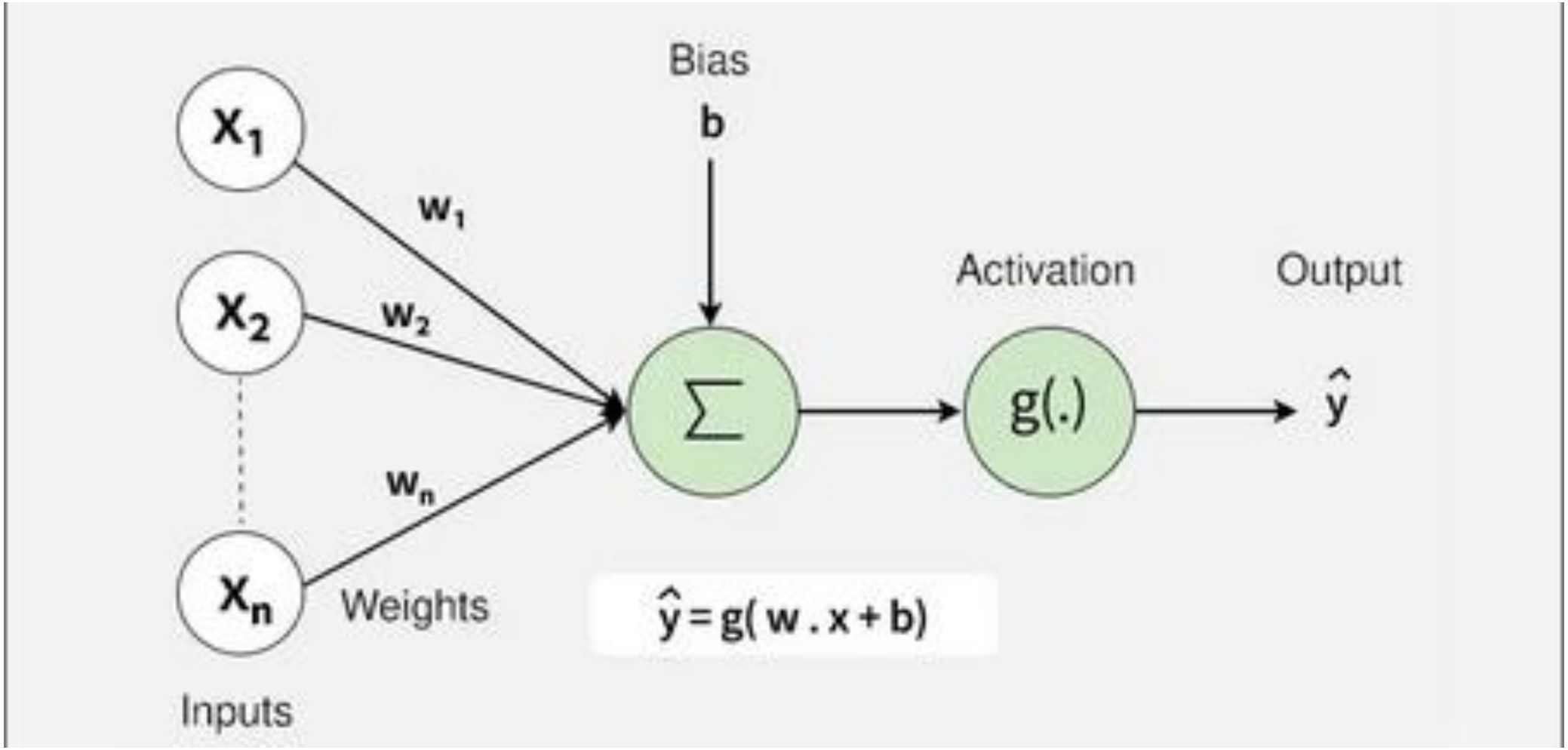
Carbon vs Silicon

Or Carbon and Silicon

Human Neural Network

AI Neural Network (Simple)



Significant Differences -- Scale

- Brain : ~ 86 billion neurons x thousands of synapses = ~ 100 trillion connections
- ChaGPT5: ~ 1 – 2 trillion parameters
- Brain is roughly 100 times denser, neurons change over time, LLMs are frozen

Speed and Processing

- Brain: Neurons fires ~ 200 times / second
  - But in Parallel

- Computer (silicon): switches at gigahertz speed
  - Von Neuman Architecture

Memory

- Brain: Contextual, emotional, and associative
- LLM: Limited to a context window. Forgets once conversation ends.
- The brain has a lifetime diary; an LLM has a scratch pad

Creativity and Error

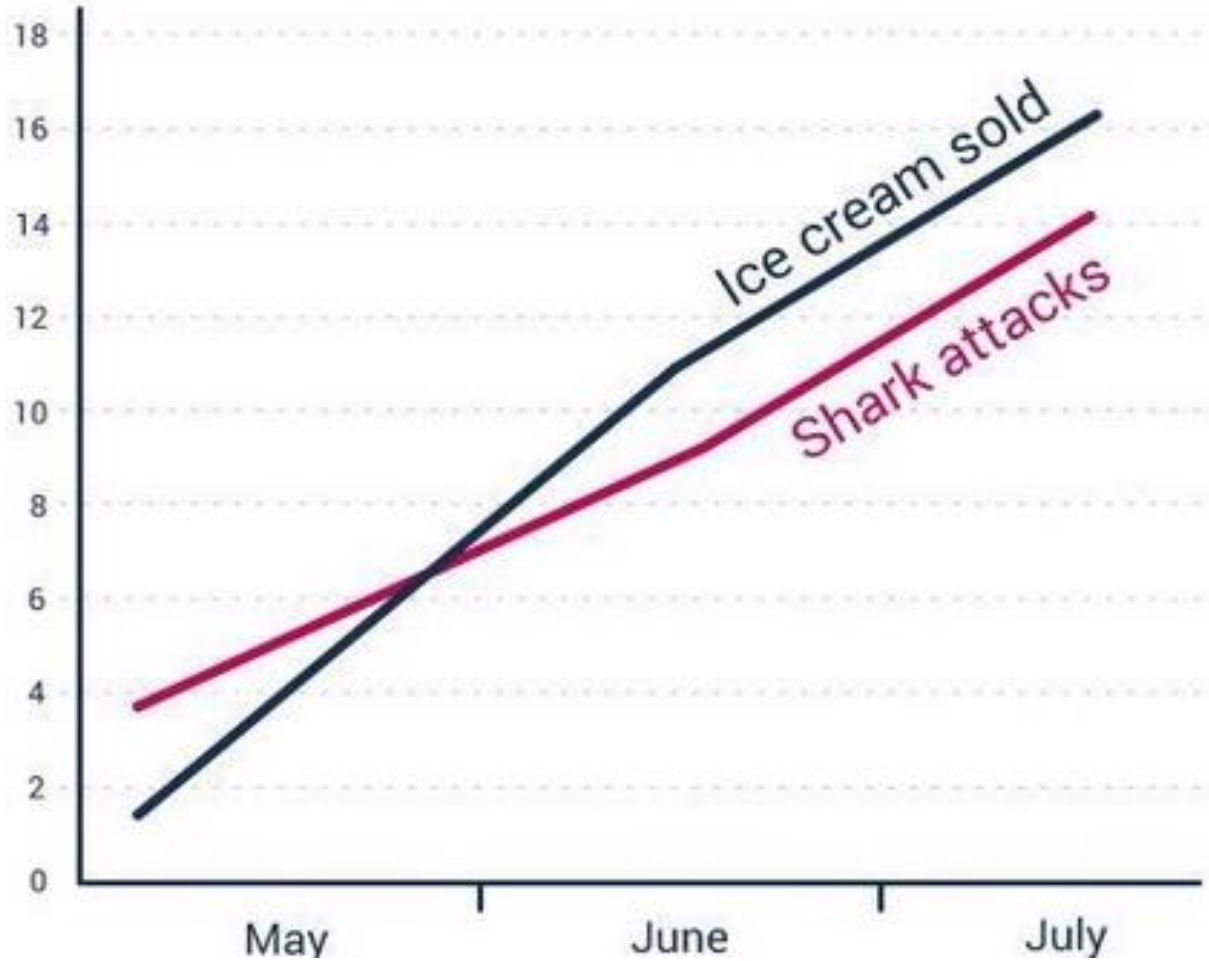
- Brain: Imaginative, improvisational, emotional
- LLM: Predictive, pattern-based
  - Appears creative but is statistical
- The Brain dreams
- The LLM remixes

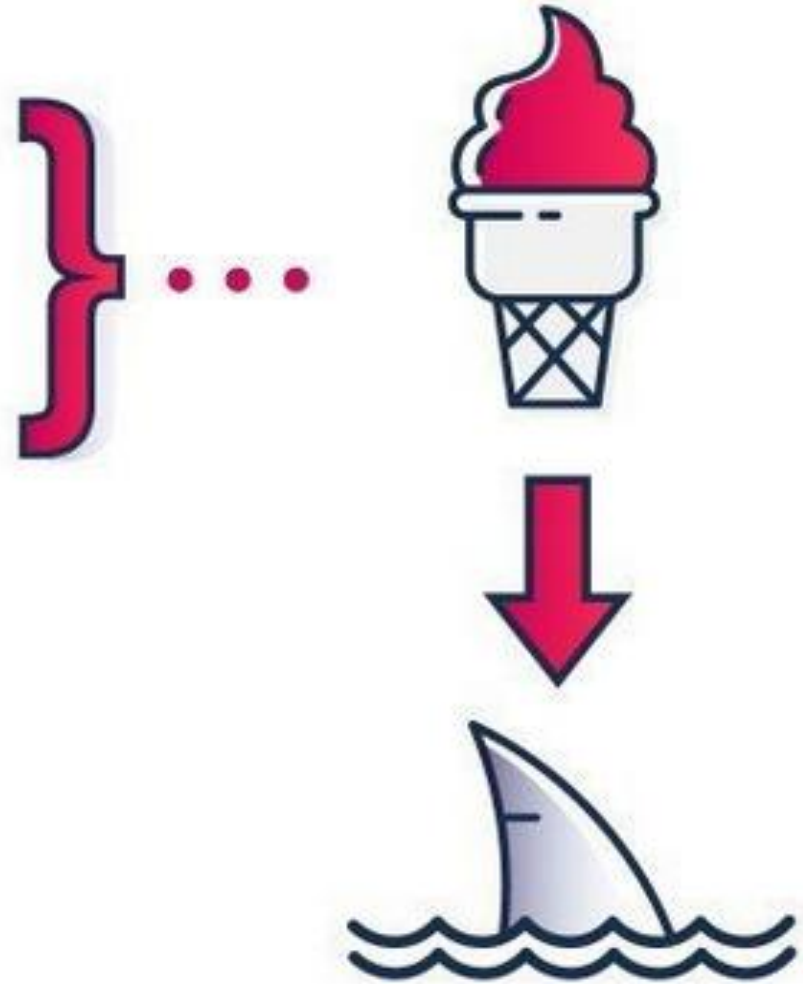
AI is Von Neumann – For Now

- Von Neumann: Sequential, Memory-fetching, Instruction driven.
- Neural Networks: Massively parallel but built and executed on Von Neumann machines.
- Future: Quantum Computer: Explores all paths at once.

Where You Have an Edge (now)

- Cross word Puzzle
- Simple Math
- Correlation ≠ Causation


18
16
14
12
10
8
6
4
2
0
Ice cream sold
Shark attacks
May
June
July



Where AI has the Edge

- When Probability Rules
  - And we think fast, should think slow
- Leap to Conclusions
  - Confirmation Bias
  - Anchoring
  - Framing
- Monty Hall Problem

The Monty Hall Problem

Back to Trust

I mean, if I can't trust him not to watch episodes before I do, then how can I trust him with anything?