

AI Basics - Day 1

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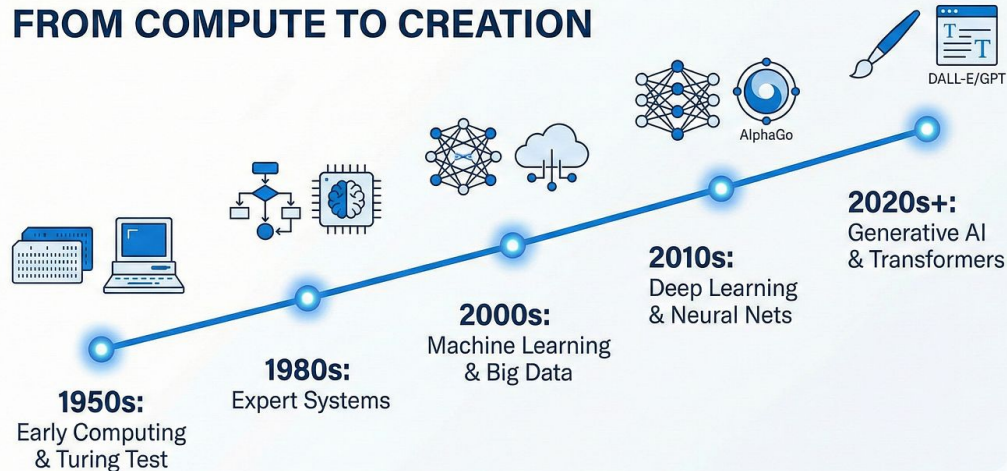


Foundations & The Big Picture

Why did AI explode in the 2020s?

AI EVOLUTION:

FROM COMPUTE TO CREATION



AI Breakthroughs

Reuters World Business Markets Sustainability Legal Commentary More

US charges 3 tied to Super Micro Computer with helping smuggle billions of dollars of AI chips to China

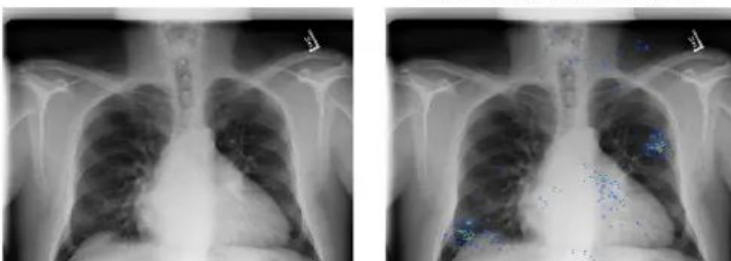
By Kanishka Singh, Karen Freifeld and Stephen Nellis

March 20, 2026 3:58 AM GMT+5:45 · Updated March 20, 2026

Example Image (00000001_001-Cardiomegaly-Emphysema)

Input Image

Predictive image regions
Heatmap of image regions which influence the prediction.



Boston Today
By the People, for the People

NEWS

TECH

ROBOTICS ARTIFICIAL INTELLIGENCE BIOTECH COMPUTERS CONSUMER ELECTRONICS CYBERSECURITY DATA CENTERS INTERNET QUANTUM COMPUTING SEMICONDUCTORS MORE

China Claims Cyborg Breakthrough To Build "Army of Centaurs"

Researchers unveil wearable robotic system that combines human and machine capabilities.

Mar. 21, 2026 at 8:20pm

GT Global Times

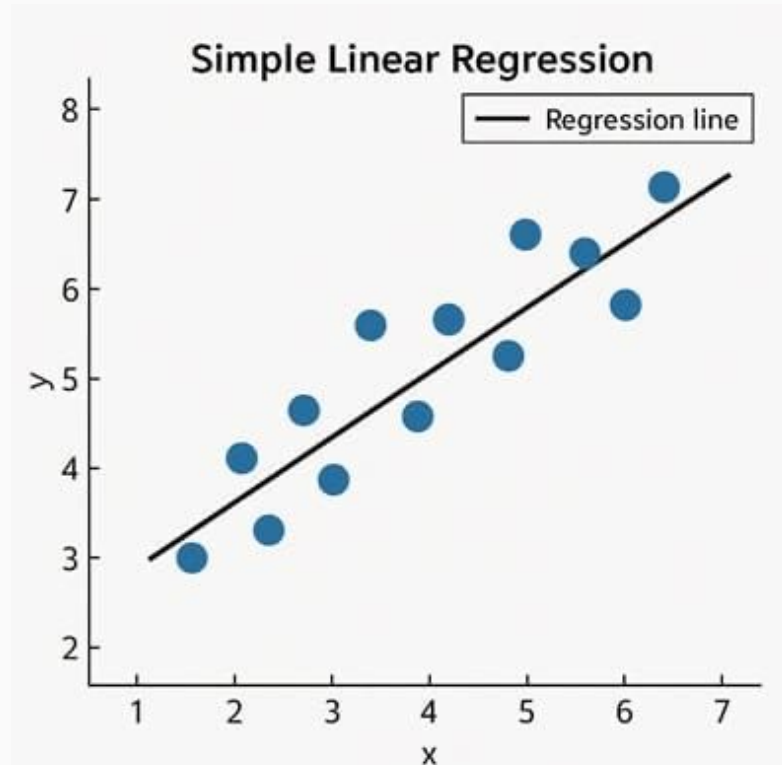
SOURCE / ECONOMY

China releases first humanoid robot standard system to support long-term growth

By Tao Mingyang
Published: Mar 01, 2026 06:52 PM

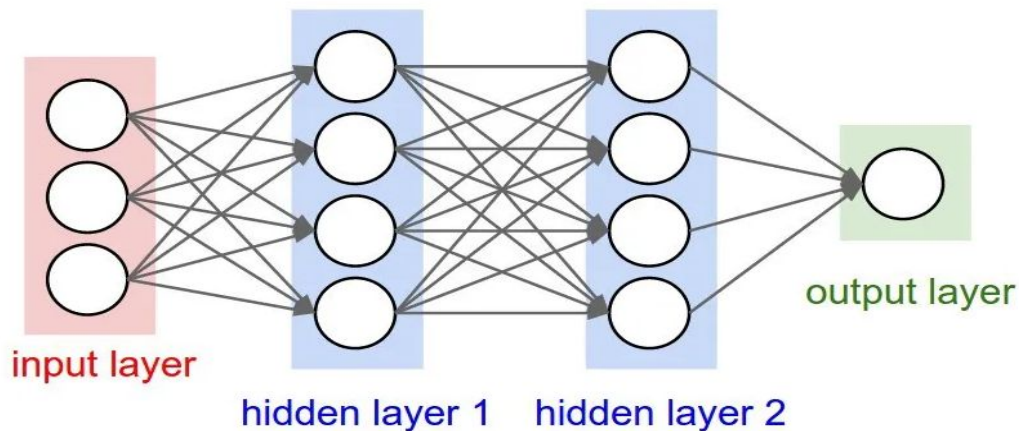
The logo for Leafclutch Technologies Pvt. Ltd. features a stylized green leaf icon to the left of the company name. The name 'Leafclutch' is in a bold, dark blue font, and 'Technologies Pvt. Ltd.' is in a smaller, green font below it.

Mechanics of Learning: Linear Regression

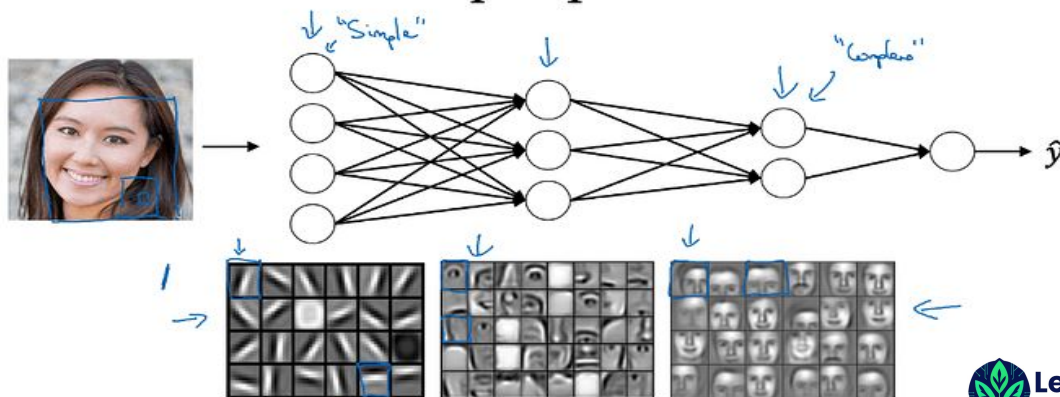


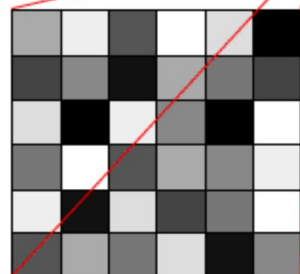
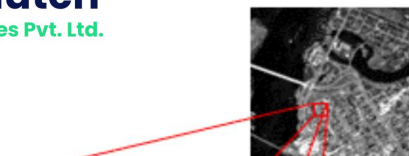
The Generative Leap: Transformers & LLMs

- How layers "see" patterns (from edges to faces).
- "Attention"—how AI knows which words in a sentence are most important.
- **Token Game:** How LLMs predict the next word based on probability, not "understanding" in the human sense.

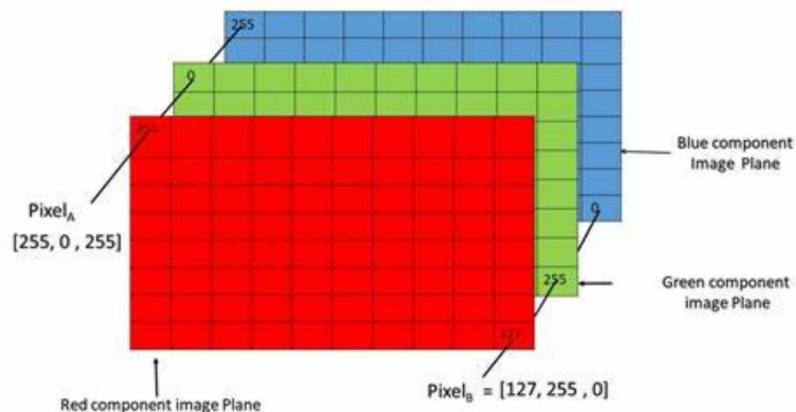


Intuition about deep representation

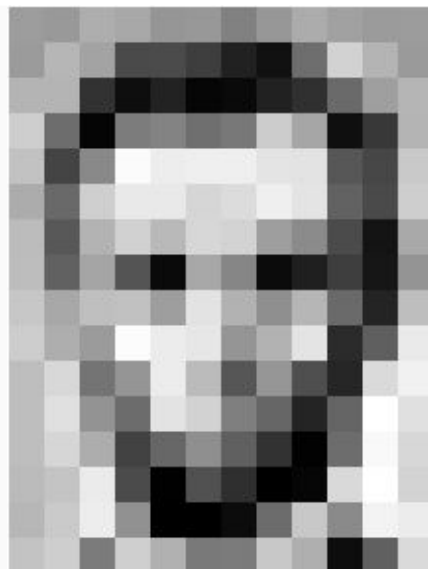




170	238	85	255	221	0
68	136	17	170	119	68
221	0	238	136	0	255
119	255	85	170	136	238
238	17	221	68	119	255
85	170	119	221	17	136



Pixel of an RGB image are formed from the corresponding pixel of the three component images



157	153	174	168	150	152	129	151	172	161	155	156
155	182	163	74	75	62	83	17	110	210	180	154
180	180	50	14	34	6	10	33	48	106	159	181
206	109	5	124	131	111	120	204	166	15	56	180
194	68	137	251	237	239	239	228	227	87	71	201
172	105	207	233	233	214	220	239	228	98	74	206
188	88	179	209	185	215	211	158	139	75	20	169
189	97	165	84	10	168	134	11	31	62	22	148
199	168	191	193	158	227	178	143	182	106	36	190
205	174	155	252	236	231	149	178	228	43	95	234
190	216	116	149	236	187	85	150	79	38	218	241
190	224	147	108	227	210	127	102	36	101	255	224
190	214	173	66	103	143	96	50	2	109	249	215
187	196	235	75	1	81	47	0	6	217	255	211
183	202	237	145	0	0	12	108	200	138	243	236
195	206	123	207	177	121	123	200	175	13	96	218

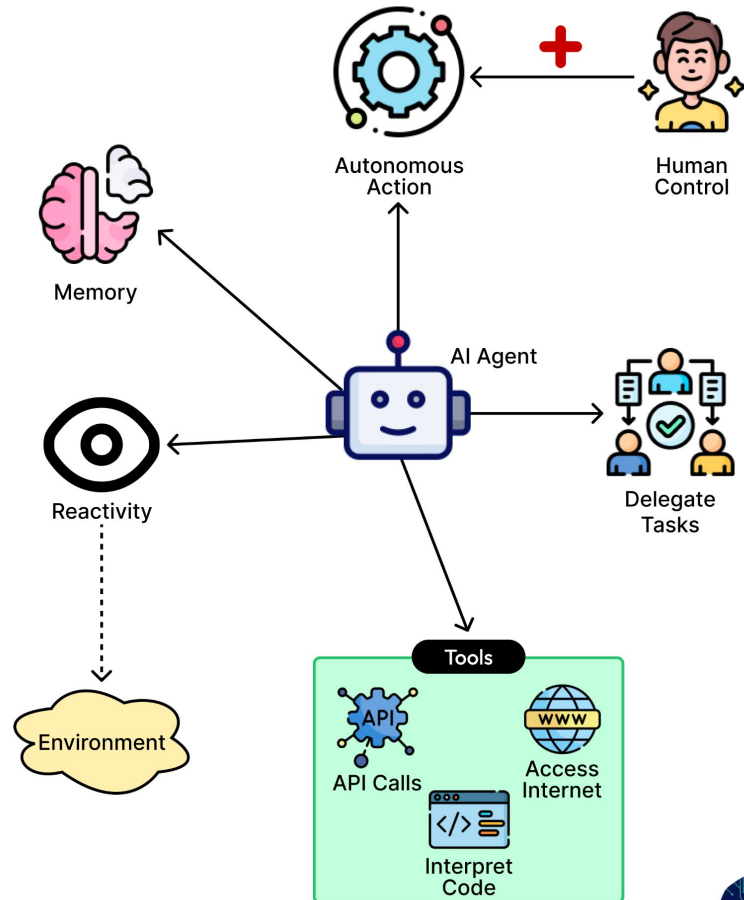
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155	182	163	74	75	62	33	17	110	210	180	154
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199	168	191	193	158	227	178	143	182	106	36	190
205	174	155	252	236	231	149	178	228	43	95	234
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183	202	237	145	0	0	12	108	200	138	243	236
195	206	123	207	177	121	123	200	175	13	96	218

The Next Frontier: Agentic AI

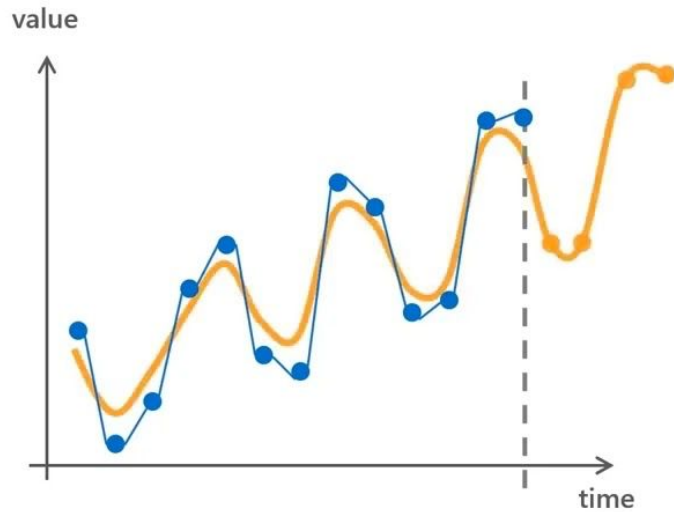
- *Chatbot*: Answers a question.
 - *Agent*: Accomplies a goal (e.g., "Research this company and write a summary").
- **The Reasoning Loop:**
Thinking (Chain of Thought) → Tool Use (Browsing/Coding) → Action → Self-Correction.

What is an AI Agent?

ByteByteGo



Exponential Smoothing – decomposes a time series



Q&A time



Thanks!

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