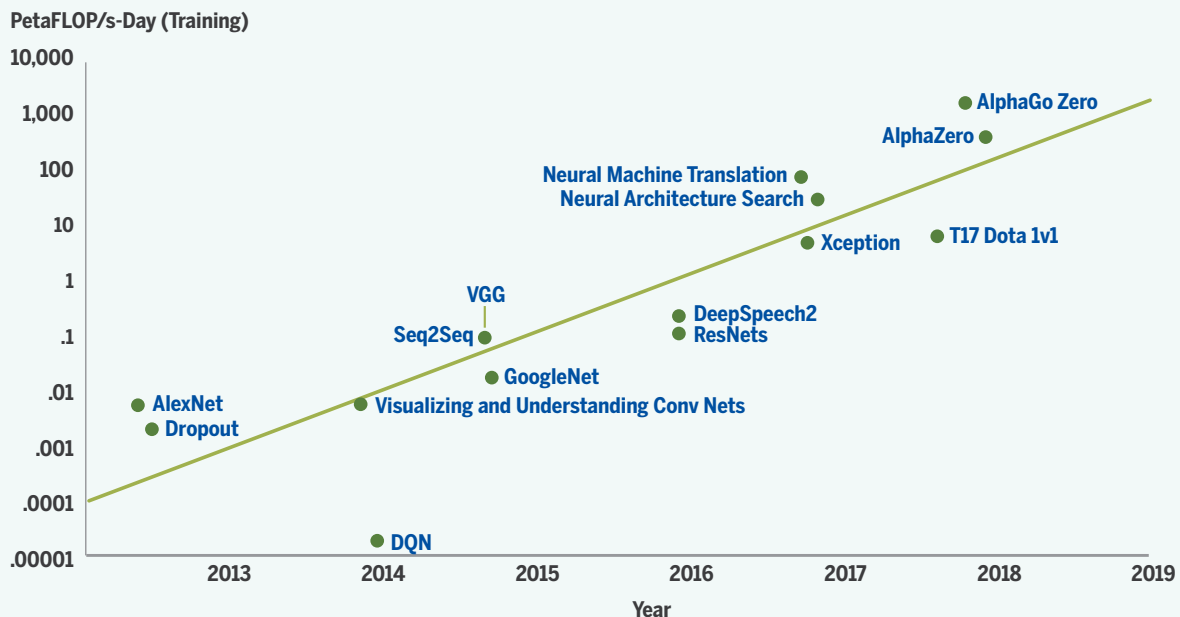


The New Moore's Law

Moore's Law states that the speed and ability of computers doubles every two years as the number of transistors on a microchip increases. It has been the driving force of the global digital revolution. Now a different version of Moore's Law is set to usher in even larger, more powerful changes in technology and living standards.

Exponential Growth in the Training of Artificial Intelligence Programs



Source: <https://openai.com/blog/ai-and-compute/>

Note: A petaFLOPS is a unit of computing speed equal to one quadrillion FLOPS, floating operations per second, a measure of computer performance.

- The amount of “training” a computer program undergoes drives advances in artificial intelligence (AI). This training can be thought of as computing usage (compute for short) needed to practice and improve a program’s skill. AI is the ability of computer systems to perform tasks that normally require human intelligence and perception.
- The chart above shows how much “training” various AI programs required over time. More available compute led to added training and better programs. Incredibly the speed of training is doubling every three to five months, faster than Moore’s Law. If sustained this greater speed is likely to lead to incredible breakthroughs in the field of AI. For example, AI recently tackled the field of radiology and proved it could analyze images better than 80% of the experts, according to Google Director of Engineering Ray Kurzweil.
- Companies that are at the forefront of AI services, such as the major cloud platforms or leaders in the hardware that drives the cloud technology forward, may enjoy a very bright future.

The views expressed are the views of Fred Alger Management, Inc. as of June 2019. These views are subject to change at any time and they do not guarantee the future performance of the markets, any security or any funds managed by Fred Alger Management, Inc. These views are not meant to provide investment advice and should not be considered a recommendation to purchase or sell securities.

This document is directed at investment professionals and qualified investors (as defined by MiFID/FCA regulations). It is for information purposes only and has been prepared and is made available for the benefit of investors. This document does not constitute an offer or solicitation to any person in any jurisdiction in which it is not authorised or permitted, or to anyone who would be an unlawful recipient, and is only intended for use by original recipients and addressees. The original recipient is solely responsible for any actions in further distributing this document and should be satisfied in doing so that there is no breach of local legislation or regulation. This document is not for distribution in the United States.

Any opinions expressed herein are those at the date this material is issued. Data, models and other statistics are sourced from our own records, unless otherwise stated herein. We caution that the value of investments in discretionary accounts, and the income derived, may fluctuate and it is possible that an investor may incur losses, including a loss of the principal invested. Investors should ensure that they fully understand the risks associated with investing and should consider their own investment objectives and risk tolerance levels. **Past performance is not indicative of future performance.** Investors whose reference currency differs from that in which the underlying assets are invested may be subject to exchange rate movements that alter the value of their investments.

Certain products may be subject to restrictions with regard to certain persons or in certain countries under national regulations applicable to such persons or countries. NOTABLY, THIS MATERIAL IS EXCLUSIVELY INTENDED FOR PERSONS WHO ARE NOT U.S. PERSONS, AS SUCH TERM IS DEFINED IN REGULATIONS OF THE U.S. SECURITIES ACT OF 1933, AS AMENDED (THE SECURITIES ACT) AND WHO ARE NOT PHYSICALLY PRESENT IN THE UNITED STATES.

Risk Disclosures: Investing in the stock market involves gains and losses and may not be suitable for all investors. Investment return and principal value of an investment will fluctuate so that an investor's shares, when redeemed, may be worth more or less than their original cost. Many technology companies have limited operating histories and prices of these companies' securities have historically been more volatile than other securities, especially over the short term. Technology companies may also face increased competition, government regulation, and risk of obsolescence due to progress in technological developments.

Important Information for All Investors: Alger Management, Ltd. (company house number 8634056, domiciled at 78 Brook Street, London W1K 5EF, UK) is authorised and regulated by the Financial Conduct Authority, for the distribution of regulated financial products and services. FAM and/or Weatherbie Capital, LLC, U.S. registered investment advisors, serve as sub-portfolio manager to financial products distributed by Alger Management, Ltd.

Fred Alger & Company, Incorporated (parent company of FAM), is not an authorized person for the purposes of the Financial Services and Markets Act 2000 of the United Kingdom ("FSMA") and this material has not been approved by an authorized person for the purposes of Section 21(2)(b) of the FSMA.

Important Information for UK Investors: The distribution of this material in the United Kingdom is restricted by law. Accordingly, this material is provided only for and is directed only at persons in the United Kingdom reasonably believed to be of a kind to whom such promotions may be communicated by an unauthorized person pursuant to an exemption under the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 (the "FPO"). Such persons include: (a) persons having professional experience in matters relating to investments and (b) high net worth bodies corporate, partnerships, unincorporated associations, trusts, etc. falling within Article 49 of the FPO. Most of the rules made under the FSMA for the protection of retail clients do not apply, and compensation under the United Kingdom Financial Services Compensation Scheme will not be available.