

COMPUTER SCIENTIST

What is a computer scientist?

Computer science involves the design and architecture of computers, the development of programmes and the effective construction of systems. Computer scientists research, develop and design computer software, hardware, and systems for scientific and technical applications.

Discover
Science + Engineering

What do they do?

Modern computer science is involved in every aspect of industry and business and underpins every aspect of our personal lives. Computing is an exciting and challenging subject of great economic and social importance. Computer scientists work in areas such as artificial intelligence, cryptography, speech technology, web design, computer graphics and software engineering. Computer science is an interdisciplinary subject. It is firmly rooted in engineering and mathematics, with links to linguistics, psychology and other fields. When concerned with hardware design it can overlap with electrical and electronic engineering. The

development of circuits made directly on silicon chips gives a link to solid state physics. Formal methods for the construction, analysis and validation of software can, on the other hand, involve much mathematics. Practical computer science is concerned with constructing hardware and software systems: digital electronics, compiler design, programming languages, operating systems, networks and graphics. Theoretical computer science addresses fundamental issues: the notion of computable function, proving the correctness of hardware and software and the theory of communicating systems.

As a computer scientist you could...



design and implement software systems



work as a games programmer or graphics designer



develop software for the internet



research advanced database theory and techniques

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Career opportunities

Computers are to be found everywhere and their role in the world is constantly expanding, making computer science an exciting and rapidly growing area that offers a diverse range of career paths. A degree in computer science opens up many career opportunities in, for example, industry, business, and health care. Graduates can find themselves working on topics such as aids for the disabled, medical imaging, industrial control; they could be designing graphical interfaces, building video-based information systems, and constructing custom solutions for a wide variety of problems. There are also opportunities to work in exciting emerging new applications

areas such as internet applications development, e-commerce, assistive health care for the disabled, systems technology, graphics and games programming. Graduates find employment as web developers, programmers, computer technicians, network administrators and also in areas such as sales, business applications and software localisation. There is therefore a demand all over the world for professionals trained in the use of computing software and hardware and the dynamic nature of computing means that there is always potential for designing novel and exciting products and services.

Did you know?



A robotic world

Research in artificial intelligence is aimed at understanding the computational mechanisms that underlie intelligent behaviour and at designing computational systems that exhibit it. It wasn't until the development of the electronic computer in 1941 that technology was available to create machine intelligence but now robots already exist that are autonomous: they can learn, communicate and teach each other. They can navigate their way around our world and be linked to extremely powerful computers that will give them a processing capacity well beyond that of humans.



Googling

The search engine Google is run on a distributed network of thousands of low-cost computers and can therefore carry out fast parallel processing. Parallel processing is a method of computation in which many calculations can be performed simultaneously, significantly speeding up data processing. Google consists of three distinct parts (1) Googlebot, a web crawler that finds and fetches web pages. (2) The indexer that sorts every word on every page and stores the resulting index of words in a huge database. (3) The query processor, which compares your search query to the index and recommends the documents that it considers most relevant.