

Pioneers in Computing



Ada Lovelace

Mathematician and writer

Wrote the first published algorithm intended for a computing machine, in her 1843 notes on Babbage's Analytical Engine. Foresaw that machines could process more than numbers alone.



Alan Turing

Mathematician and codebreaker

Formalised the idea of a general-purpose computing machine in 1936. Helped break the Enigma cipher at Bletchley Park during WWII. Prosecuted in 1952 for being gay, under laws since repealed.



Grace Hopper

Computer scientist and Navy rear admiral

Wrote the first compiler and led the team behind FLOW-MATIC, which shaped COBOL. Served in the US Navy, retiring as a rear admiral. Documented the first ever computer bug.



Edsger Dijkstra

Computer scientist

Devised the shortest-path algorithm that bears his name, now core to routing and navigation software. Championed structured programming over unrestrained use of goto.



Niklaus Wirth

Swiss computer scientist

Designed Pascal in 1970 to teach structured programming, followed by Modula-2 and Oberon. Won the Turing Award in 1984.



Edgar F. Codd

Computer scientist

Invented the relational model for databases at IBM in 1970, the theoretical basis for SQL and relational database systems everywhere. Won the Turing Award in 1981.



Dennis Ritchie

Computer scientist

Created the C programming language at Bell Labs and co-created Unix with Ken Thompson. Shared the 1983 Turing Award for that work.



Barbara Liskov

Turing Award winning computer scientist

Built CLU, one of the first languages designed around data abstraction, and formulated the Liskov substitution principle. Second woman to win the Turing Award, in 2008.



Margaret Hamilton

Software engineer

Led the team that wrote the Apollo Guidance Computer's flight software. Her error-handling code let Apollo 11 land safely despite a computer overload alarm.



Radia Perlman

Inventor of the Spanning Tree Protocol

Wrote the protocol that stops loops in Ethernet networks, letting them scale from a few machines to hundreds of thousands. Holds over 100 patents.



Bjarne Stroustrup

Creator of C++

Built C++ at Bell Labs from 1979, releasing it in 1985 as one of the first widely used object-oriented languages.



Lynn Conway

VLSI chip design pioneer

Made early contributions to computer architecture at IBM, then transformed chip design at Xerox PARC with her VLSI textbook. Fired by IBM in 1968 for being transgender; the company apologised in 2020.



James Gosling

Canadian computer scientist

Led the team at Sun Microsystems that created Java in the early 1990s, now one of the world's most widely used programming languages.



Guido van Rossum

Creator of Python

Built Python in 1990 at a Dutch research institute, first releasing it in 1991. Led the language's direction until stepping back in 2018.



Sophie Wilson

Co-designer of BBC Micro and ARM

Wrote BBC BASIC and designed the BBC Micro's operating system at Acorn. A transgener woman, she co-designed the original ARM instruction set, now behind most smartphones.



Robert C. Martin

Software engineer and author

Co-authored the Agile Manifesto and formulated the SOLID design principles. Wrote Clean Code, a standard reference on writing maintainable software.



Yukihiro Matsumoto

Creator of Ruby

Designed the Ruby programming language, first released in 1995, blending ideas from Perl, Smalltalk and Lisp. Still leads its development.



Audrey Tang

Civic hacker and digital minister

Became Taiwan's first Digital Minister in 2016. Built the real-time map of face mask stock during Covid-19. Taiwan's first openly transgender cabinet minister.



Fei-Fei Li

AI researcher and ImageNet creator

Built ImageNet, the labelled image dataset that helped trigger the deep learning boom. Co-founded Stanford's Human-Centered AI Institute.



Timnit Gebru

AI ethics researcher

Co-founded Black in AI and later founded the Distributed AI Research Institute. Left Google in 2020 after a dispute over her research on AI risks.

"What everyone ... shares in common is not gender or ethnic background, but motivation, perseverance, and desire, the desire to participate in a voyage of discovery." - Ellen Ochoa