

# electric *dreams*

The nexus between emotional  
and artificial intelligence.





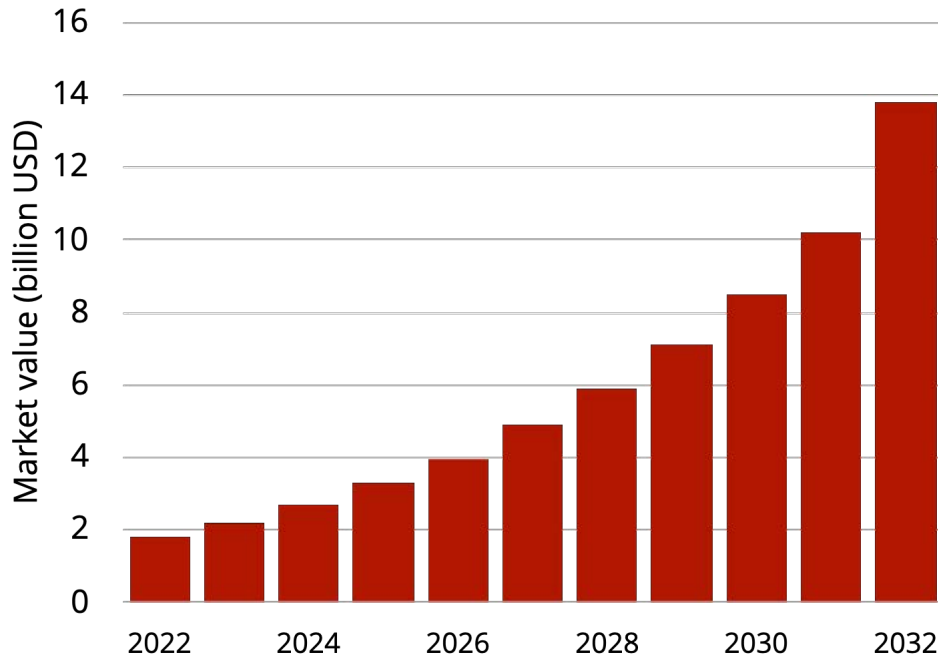
How many of you use  
generative AI tools like  
ChatGPT, Copilot or Bard at  
least once a week?

Sources: Grand View Research,  
USD Analytics, Emergen



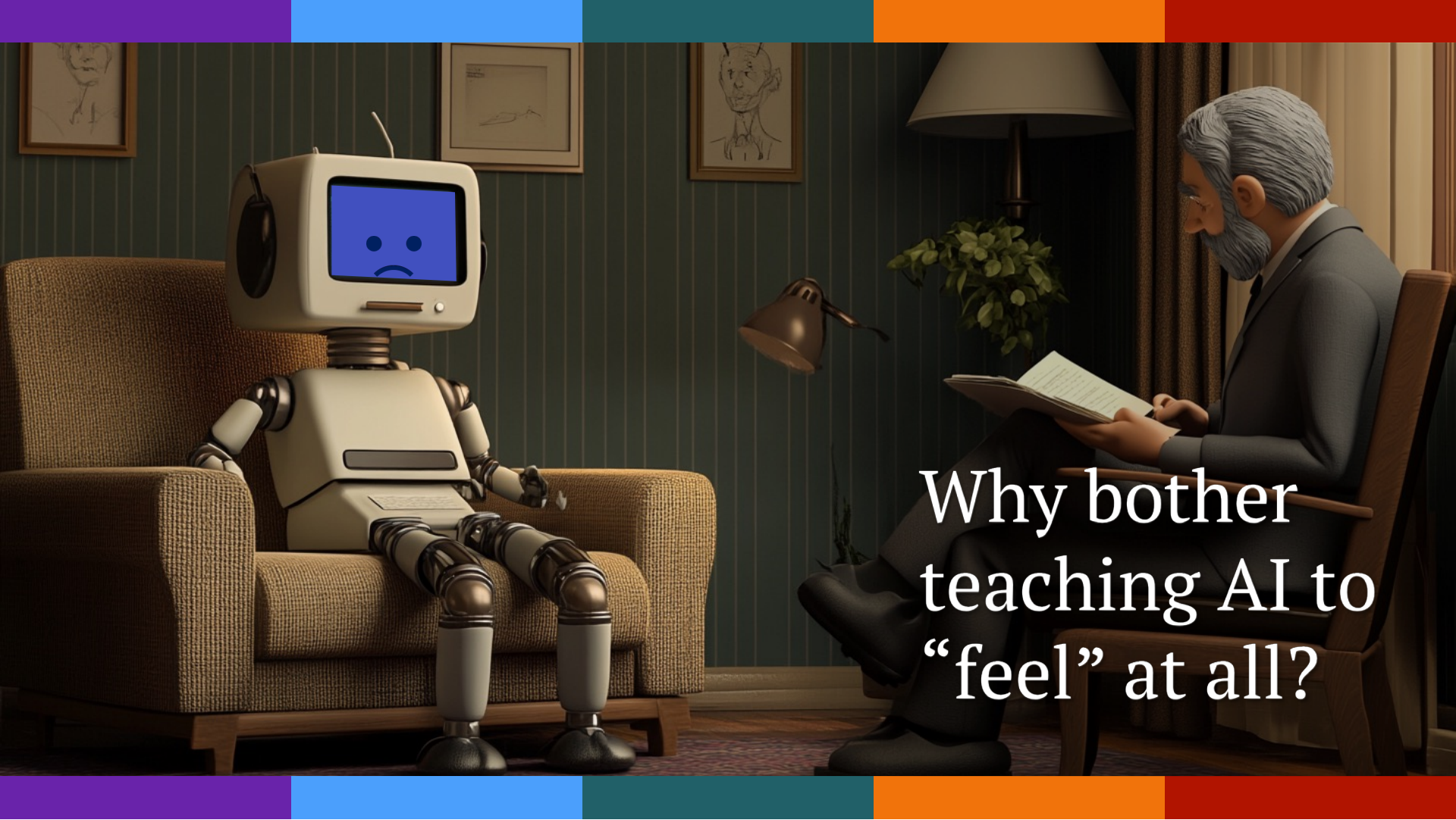
- By 2025, 95% of all customer interactions will be powered by AI
- By 2025, AI is expected to create 97 million new jobs, while displacing 85 million jobs due to automation
- By 2026, AI in investment banking is expected to enhance revenues by \$3.5 million *per front office trader*
- Global AI market is expected to grow to \$1.59 trillion by 2030

Sources: Grand View Research,  
USD Analytics, Emergen



Spending on  
Emotional AI is  
expected to hit  
\$13.8 billion by  
2032

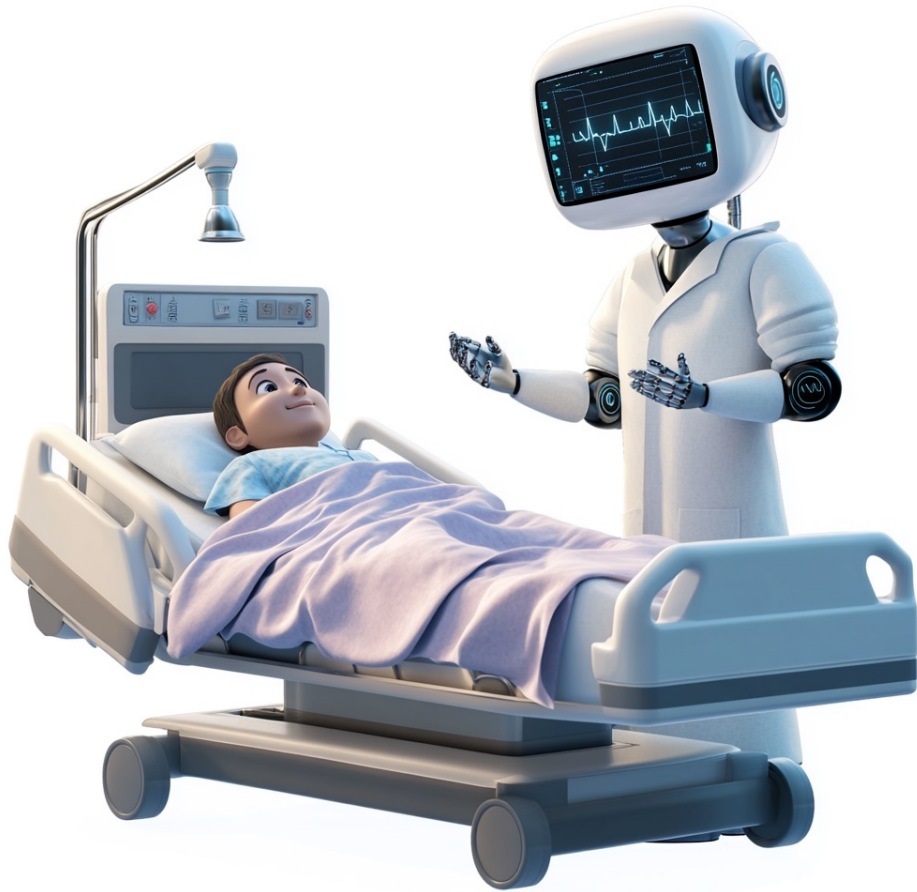
Source: Emergen Research



Why bother  
teaching AI to  
“feel” at all?

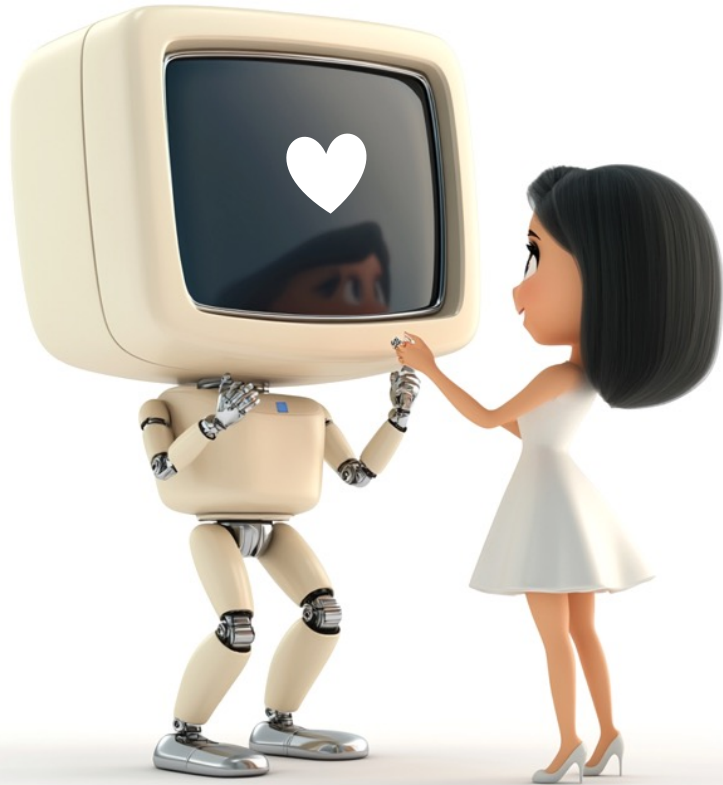


Sensitivity to user  
stress levels can  
improve efficiency



AI is poised to  
enter the caring  
professions





Positive AI  
experiences increase  
customer loyalty and  
retention



Consumers are  
learning to expect  
positive AI  
interactions



How does  
AI interpret  
emotional  
cues?



# Text analysis and sentiment detection (e.g., NLP\*)



*\*That's Natural Language Processing, NOT Neuro-Linguistic Programming!!!*



## Facial expression recognition (e.g., FACS)



Affectiva



Microsoft's  
Azure Face API



# Voice and speech analysis (e.g., prosody)

**cogito**





# Physiological data analysis (e.g., EEG, HRV, GSR)

**NeuroSky**<sup>®</sup>  
Body and Mind. Quantified.

**empatica** 



# Multimodal emotion recognition

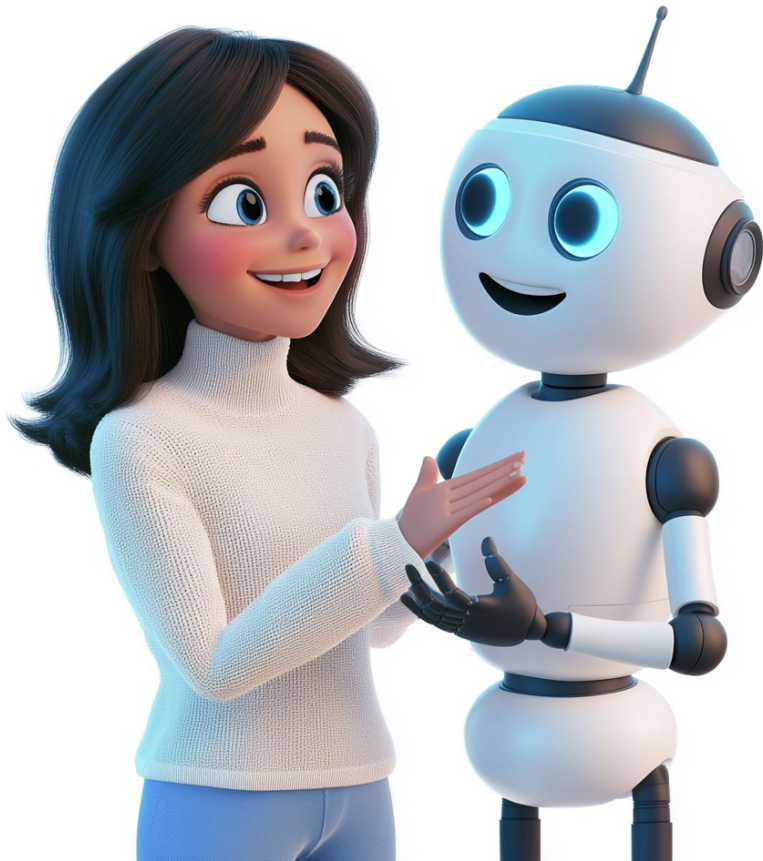
**Walmart** 



E.G., VIDEO + RFID



How does AI  
respond?



# Text-based responses in chatbots





# Voice modulation in virtual assistants

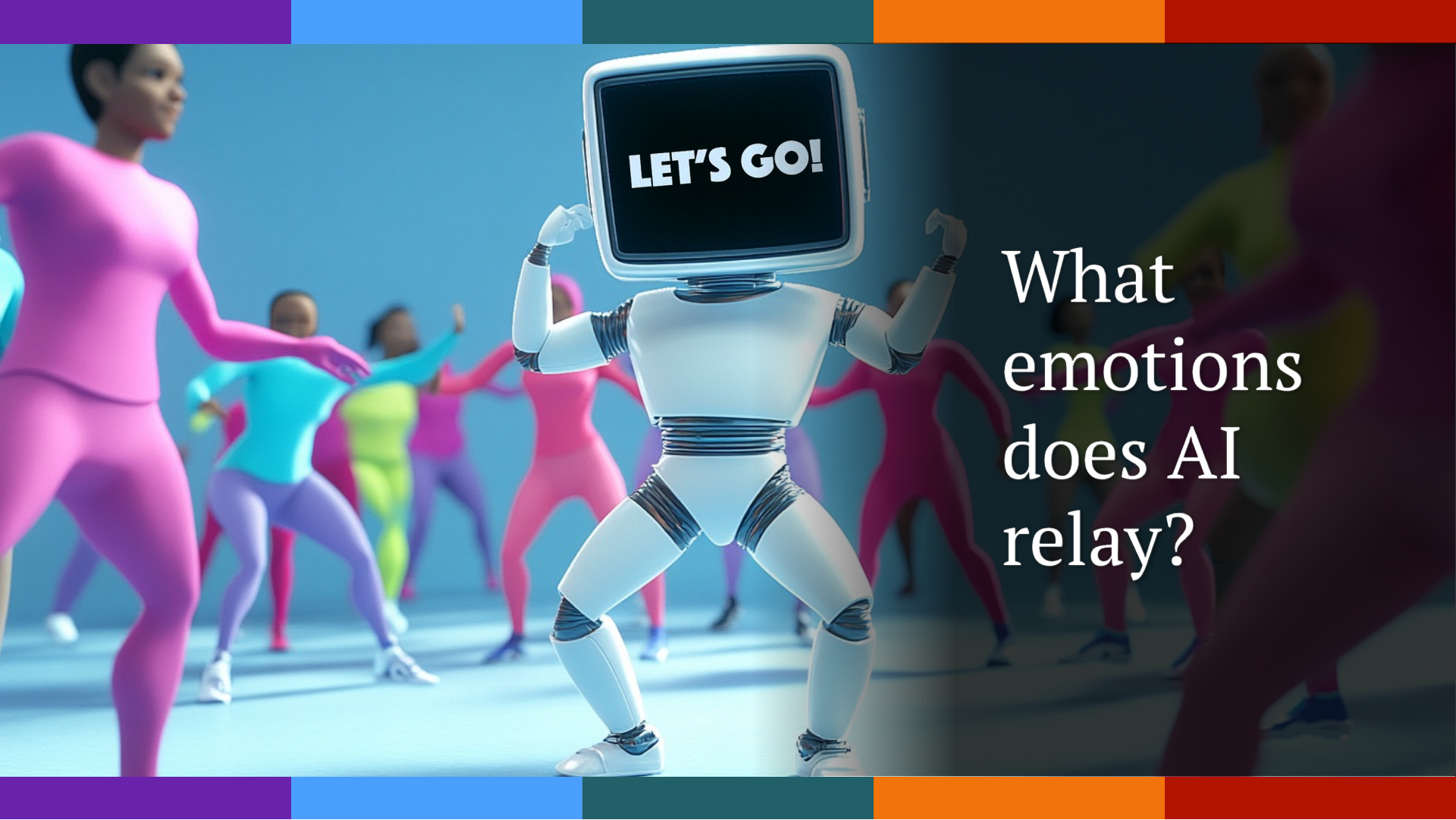


Amazon Polly



Emotionally  
adaptive interfaces



A white robot with a television for a head, displaying the text "LET'S GO!" on its screen. The robot is standing in a dance studio, surrounded by a group of people in colorful leotards (pink, blue, yellow, purple) who appear to be dancing or exercising. The background is a bright blue wall. The robot has a friendly, encouraging expression.

**LET'S GO!**

What  
emotions  
does AI  
relay?



Source: Grand View Research

## Contribution

\$ $\frac{1}{2}$ -1 billion over the next 5 years

Graceful handling of errors can build trust and offer immediate solutions.



Source: Grand View Research

## Cheerfulness

\$ $\frac{1}{2}$ -1 billion over the next 5 years

Cheerful responses are crucial for maintaining user engagement.



Source: Grand View Research

## De-escalation

\$1-1½ billion over the next 5 years

Calm responses are vital for defusing negative consumer interactions.



Source: Grand View Research

## Motivation

\$1½-2 billion over the next 5 years

Personal development subscriptions (e.g., language and fitness) require motivation to remain active.

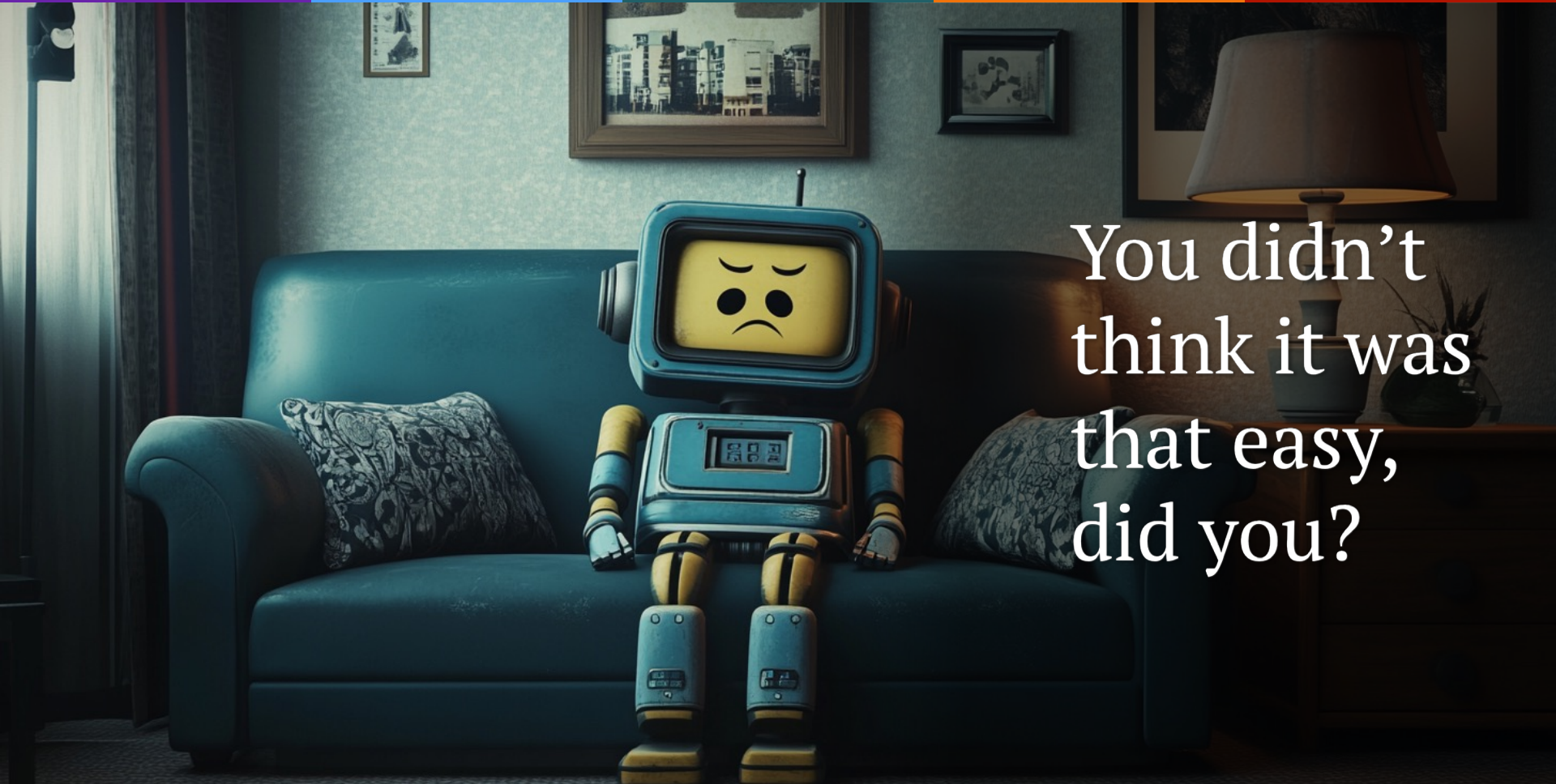


Source: Grand View Research

# Empathy

\$2-3 billion over the next 5 years

Empathy is foundational to  
influence and behaviour change.

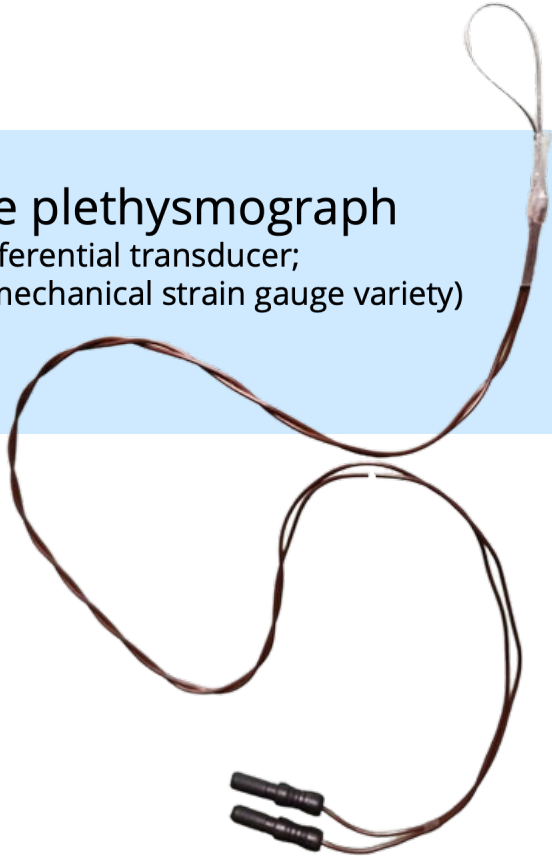


You didn't  
think it was  
that easy,  
did you?



## Penile plethysmograph

(Circumferential transducer;  
electromechanical strain gauge variety)



Participants  
(generally) have  
to consent to  
recording  
affective data

## Accuracy of AI emotion recognition from facial cues

Ethnicity	Accuracy
Caucasian/White	70% - 80%
Asian	60% - 70%
Latino/Hispanic	55% - 65%
Middle Eastern	50% - 65%
Black/African	50% - 60%

Some data collection methods contain systemic bias

Source: AI and Ethics, Springer

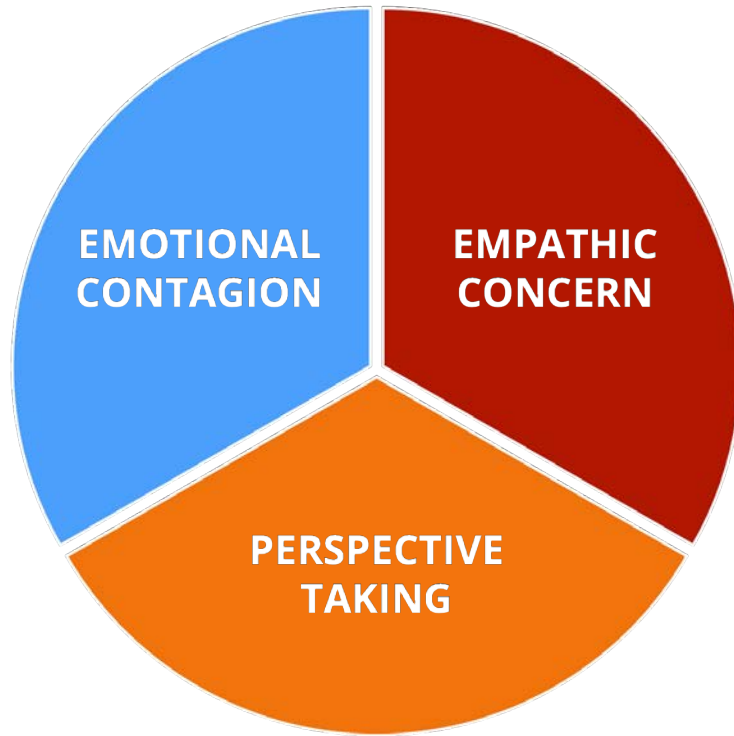


SUSTAINED  
EYE CONTACT **MAY BE**  
A MARK OF RESPECT

SUSTAINED  
EYE CONTACT **MAY BE**  
CONFRONTATIONAL



There are important  
cultural and situational  
differences in  
emotional expression

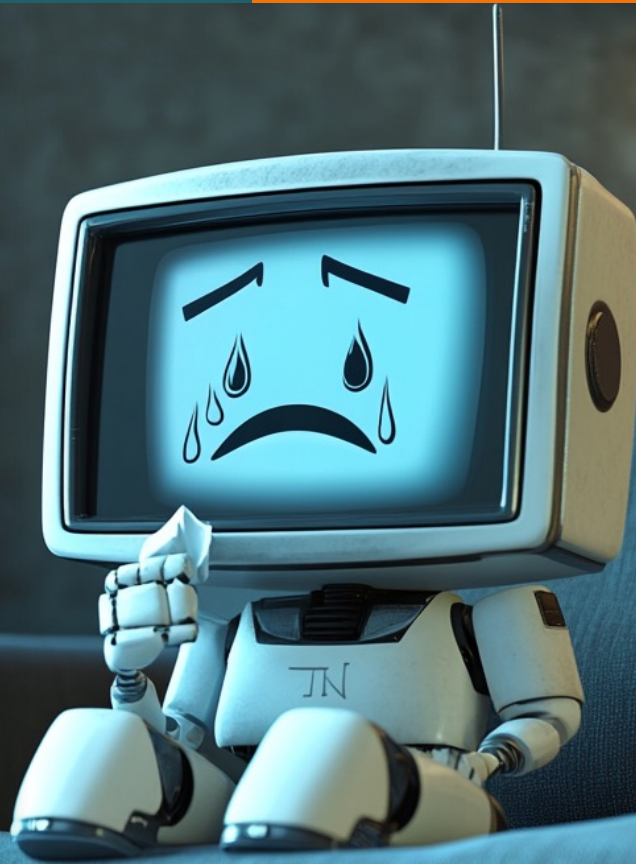


Measurement of  
empathy is  
incredibly messy

*a-*  
*lexi-*  
*thymia*

Responses to  
empathic gestures  
are not unilateral

So, what  
now?





We are in *desperate*,  
*desperate* need of more  
diversity in this space



NLP is likely our best bet to leverage emotional AI in the foreseeable future



Word choice  
(discovered during NLP)  
can open a window to  
enduring traits



TEMPORARY



PERMANENT

Trait analysis can help us better identify and respond to emotional states

How is the  
lab helping?





**4 EMOTIONAL  
COMPETENCIES**

**3 SOCIAL  
COMPETENCIES**



**3 MOTIVATIONAL  
COMPETENCIES**



## 1. Emotional Understanding (EU):

**Low EU (EU-1):** I would focus on concrete language and external, observable behaviors rather than abstract emotional insights. Questions would focus more on "what happened?" or "what did you do?" instead of "How did you feel?"

**High EU (EU-6):** I'd encourage deep emotional reflection and open-ended questions about feelings and motivations, because I'd know you have the capacity to unpack emotional complexity. I might also ask questions that explore nuanced emotional shifts or patterns.

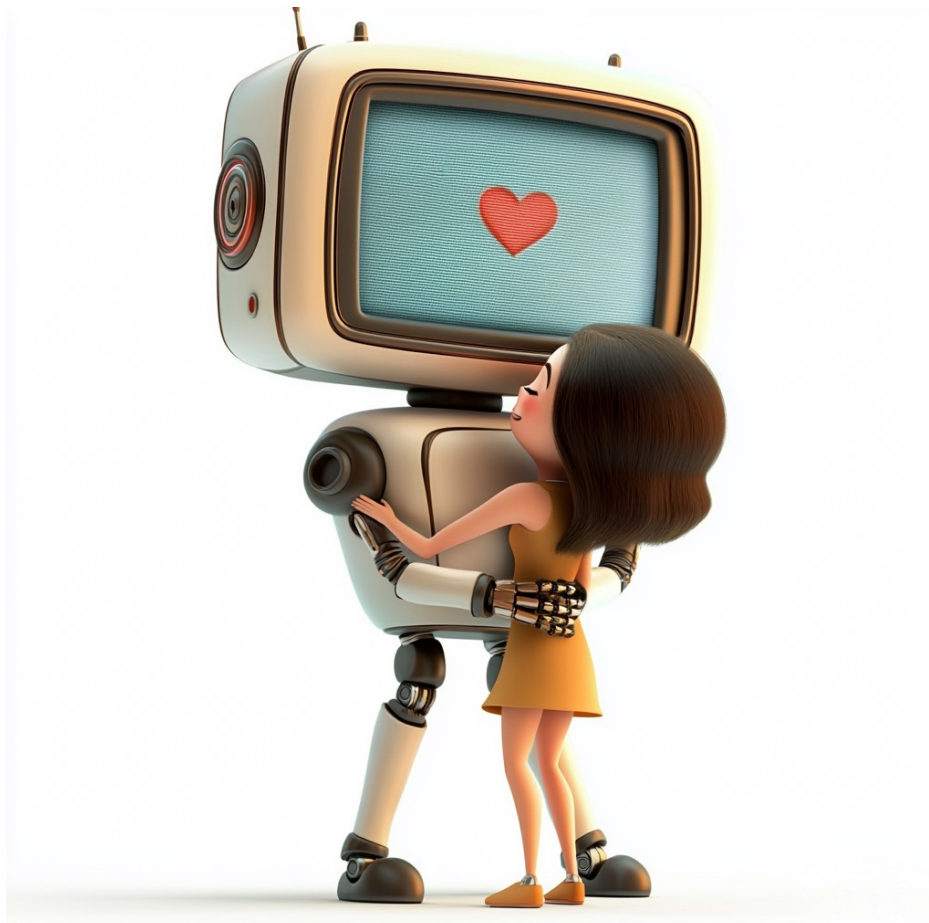


## 8. Motivational Self-Efficacy (MS):

**Low MS (MS-1):** If I sensed low confidence in your ability to achieve goals, I'd focus on building your belief in small, achievable successes and reinforcing your past accomplishments. I'd also provide extra encouragement to help you feel empowered.

**High MS (MS-6):** I'd assume you are already confident in setting and reaching goals, so my focus would be on giving you challenging yet feasible tasks to push your boundaries without overwhelming you.







Questions