The idea that instructions can be stored in computer memory gave rise to the field of computer science known as algorithms and complexity. A key part of this field is the study and application of data structures. Data structure is a major concern for computer scientists.

The invention of the magnetic disk provided quick access to data. This invention led to the creation of more elaborate file systems and the development of databases and information retrieval systems. This area of computer science is known as information management.

The goal of intelligent systems research is to create computing machines and robotic devices capable of performing tasks that would normally be considered to require human intelligence.

Mobile computing, client-server computing and computer hacking - have contributed to three new areas in computer science.

Platform-based development is the study of the special needs of mobile devices.

Information security and protection is concerned with the development of computing systems and software that protect the integrity and security of data.

A particular problem of computer science is the unique impact on society. These and other problems form the basis of the social and professional issues of computer science.

Computer science has strong mathematical and engineering roots. Bachelor's, Master's and Doctoral programmes in computer science are regularly offered by higher education institutions.

An algorithm is a specific procedure for solving a well-defined computational problem. Algorithm design and analysis are fundamental to all aspects of computer science. Algorithm development requires an understanding of the alternatives available to solve a computational problem, and an understanding that the algorithm fully and effectively solves the problem at hand.

Data structures allow an algorithm to work efficiently because the basic computer memory is linear, consisting of a sequence of memory cells. The simplest data structure is a linear array in which adjacent elements are numbered by consecutive integer "indices", and the value of an element is accessed by its unique index. Many algorithms have been developed for sorting and searching lists of data. Although data items are stored in memory sequentially, they can be linked by pointers. The simplest such structure is called a linked list. Algorithms have been developed to efficiently manipulate such lists by searching, inserting and deleting items.