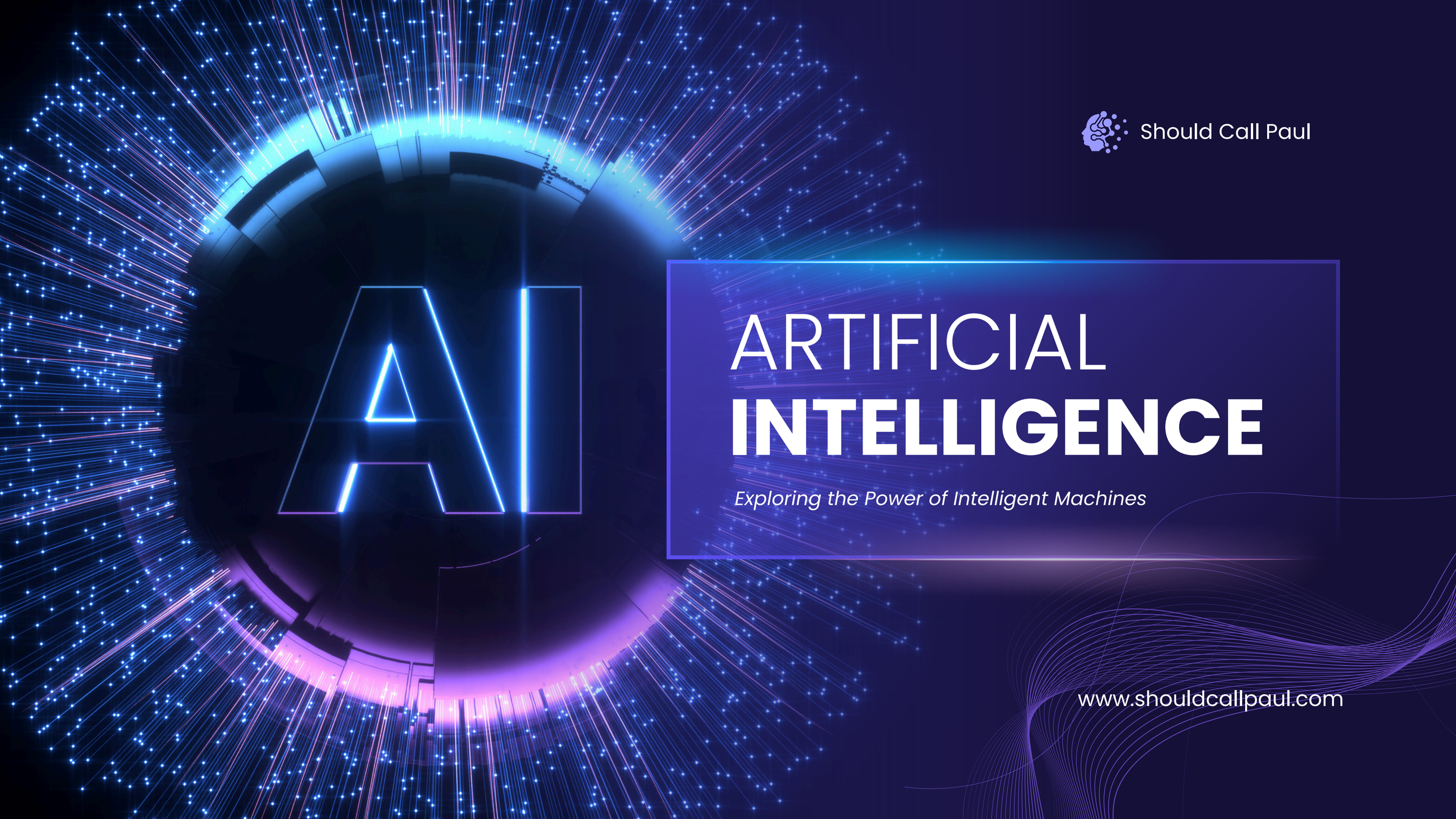
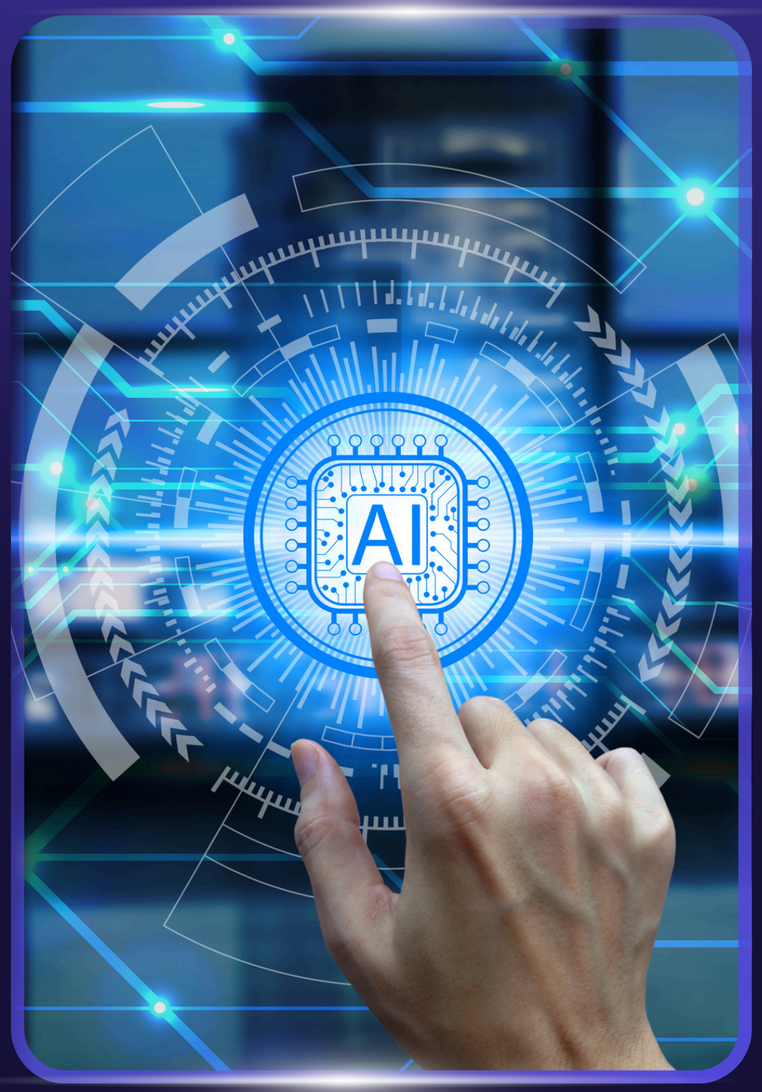


Should Call Paul

ARTIFICIAL INTELLIGENCE

Exploring the Power of Intelligent Machines

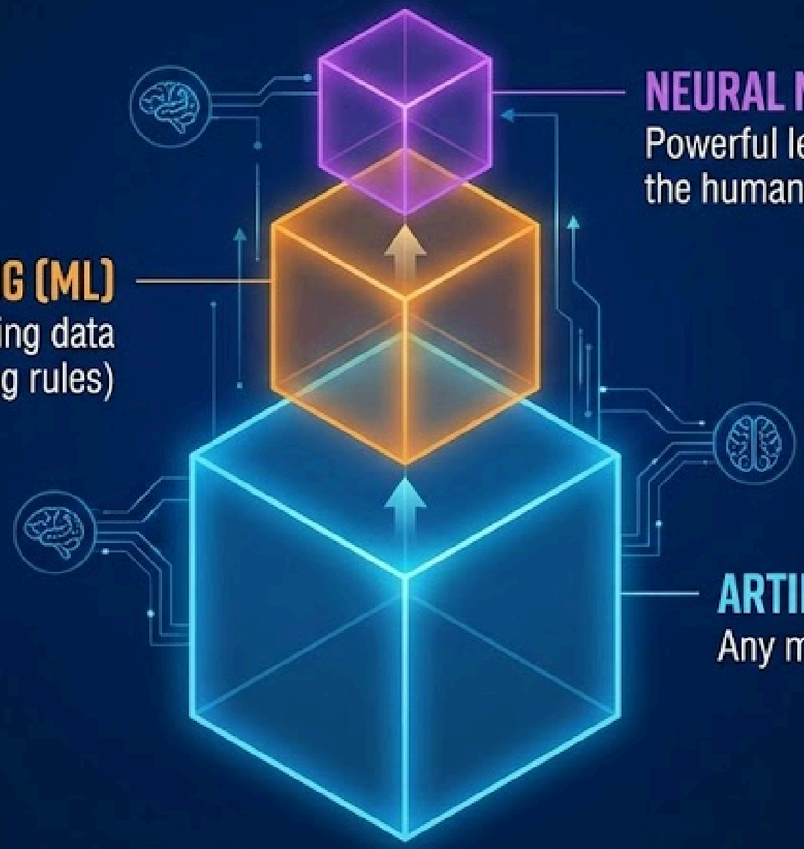
www.shouldcallpaul.com



What is Artificial Intelligence?


SCI-FI AI UNIVERSE
tGPT

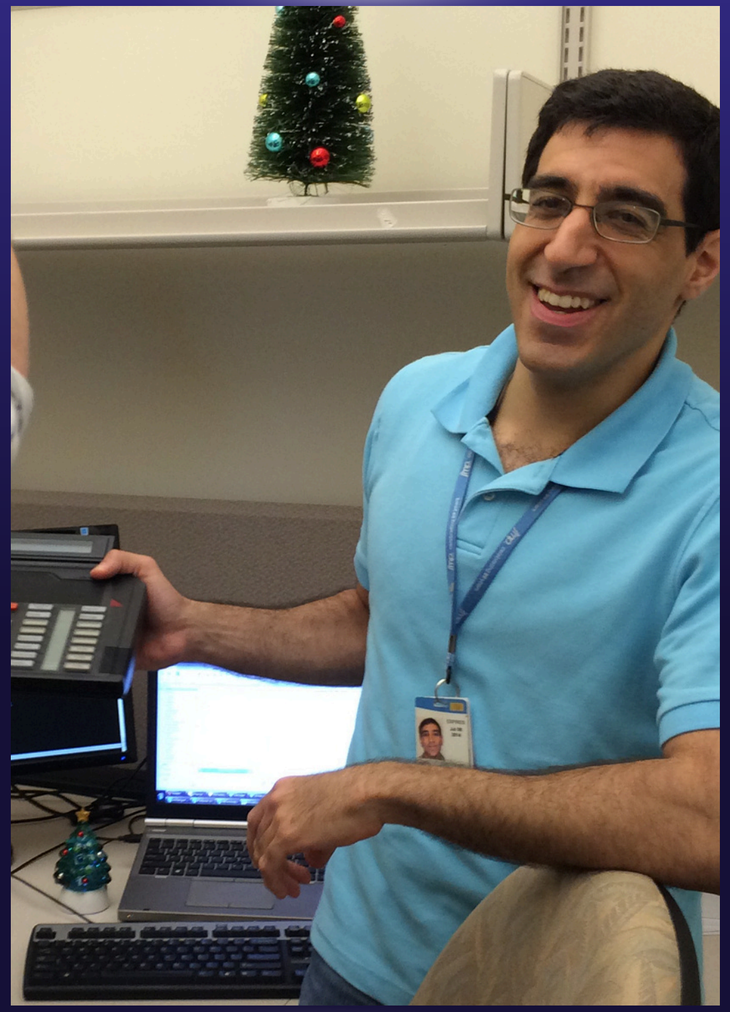
THE AI HIERARCHY: BUILDING BLOCKS



NEURAL NETWORKS / DEEP LEARNING
Powerful learning inspired by
the human brain

MACHINE LEARNING (ML)
Gets smarter by seeing data
(not just following rules)

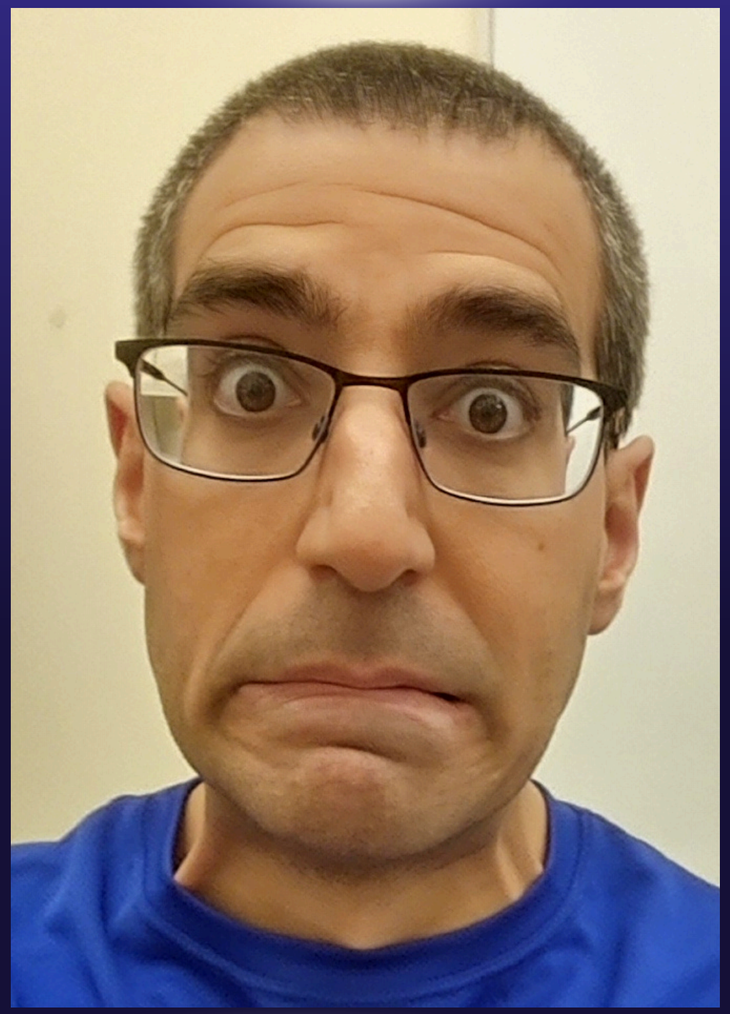
ARTIFICIAL INTELLIGENCE (AI)
Any machine doing something smart



Who is **Paul**?

With over **20 years** as a **Principal Software Engineer** and a Master's degree from **RPI**, I have developed award-winning **AI applications** and hold **multiple patents** in complex software systems. My practical experience ranges from building fraud detection tools for corporate environments to **teaching AI literacy** to school leaders and library communities. I bridge the gap between complex code and real-world utility, ensuring you understand not just what AI is, but how it actually works

- **Software Developer 20+ years**
- **Mobile Apps & Websites**
- **Technical Conference Speaker**



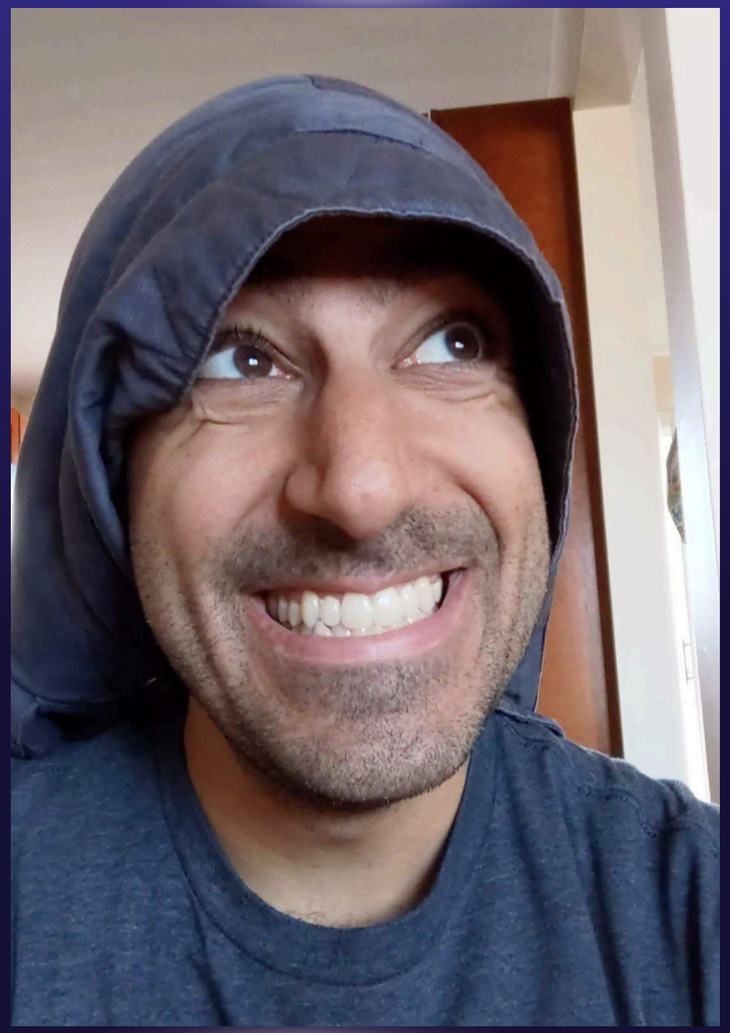
Paul got **depressed**

- **Played with ChatGPT**
- **Good tool for humanity?**
- **Net positive?**
- **Replace humans?**
- **No more jobs?**
- **Depressed People**
- **Out of work People**

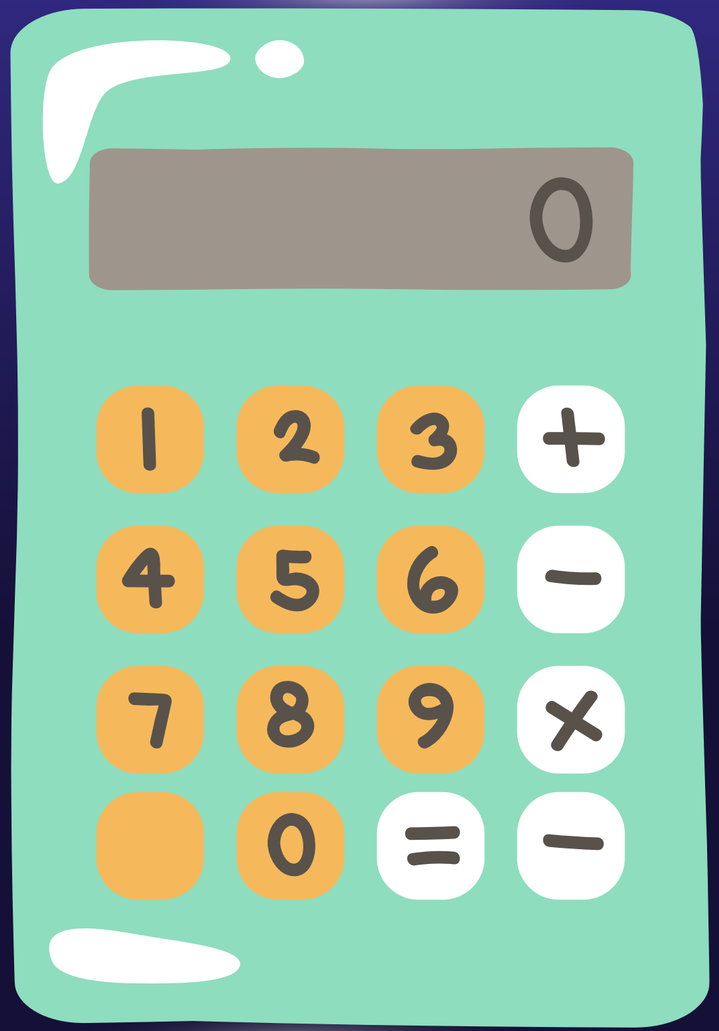
What is **human**?

- **What does it mean to be human?**
- **Who am I?**
- **What am I?**
- **Why am I?**
- **Mid-life crisis**

Drugs & Alcohol



Just kidding!!!



Kind of like a calculator

Isn't this just a **tool**?
Use a calculator to calculate tip at a restaurant or check my kids' math homework

Calculators came out in the 1970s

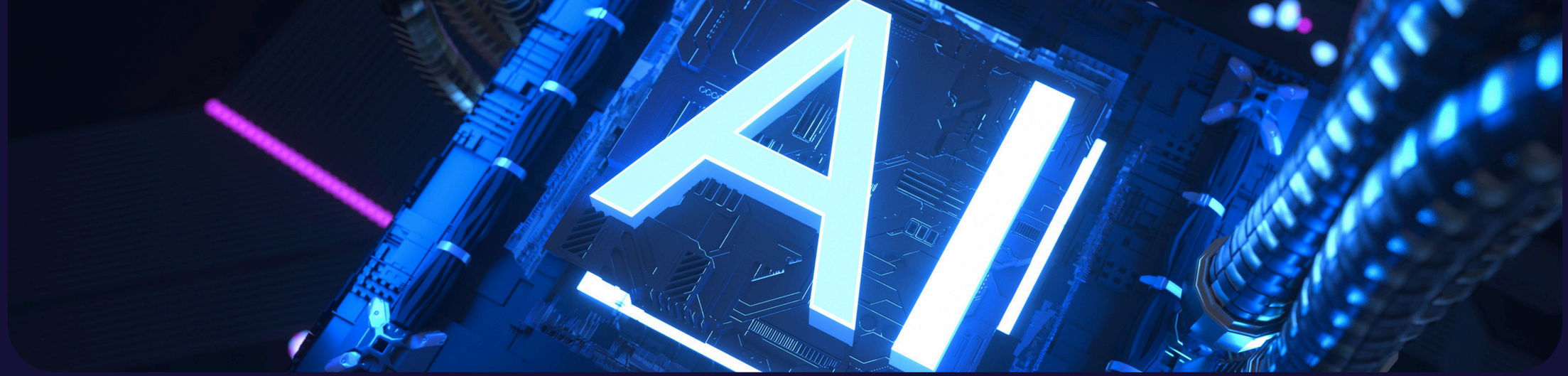
- Replaced **manual** tasks.
- Job Loss
- Low-level accounting & bookkeeping
- Businesses no longer needed as many employees

New Jobs

- Made it easier to perform **complex** calculations
- **Higher-level** accounting
- Finance & Engineering
- Spreadsheet software

Paul was **enlightened**

- Depression stops, **Life begins!**
- A.I. is a **tool**, you are in **control**.
- Love it? Just **learn to use it**!



Automation vs. A.I.

Automation follows a strict recipe. It executes pre-written "If/Then" rules perfectly but blindly. It cannot judge quality or context—it simply does exactly what it was told to do, even if the instructions or the situation change.

AI is a chef who learns by tasting. Instead of just following a script, it analyzes data to predict the best outcome. It recognizes patterns and adapts on its own, constantly improving its "cooking" based on experience rather than rigid rules.

Automatic Door

Opens when you approach, but doesn’t know who you are.

Face ID on your phone

Unlocks because it recognizes the patterns of your face.

A.I. or just **automation**?

A.I. or just **automation**?

The Automatic Door

A sliding door opens at the grocery store when you walk near it.

Automation!

It uses a simple motion sensor. It opens for anything that breaks the beam (a person, a cart, a dog). It doesn't "know" it's you.

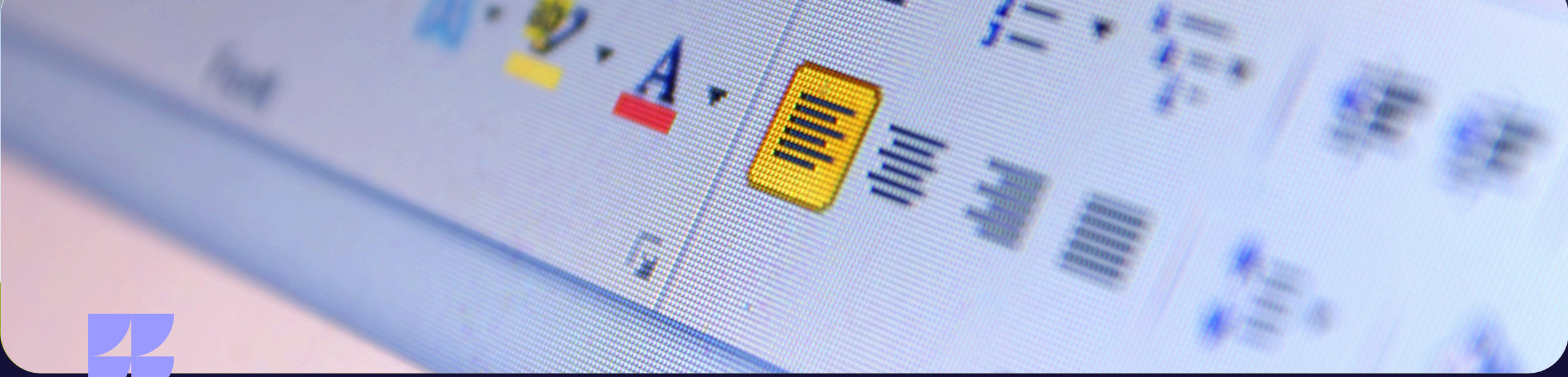
A.I. or just **automation**?

Spotify's "Discover Weekly"

A playlist appears every Monday with songs you've never heard but likely enjoy.

A.I.

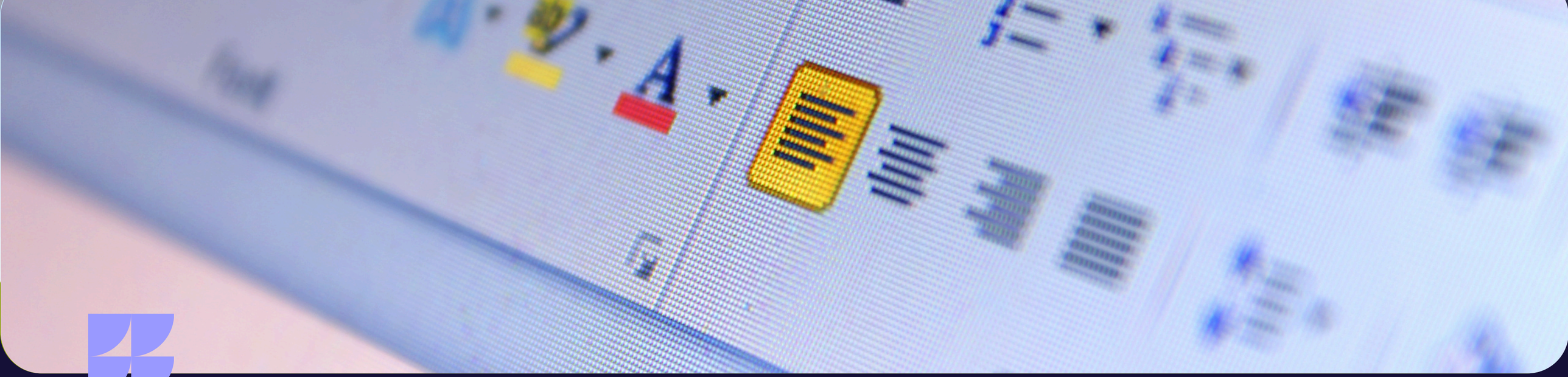
It analyzes your listening history and compares it to millions of other users to *predict* what you will like.



A.I. or just **automation**?

Word Processor "Find & Replace"

You tell Word to change every "cat" to "dog."



Automation!

It is following a strict command. It will not change "kitten" to "puppy" unless you explicitly tell it to.

ChatGPT

A.I. or just **automation**?

ChatGPT / Gemini

You tell Word to change every "cat" to "dog."

ChatGPT

A.I.

It wasn't pre-programmed with that specific poem. It predicted the next words based on patterns it learned from reading the internet.

A.I. or just **automation**?

A Thermostat (basic)

The heat turns on when the room drops below 68°F.

Automation!

It follows a simple "If/Then" rule. (Note: A *Nest* thermostat that learns your schedule would be AI).

A.I. or just **automation**?

Credit Card Fraud Alert

Your bank texts you: "Did you just spend $500 in London?"

A.I.

It recognized an anomaly. It learned your normal spending pattern (coffee in New Jersey) and flagged this as "weird."

A.I. or just **automation**?

Facebook Photo Tagging

You upload a group photo and it suggests tagging your friend "John."

A.I. or just **automation**?

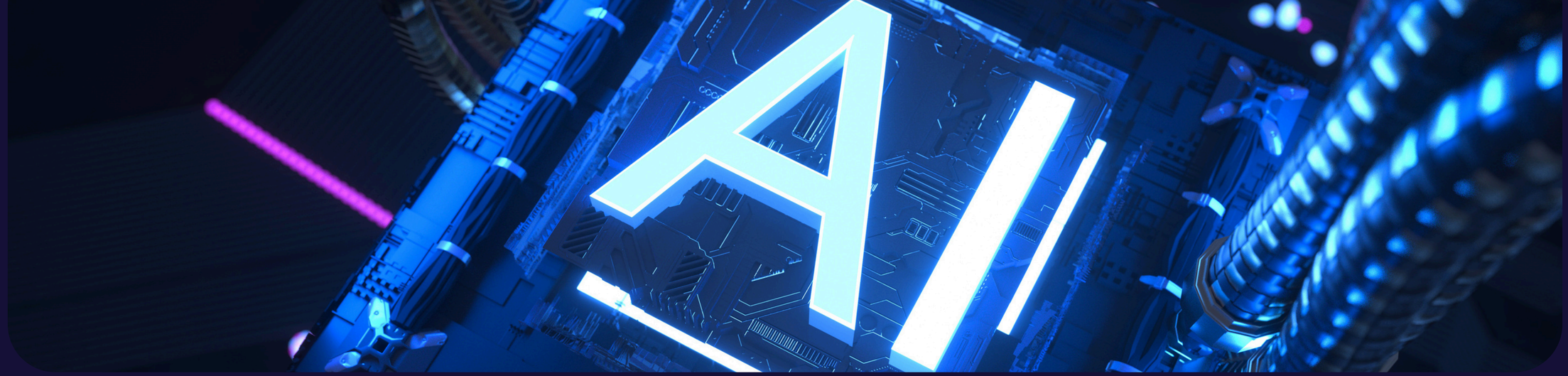
A.I. (Neural Network)

It uses facial recognition to "see" the pixels of the face and match them to patterns it learned from John's other photos.

A.I. or just **automation**?

Does the machine get better the more you use it?

- No: It's usually Automation.
- Yes: It's usually AI/Machine Learning.



Machine Learning

- **Student (The Machine)**: Starts out knowing nothing. It guesses randomly.
- **Teacher (The Data)**: Holds the "Answer Key."
- **Process**: The student takes a practice exam, gets answers wrong, looks at the Answer Key to see where they messed up, and adjusts their thinking for the next practice exam.

If they do this 10,000 times, they eventually figure out the patterns and stop making mistakes.

Traditional Coding

You give the computer the rules.

Machine Learning

You give the computer the answers (data) and it figures out the rules.

Interactive Demo: Google Teachable Machine

- Image Model
- Audio Model
- Pose Model

Interactive Demo: The Emotion Detector

Class 1 ("Happy"): Hold the record button while the volunteer smiles broadly, laughs, and tilts their head happily.

Class 2 ("Mad"): Hold the record button while the volunteer frowns, furrows their brow, and looks angry.

Interactive Demo: The Clapper

Class 1 ("Silence"): Record 20 seconds of just the room noise (no one talking). Extract samples.

Class 2 ("Clap"): Record 10 seconds of the volunteer clapping consistently. Extract samples.

Class 3 ("Snap"): Record 10 seconds of the volunteer snapping their fingers (or saying "Hey!"). Extract samples.

Train model.

Interactive Demo: The Human Joystick

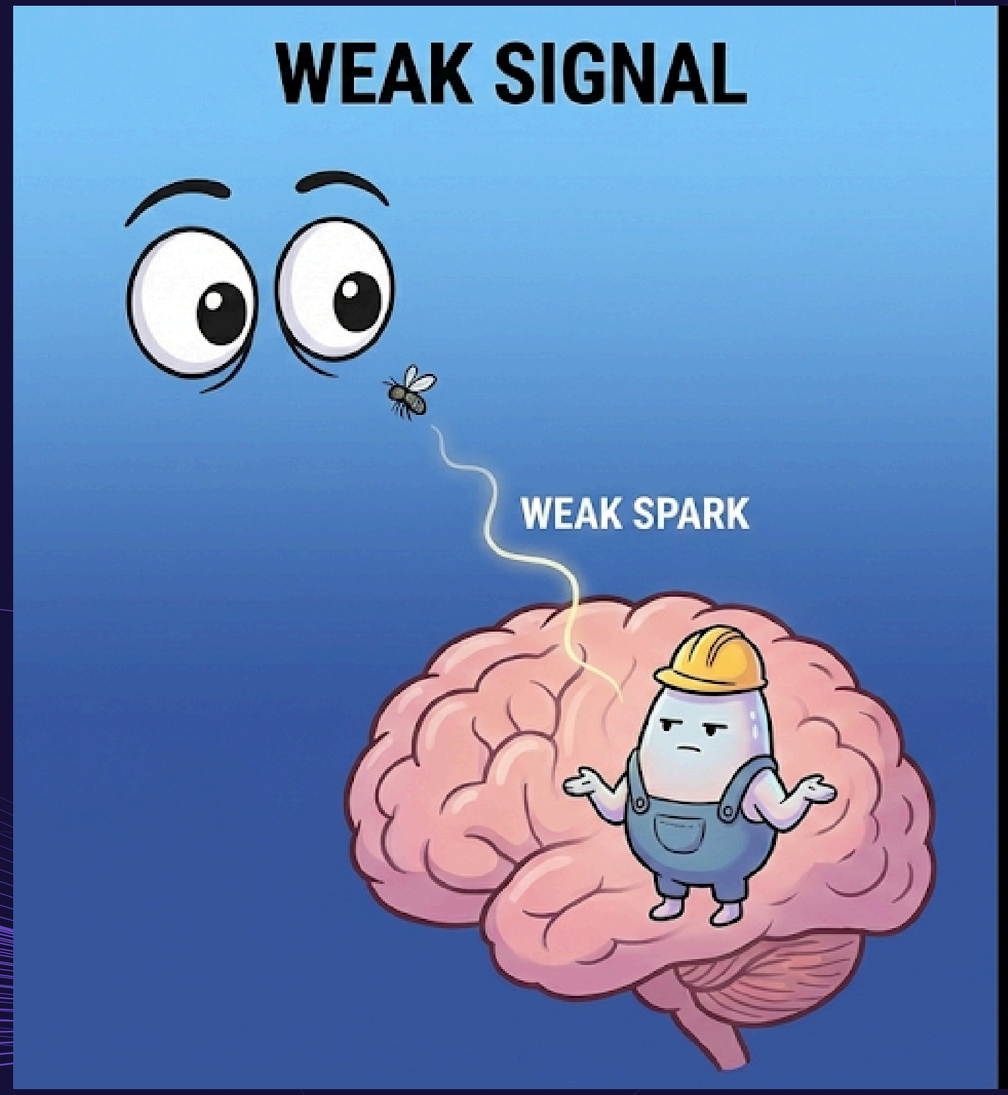
Class 1 ("Left"): Volunteer leans their torso left and raises their left arm. Record for 10 seconds.

Class 2 ("Right"): Volunteer leans their torso right and raises their right arm. Record for 10 seconds.

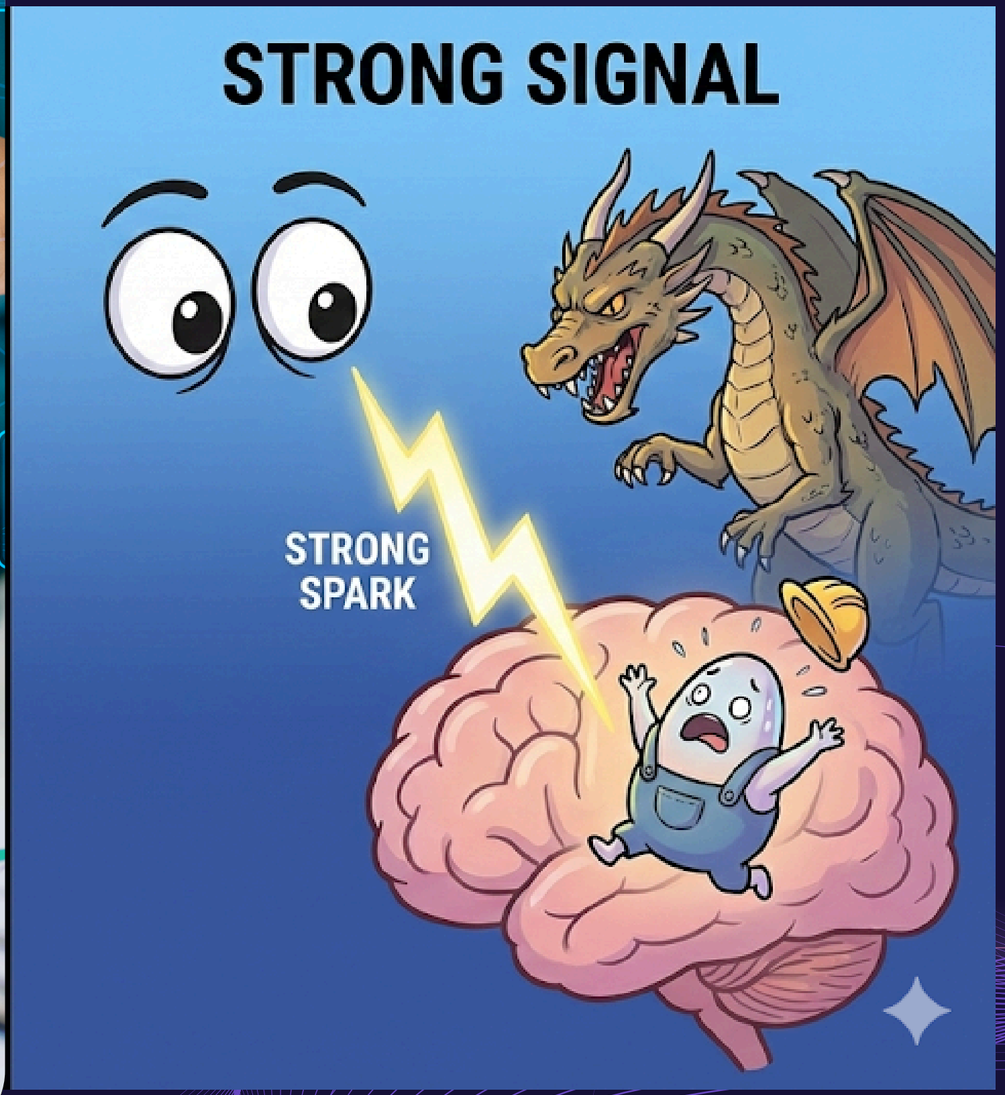
Class 3 ("Center"): Volunteer stands perfectly straight with arms down.

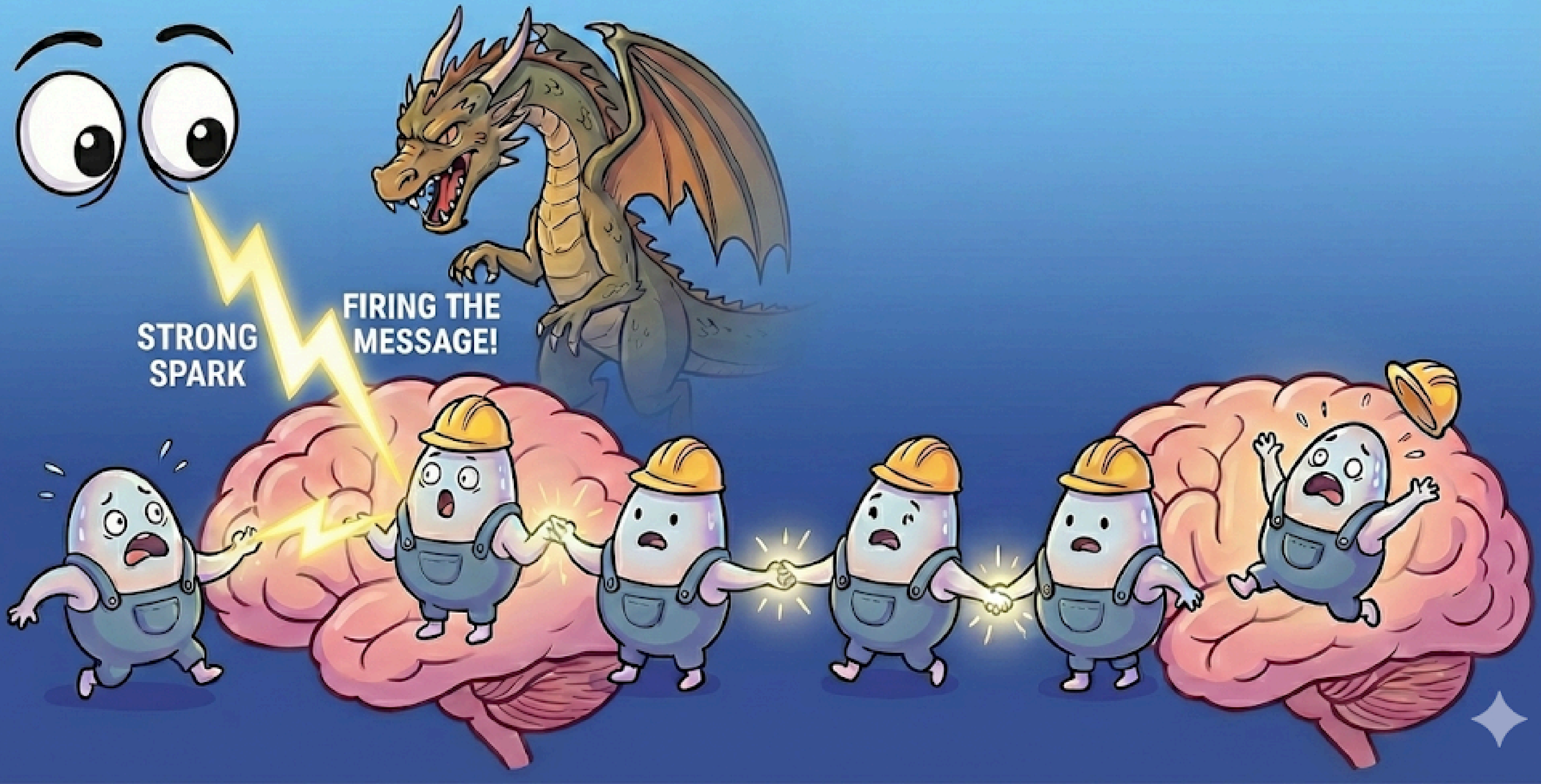
Neural Networks

Neural Networks



Neural Networks




STRONG SPARK
FIRING THE MESSAGE!

Artificial Neuron (a "Node")

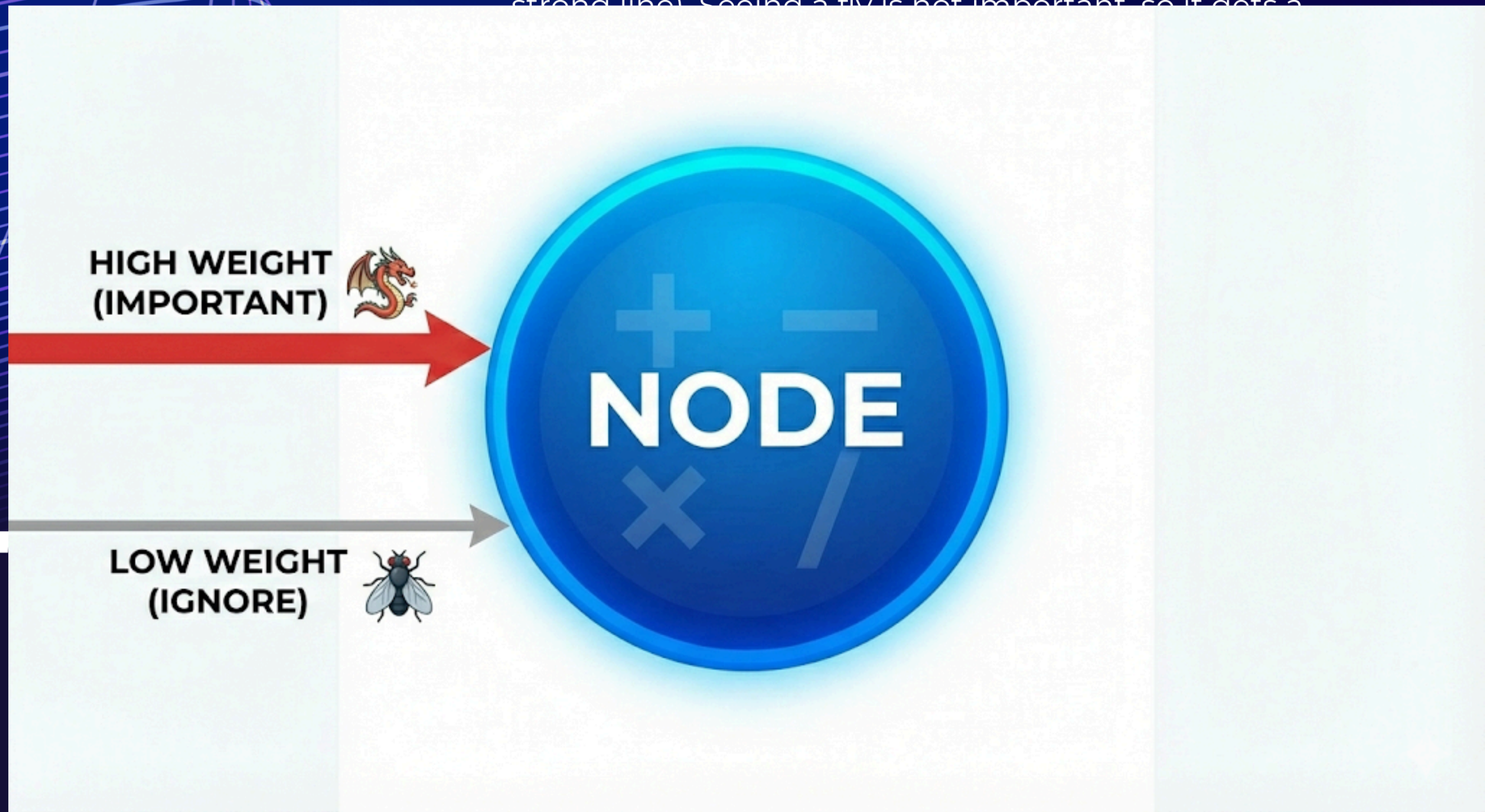
Node

First, we have the Node. It's not a biological cell; it's just a container for mathematical operations

Artificial Neuron (a "Node"

The Weights: Connection Strength

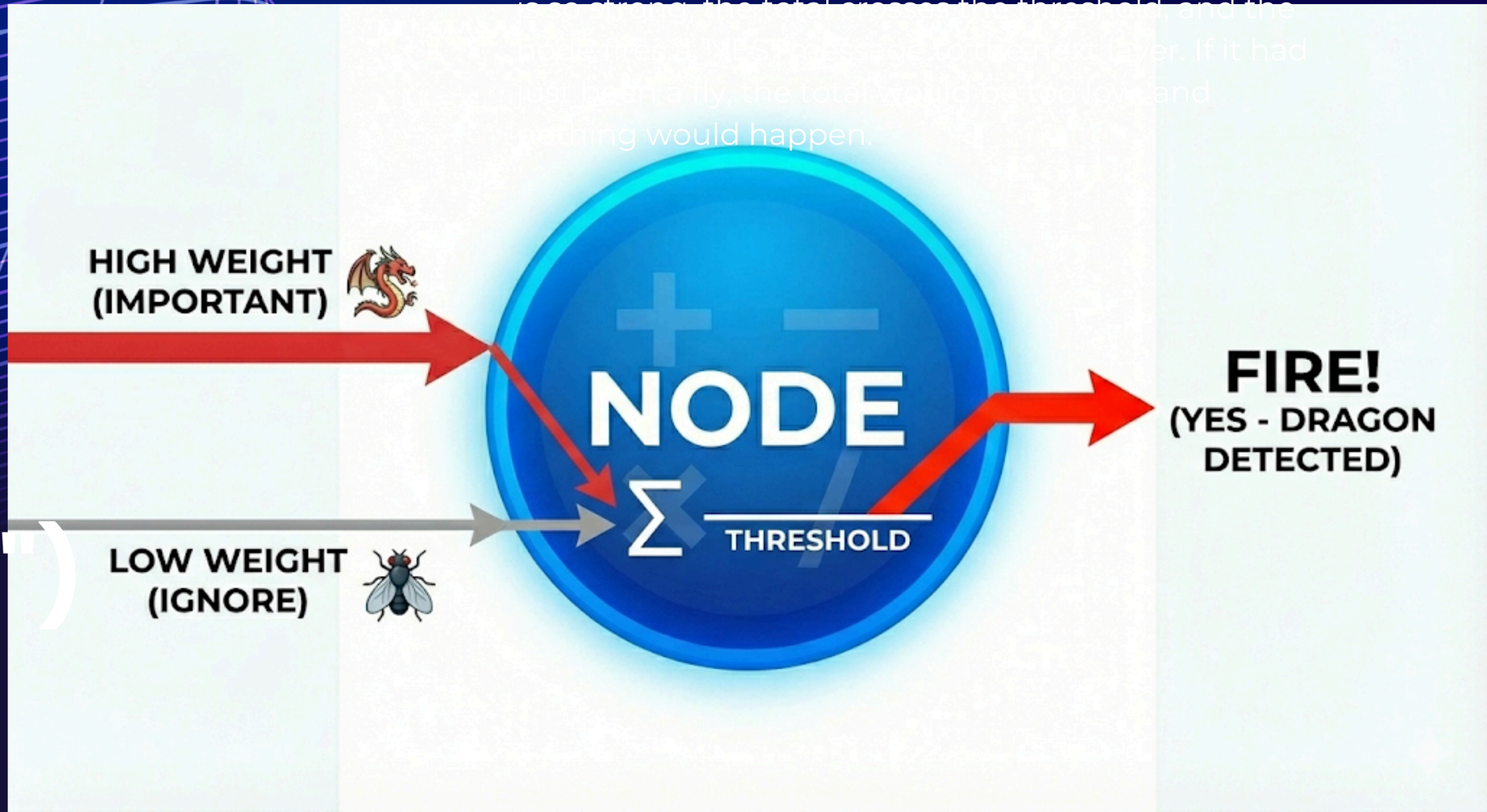
Next, information comes into the node. The network has learned that seeing a dragon is very important, so that connection gets a high weight (a thick, strong line). Seeing a fly is not important, so it gets a



Artificial Neuron (a "Node")

3. The Activation Function: The "Fire" Decision

Finally, the node does its job. It adds up all the incoming signals (the ∑ symbol). It then compares that total to a threshold. Because the "dragon" signal is so strong, the total crosses the threshold, and the node fires a new message to the next layer. If it had just been a fly, the total would be too low, and nothing would happen.



Neural Network – exercise

Quick Draw (with Google)

Transforming Industries with AI

Healthcare

Diagnostics, drug discovery, and personalized medical solutions.

Finance

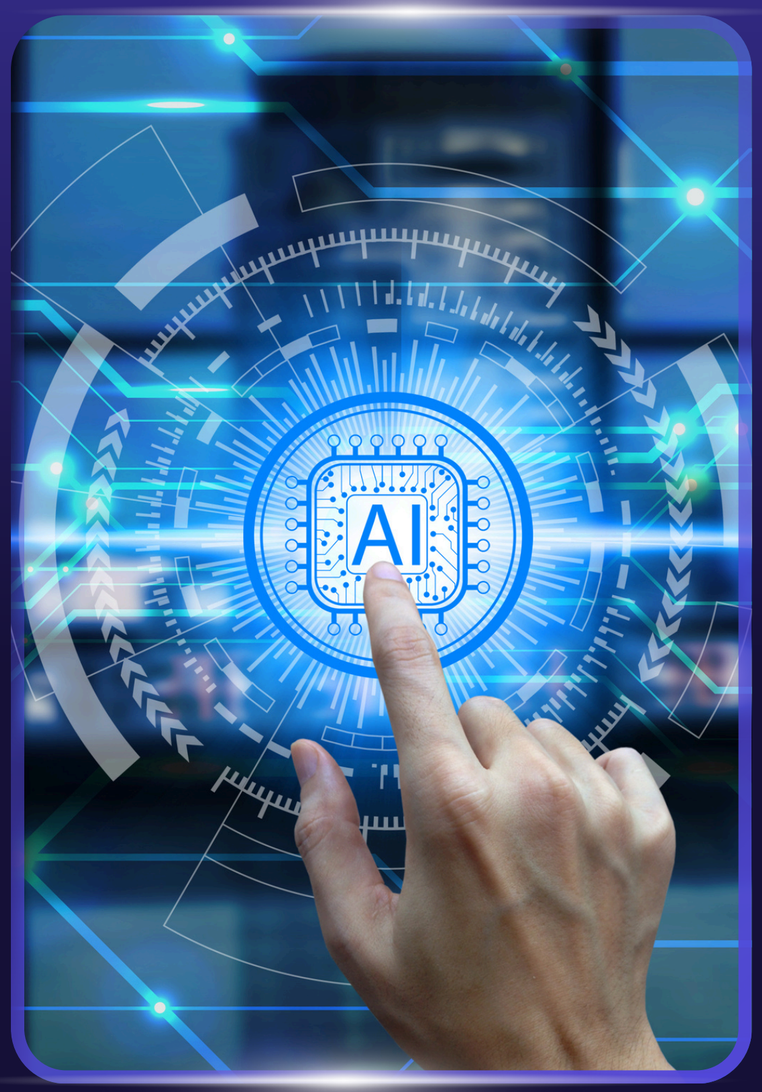
Fraud detection, algorithmic trading, and credit scoring.

Transportation

Self-driving cars, route planning, and traffic management.

Retail

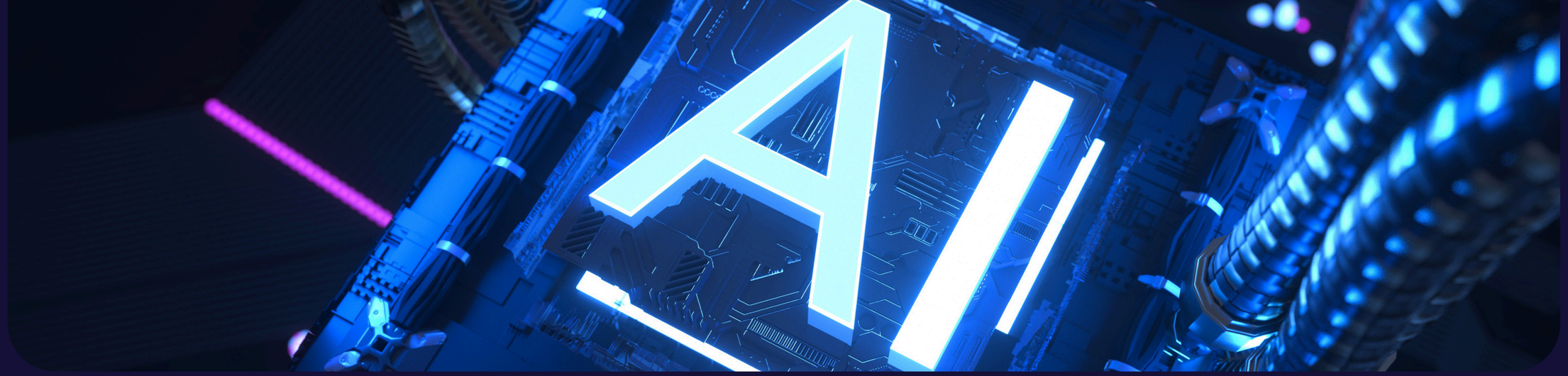
Chatbots, tailored shopping, and supply chain efficiency.



What is Artificial Intelligence?

Artificial Intelligence (AI) is the simulation of human intelligence in machines programmed to think and learn like humans. AI systems are capable of performing tasks such as recognizing patterns, understanding language, and solving complex problems. It is transforming industries and driving innovation across the globe.

- **Pattern Recognition**
- **Machine Learning**
- **Problem-Solving**



Types of AI

Narrow AI is designed to perform specific tasks, such as facial recognition or language translation. It excels in its designated area but cannot perform tasks outside its scope.

General AI, on the other hand, is designed to perform any intellectual task that a human can do, mimicking human-like flexibility and learning capabilities.

Narrow AI

AI specialized for specific tasks or domains.

General AI

AI capable of performing diverse, human-like tasks.

The Heart of Artificial Intelligence

Machine Learning

A subset of AI where algorithms learn from data to improve performance on specific tasks.

Deep Learning

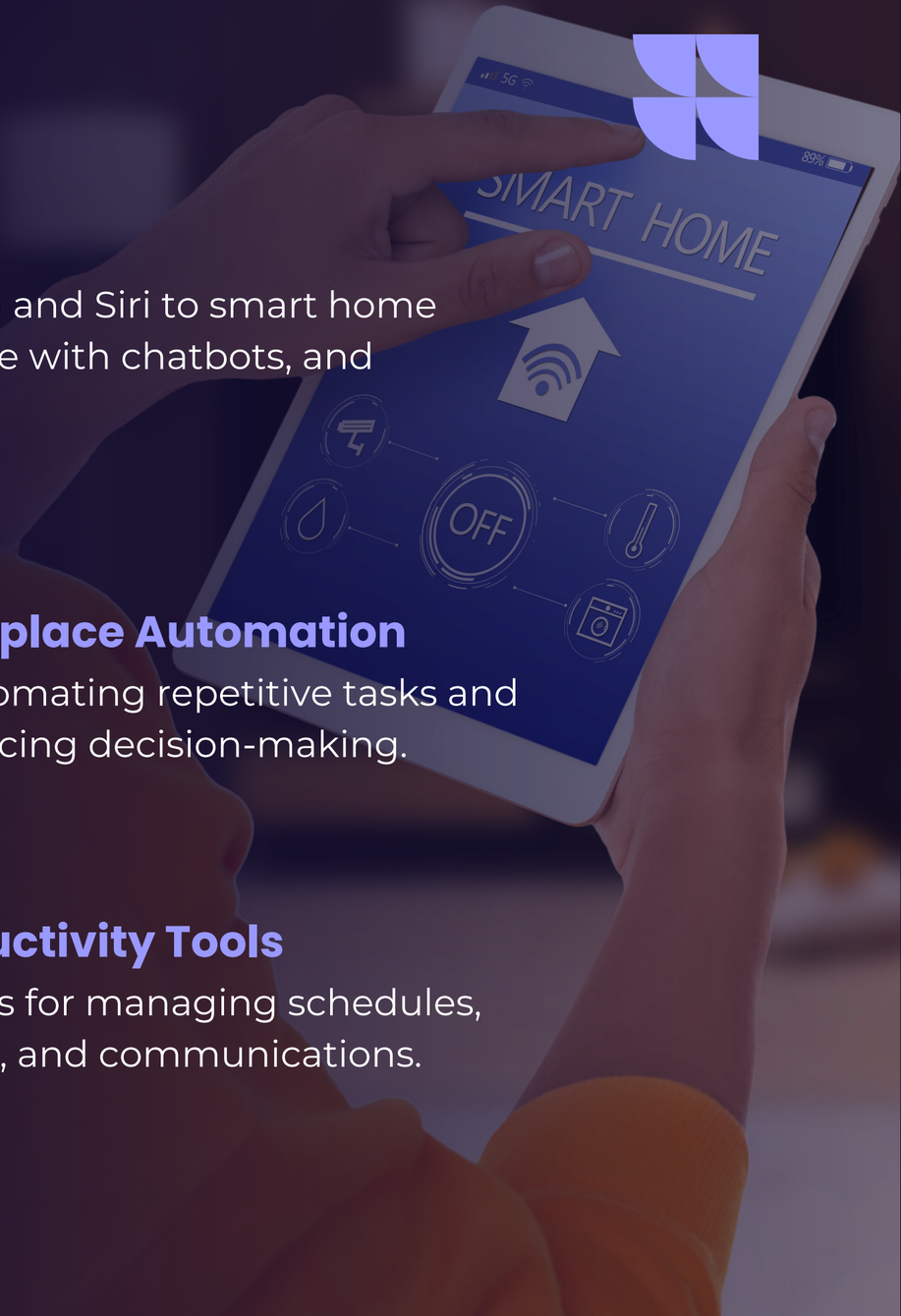
A specialized Machine Learning technique using multi-layered neural networks to process and model complex data patterns.

Overcoming Barriers in AI Development

AI is revolutionizing various industries by automating processes, improving efficiency, and creating new opportunities. In healthcare, AI is used to analyze medical images, in finance to detect fraud, and in transportation to power self-driving cars. AI's potential extends across sectors, from customer service to education and beyond.

AI in Everyday Life

AI is seamlessly integrated into our daily lives, from voice assistants like Alexa and Siri to smart home devices. At work, AI automates repetitive tasks, improves customer service with chatbots, and enhances decision-making with data analytics.



Smart Homes

AI-powered devices like thermostats, lights, and security systems.

Workplace Automation

AI automating repetitive tasks and enhancing decision-making.

Personal Assistants

Voice-activated tools assisting with reminders, tasks, and information.

Productivity Tools

AI tools for managing schedules, emails, and communications.

AI Ethics and Regulations

The future of AI holds exciting possibilities. As AI continues to evolve, it will enable more advanced systems capable of solving even more complex problems. From advancing healthcare to enhancing education, AI promises to create new solutions that were once unimaginable.

Data Privacy

Protecting sensitive personal data in AI applications.

Transparency

Ensuring AI systems are understandable and explainable.

Accountability

Holding AI systems and developers accountable for decisions.

Conclusion

Artificial Intelligence offers immense potential to transform industries, improve lives, and solve complex challenges. However, its future success depends on how we address its ethical, economic, and social implications. By embracing AI responsibly, we can ensure that it benefits all of humanity and drives positive change.

01

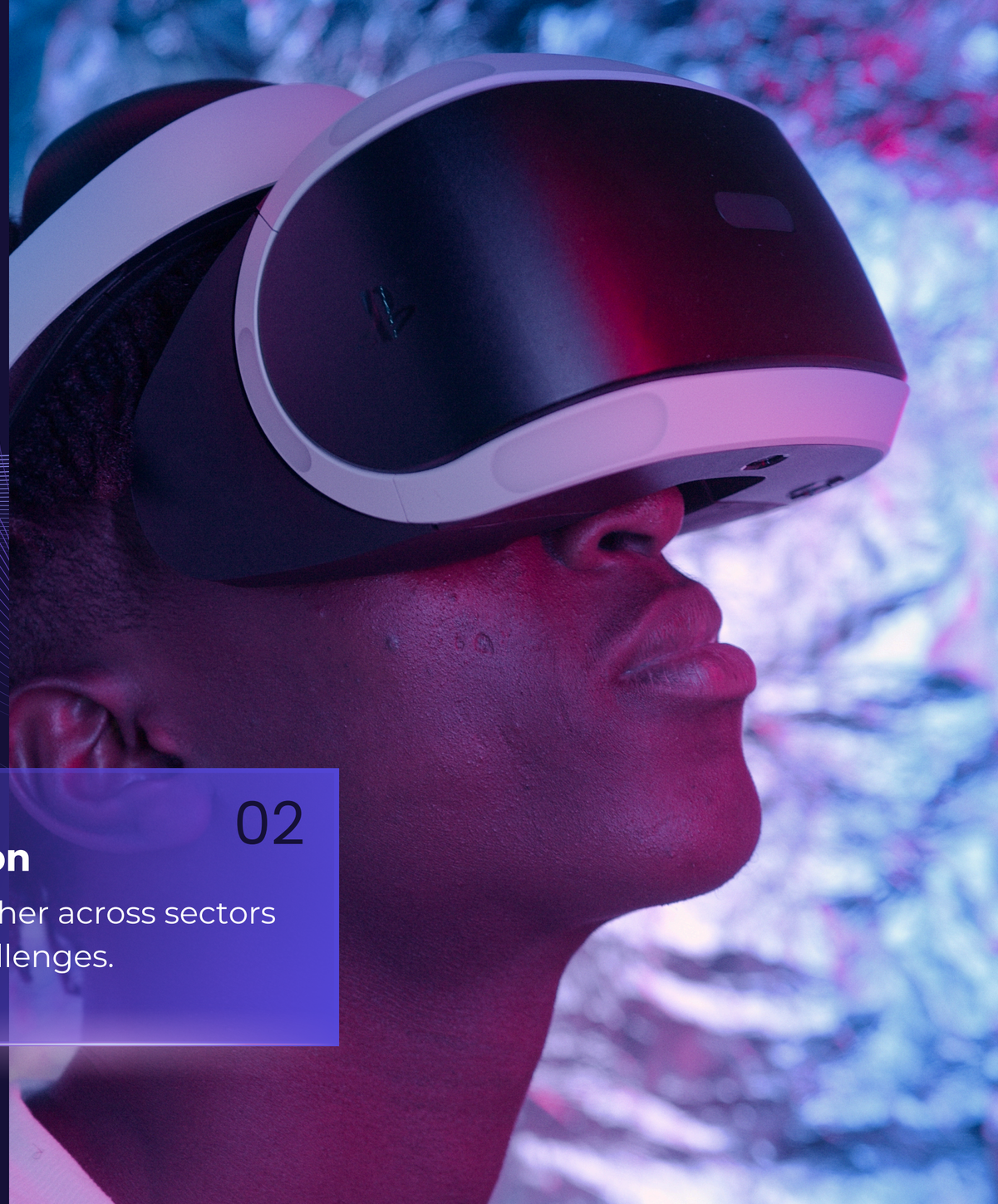
Innovation

Leveraging AI to create new solutions for global issues.

02

Collaboration

Working together across sectors to address challenges.



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