Compute Used for AI Training Runs

Total compute used to train notable AI models, measured in total FLOP (floating-point operations) | Logarithmic

Plot of total training compute (FLOP) versus Release Date for notable AI models.

Y-axis (FLOP, logarithmic): FLOP, 10, 10^2, 10^3 (KiloFLOP), 10^4, 10^5, 10^6 (MegaFLOP), 10^7, 10^8, 10^9 (GigaFLOP), 10^{10}, 10^{11}, 10^{12} (TeraFLOP), 10^{13}, 10^{14}, 10^{15} (PetaFLOP), 10^{16}, 10^{17}, 10^{18} (ExaFLOP), 10^{19}, 10^{20}, 10^{21} (ZettaFLOP), 10^{22}, 10^{23}, 10^{24} (YottaFLOP), 10^{25}, 10^{26}

X-axis (Release Date): 1950, 1955, 1960, 1965, 1970, 1975, 1980, 1985, 1990, 1995, 2000, 2005, 2010, 2015, 2020, 2025

Labeled models: Theseus, Perceptron Mark I, Pandemonium, Neocognitron, Innervator, Fuzzy NN, NetTalk, TD-Gammon, NPLM, Dropout, AlexNet, GPT-1, MoE, AlphaGo Lee, GPT-2, AlphaFold, OpenAI Five, AlphaGo Zero, GPT-3, DALL-E, Gato, PaLM, Minerva, GPT-4, Claude 2, Llama 2, Gemini

Pre Deep Learning Era

Training Compute Doubling Time: **21.6 months**

Deep Learning Era

Training Compute Doubling Time: **6.0 months**

Release Date