions to improve procedure efficiency and rhythm.

22:56 Sugerido por IA

Leave your feedback.

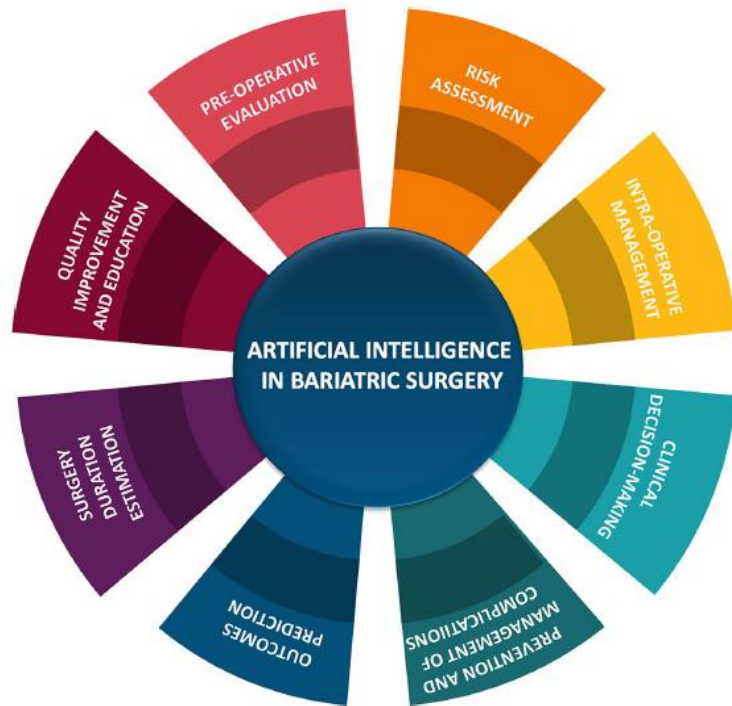
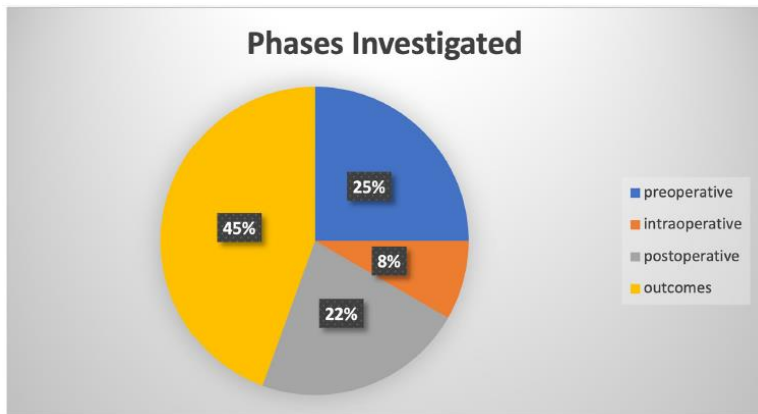
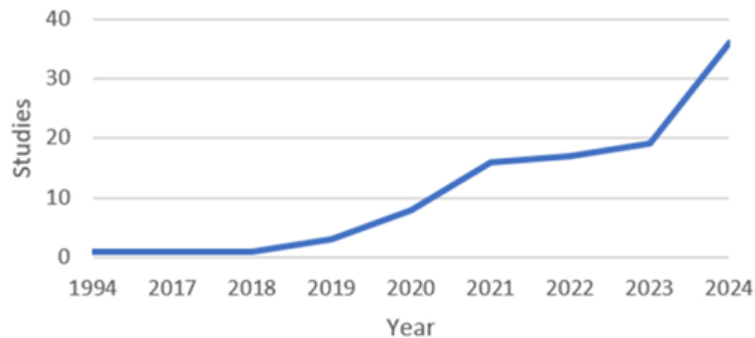
22:56

Cancel

Continue to assessment

Stage 1: Robotic Vascular Anastomosis Assessment Scale (R-VAAS)

PONTIFICIA
UNIVERSIDAD
CATÓLICA
DE CHILE



AI bariatric weight trajectory prediction



Bariatric Weight
Trajectory Prediction

THE LANCET
Digital Health

Prediction About Partners

Contact

Metric
Imper.



Patient

Weight

120 ✓
kg

Height

170 ✓
cm

Age

36 ✓
years

Non-smoker



Smoker

Type 2 diabetes

No diabetes ✓

Surgery

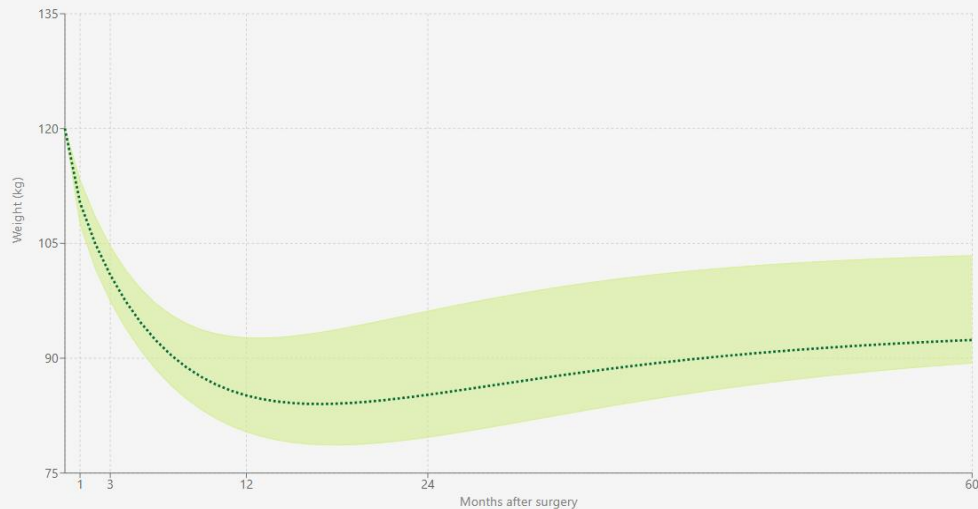
Type of intervention

Sleeve Gastrectomy ✓

Predict trajectory

	Weight (kg)	Height (cm)	Age (years)	Smoker	Type 2 diabetes	Diabetes duration (years)	Type of intervention
Current prediction	120	170	36	No	No diabetes	0	Sleeve Gastrectomy

Weight

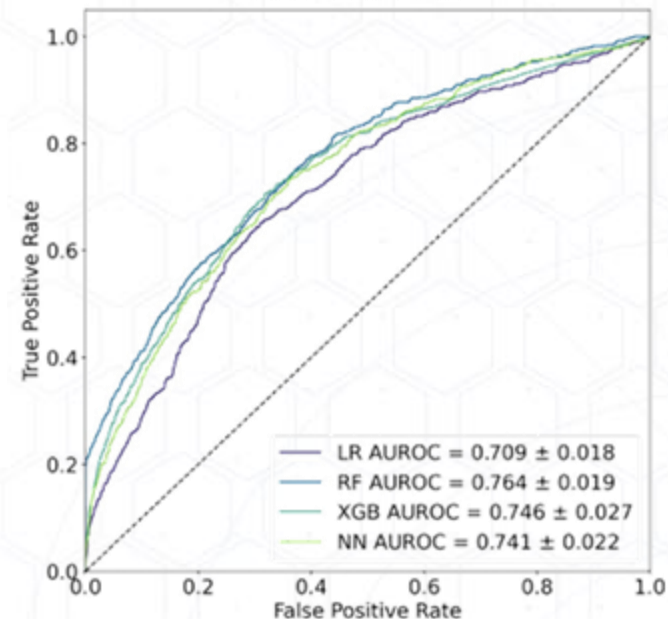


Prediction of weight trajectory after surgery

Application of machine learning to predict postoperative gastrointestinal bleed in bariatric surgery

Justin L. Hsu¹, Kevin A. Chen¹, Logan R. Butler², Anoosh Bahraini¹, Muneera R. Kapadia¹, Shawn M. Gomez³, Timothy M. Farrell¹

¹Department of Surgery, University of North Carolina School of Medicine, 4001 Burnett-Womack CB#7050, Chapel Hill, NC 27599, USA

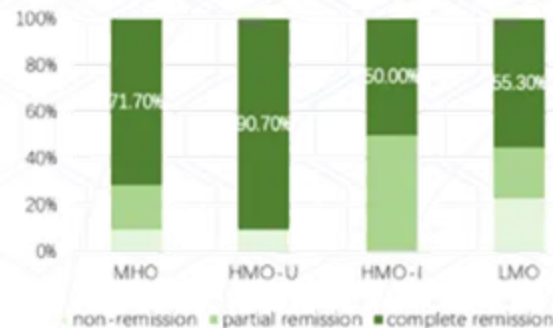
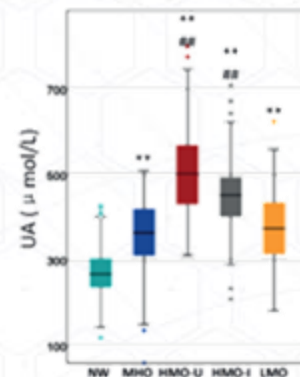
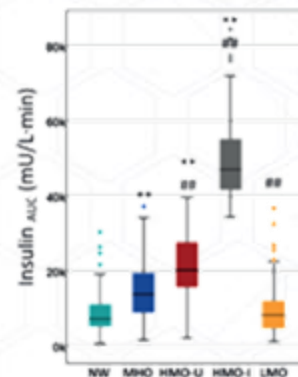
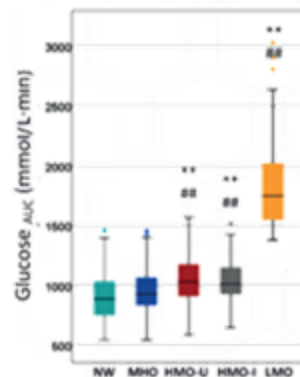
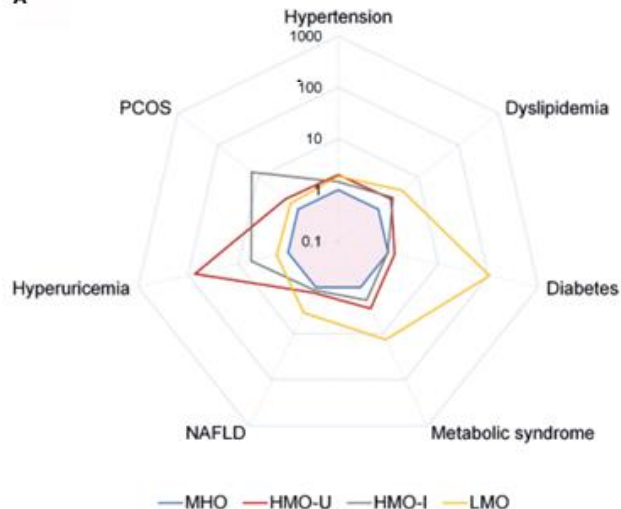


Insulin, Glucose, Uric Acid during OGTT

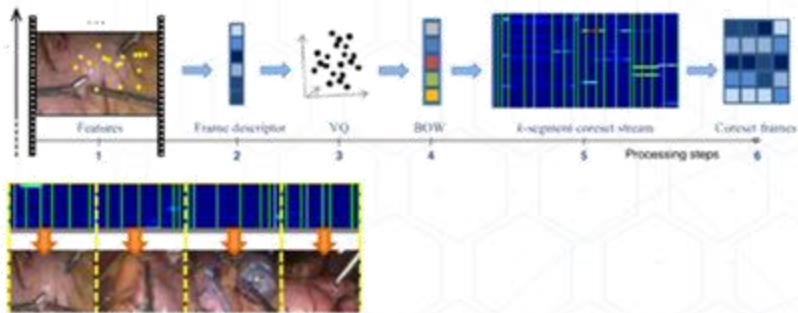
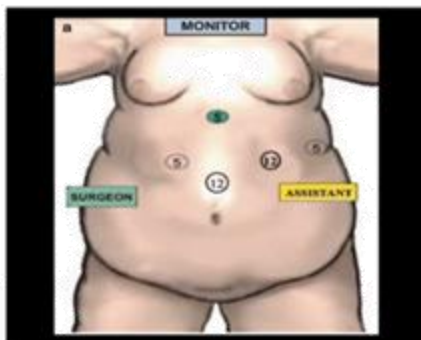


frontiers
in Endocrinology

A



Surgery Steps Video Analysis



STEP 1
ACCESS TO THE ABDOMINAL
CAVITY

Step 2
Dissection of the greater
curvature + Hiatal dissection +
Introduction/placement of the
calibration tube

Step 3
Stapling of the greater
curvature

Step 4
Removal of the gastric remnant

Step 5
Oversuture

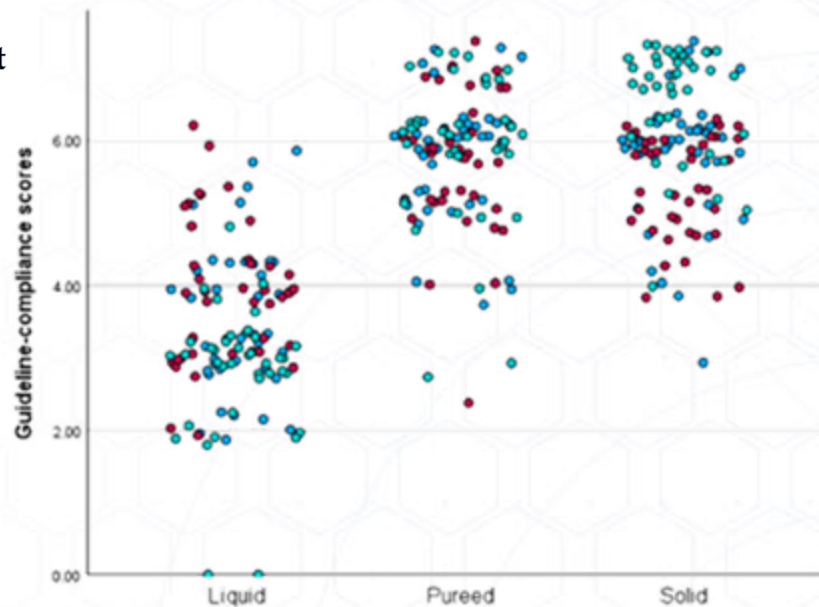
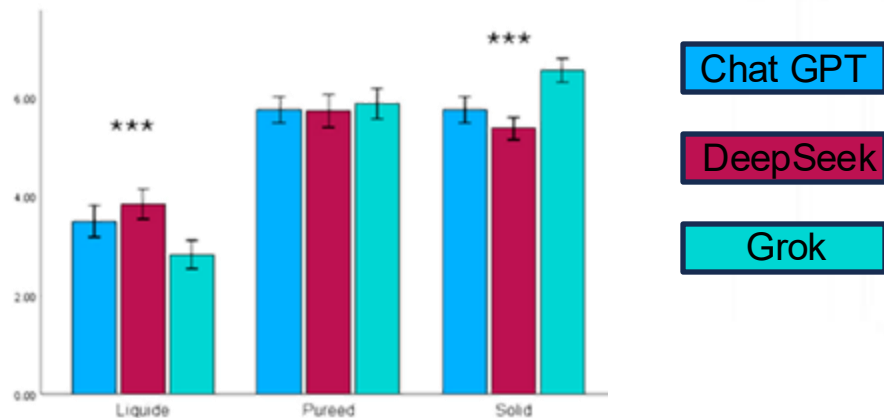
Step 6
Leak test and final
inspection



Article

Guideline Compliance of Artificial Intelligence–Generated Diet Plans After Bariatric Surgery: A Cross-Sectional Simulation Comparing ChatGPT-4o, DeepSeek and Grok-3

Aylin Bolat Yilmaz ¹, Emre Batuhan Kenger ², Tugce Ozlu Karahan ², Duygu Saglam ³ and Murat Bas ^{3,*}

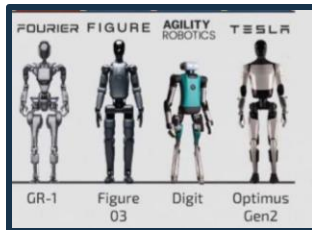
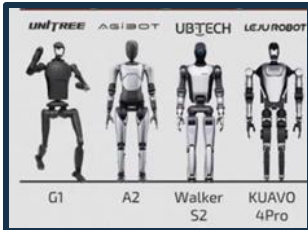


The Future: Robotics

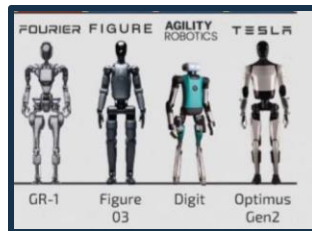
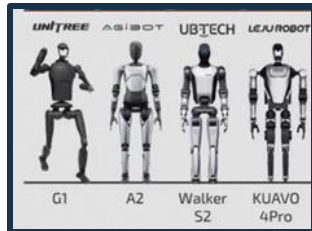
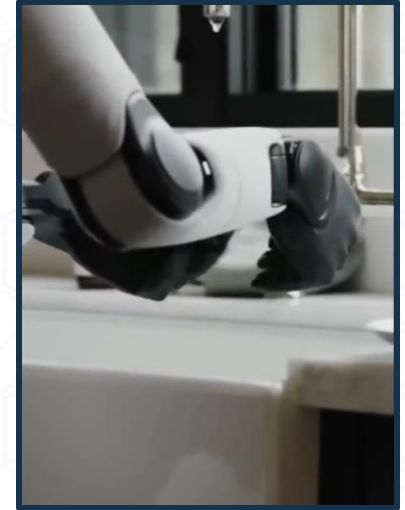
Needle Pickup & Retry Behavior



HUMANOID ROBOTICS

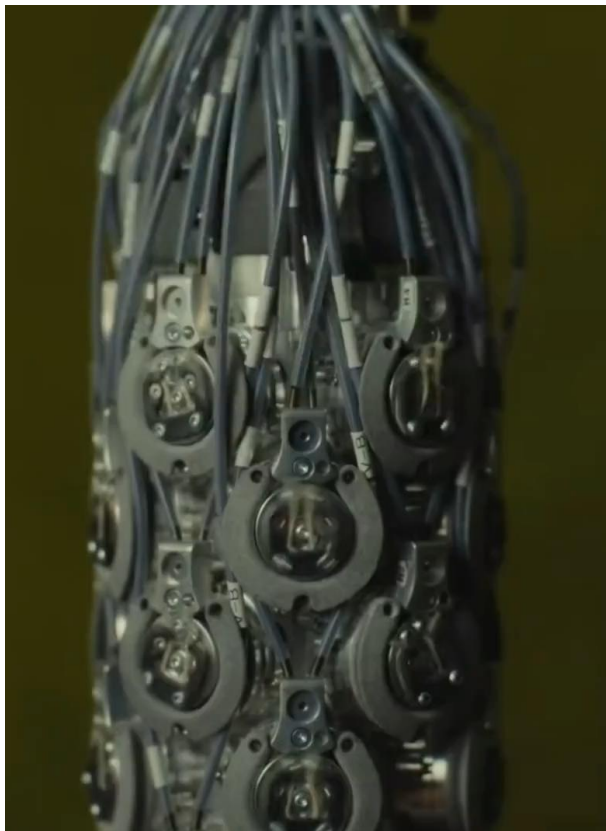


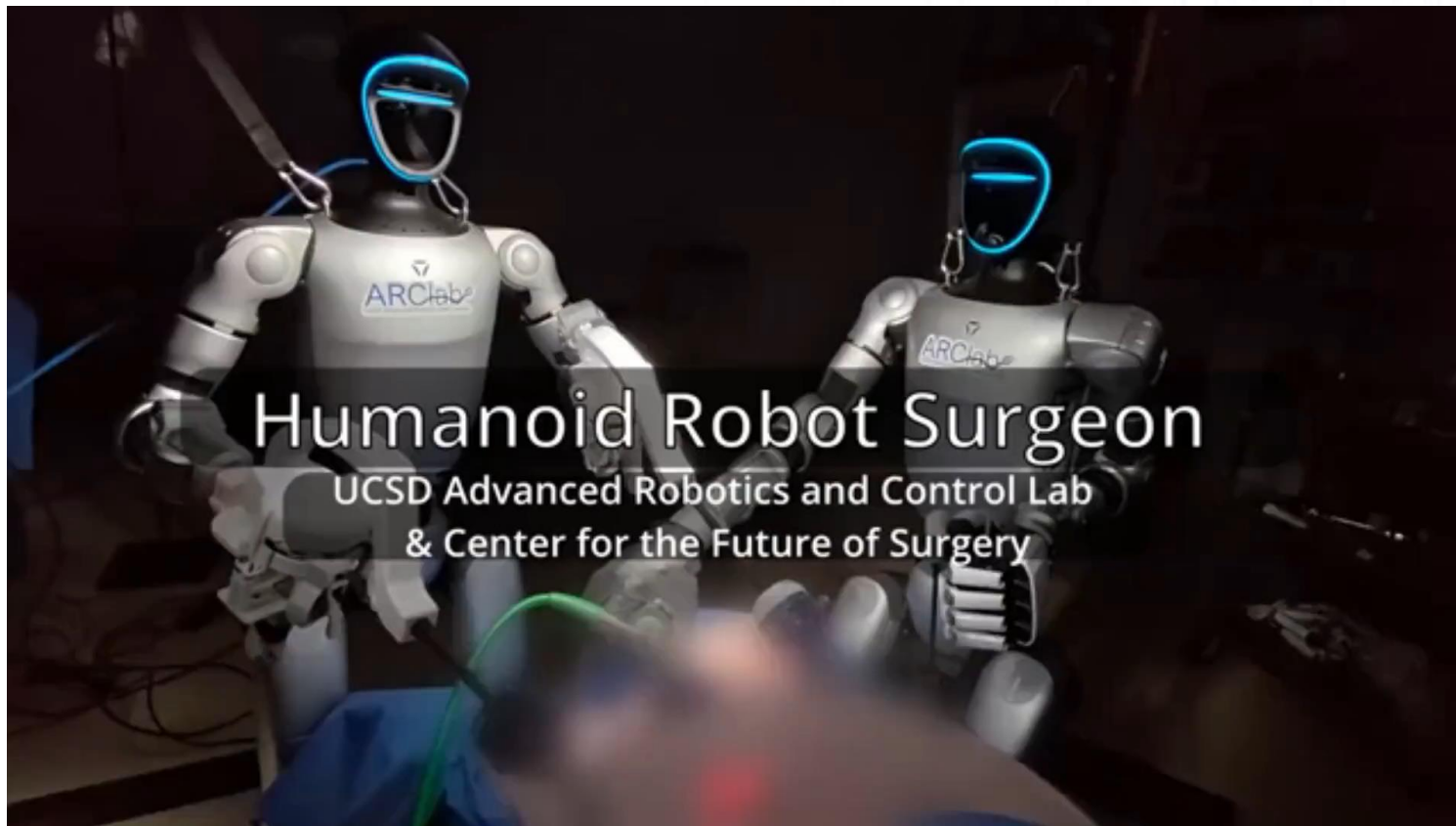
HUMANOID ROBOTICS



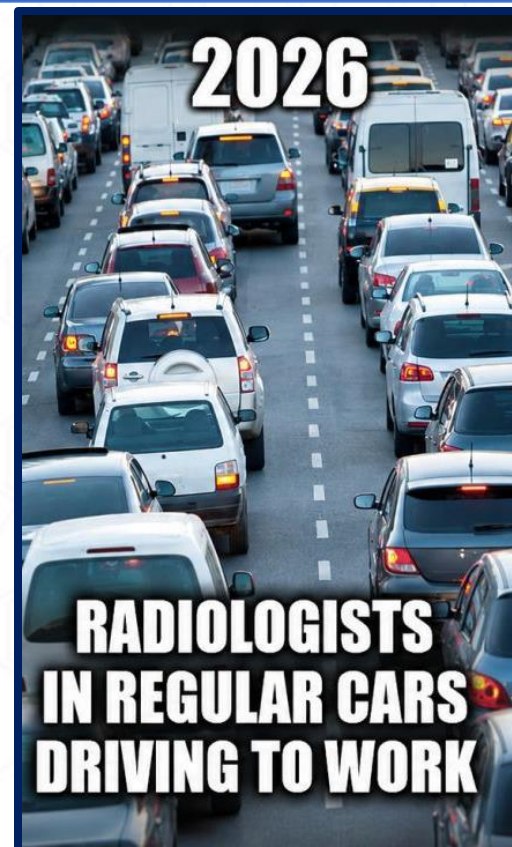


Humanoid Robots: Hands

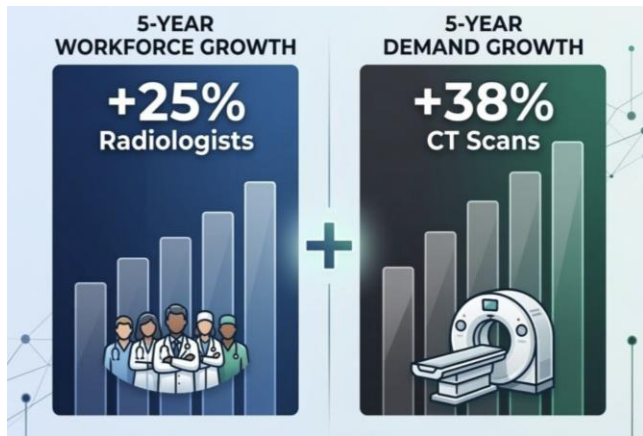




Will AI replace Surgeons?



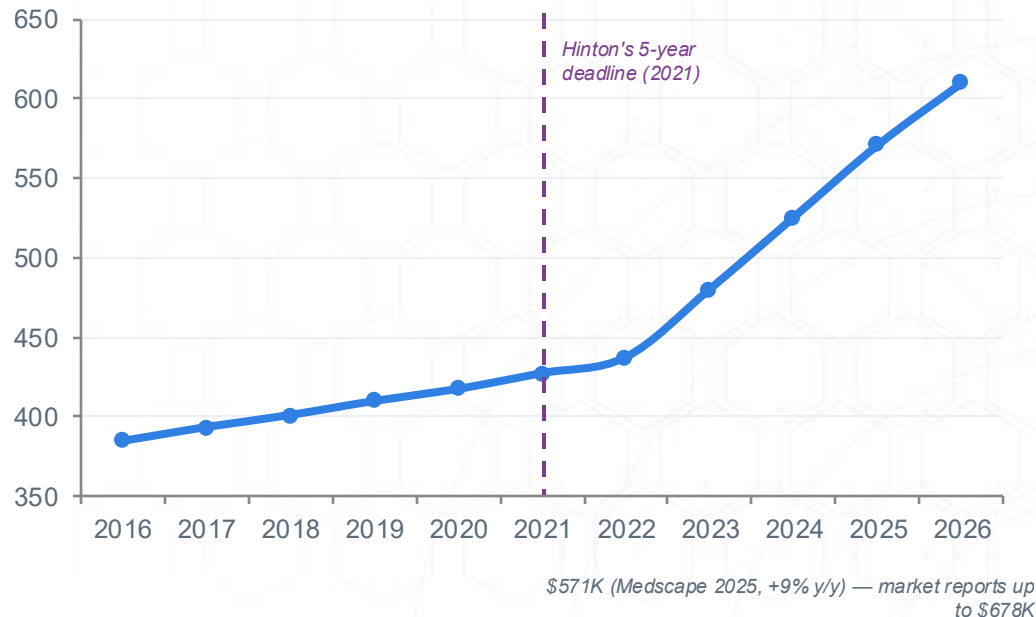
The Failed Prophecy: Javons Paradox



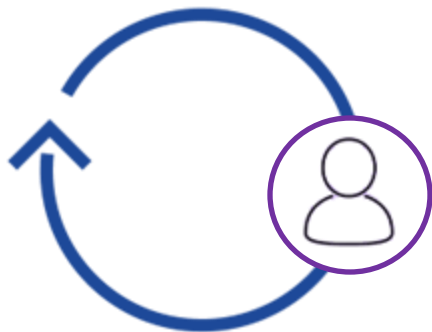
AI efficiency lowers costs and
increases imaging demand



US radiologist average compensation (US\$K)



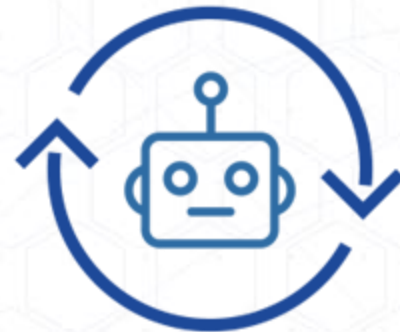
Replacement Ladder



IN THE LOOP



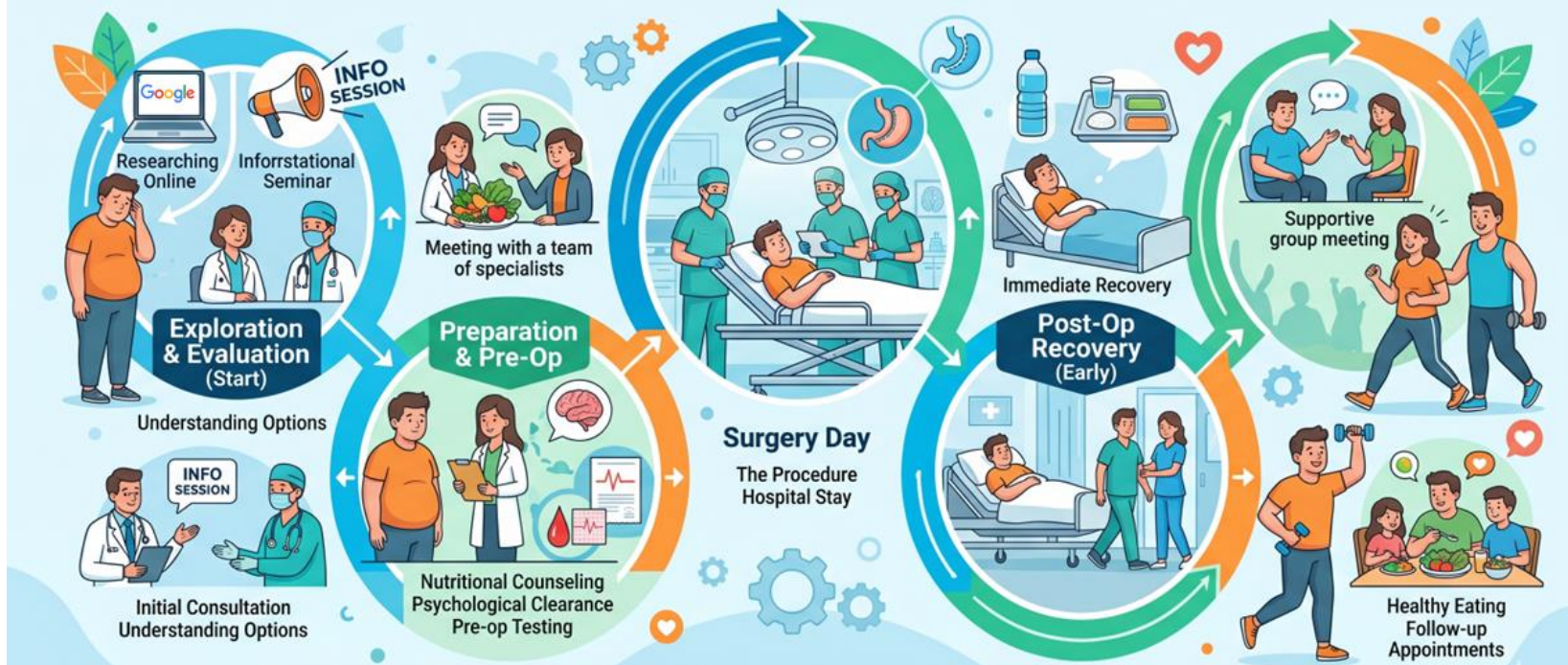
ON THE LOOP



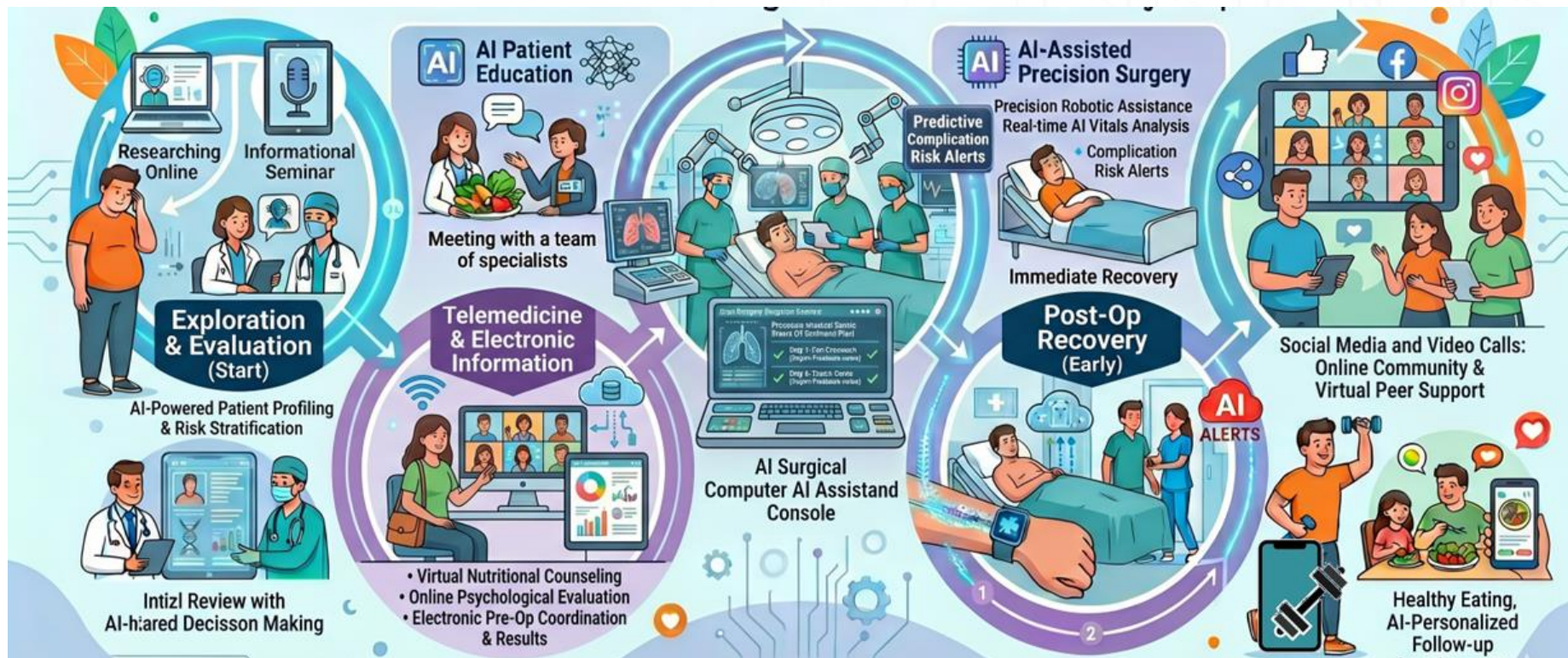
OUT OF THE LOOP



My Bariatric Surgery Journey: A Path to Healthier Living



Future AI Bariatric Path





Delegate
efficiency to **AI**.

Reserve **human talent**
for **creativity,**
innovation, and
judgment.

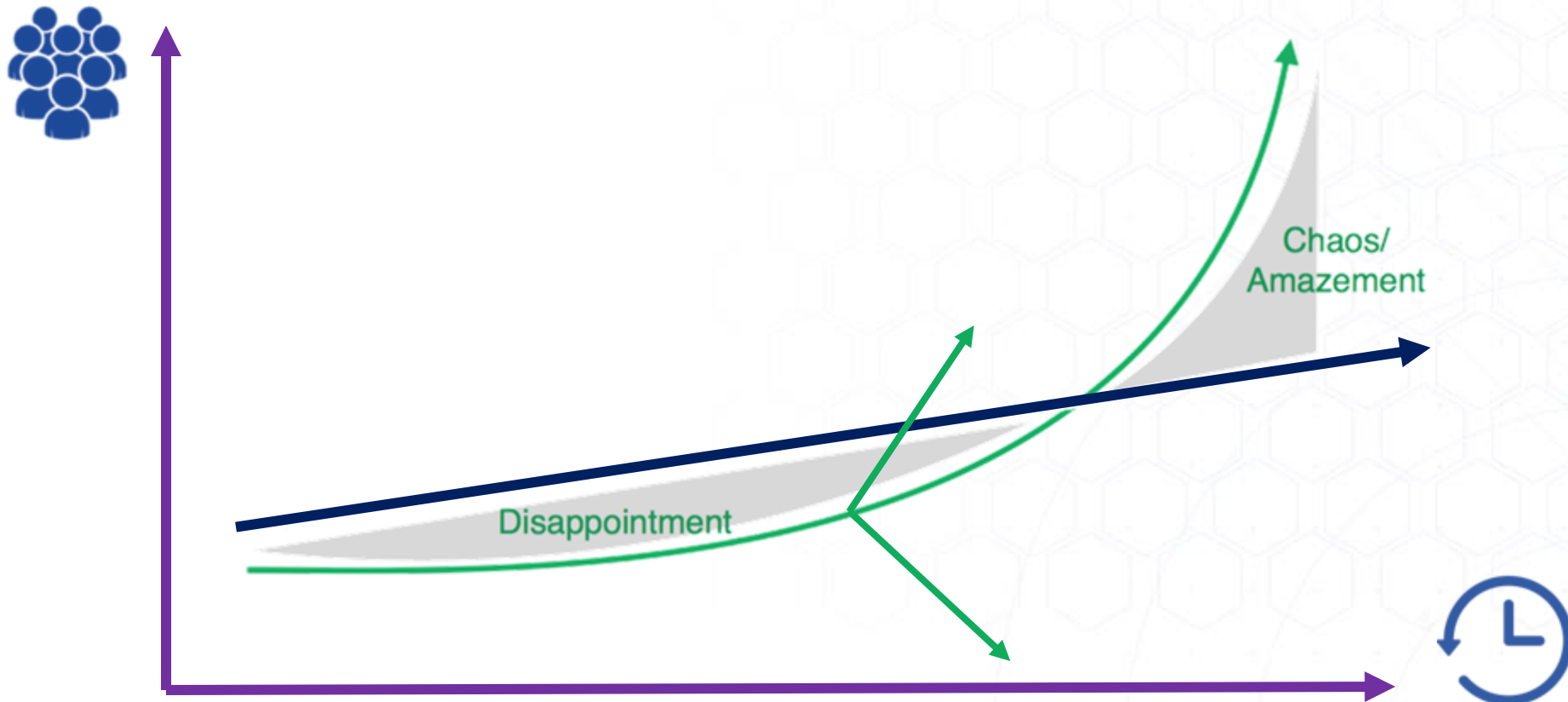
AI improving the effectiveness of MBS

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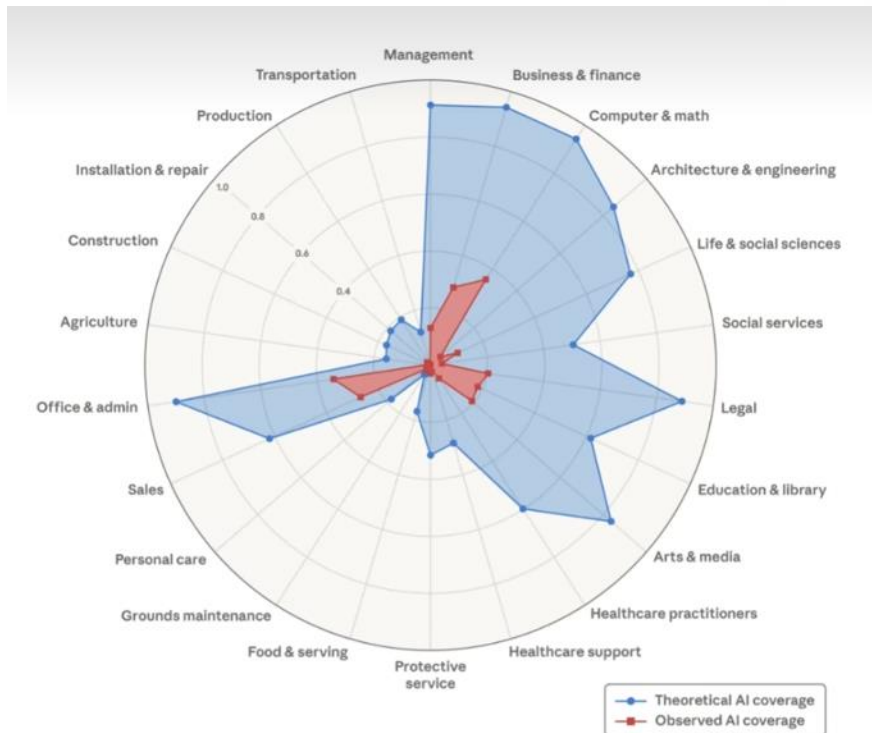
achurrapablo@gmail.com



Curva de crecimiento exponencial de nuevas tecnologías



TASKS is not the same as JOBS



Big Data Analysis will help predict more outcomes

