Role of Computer Engineering in Education

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DESCRIPTION

Electrical engineering and computer science are combined in computer engineering to produce new computer hardware and software. They work as both software and hardware engineers and are involved in the architecture design of computers. Software development and cyber security is just a couple of the fascinating, varied, and fast-growing occupations available in the discipline of computer science. Software engineering education is necessary for computer engineers in addition to instruction in electronic engineering, software design, and hardware-software interaction. In addition to covering topics like Artificial Intelligence (AI), robotics, computer networks, computer architecture, and operating systems, it makes use of the techniques and ideas of electrical engineering and computer science [1].

The design of individual microcontrollers, microprocessors, personal computers, and supercomputers, as well as circuit design, are all tasks that computer engineers are involved in. Writing software and firmware for embedded microcontrollers, building VLSI chips, developing analogue sensors, designing mixed signal circuit boards, and designing operating systems are typical topics covered by computer engineering [2]. Computer engineers are highly suited for this field of study since robotics research uses digital systems to manage and monitor electrical systems including motors, communications, and sensors [3, 4].

The whole breadth of information required in the design and implementation of computers is beyond the scope of an undergraduate degree, hence computer engineering students are often permitted to choose topics of in-depth study in their junior and senior year. Before choosing computer engineering as their primary concentration, engineering students at other universities would be required to complete one or two years of general engineering [5]. Even though computer science engineering is challenging, it is typically simpler than other engineering disciplines. However, computer science does require a lot of work to complete because it involves intricate mathematical calculations and scientific concepts [6].

Impact on education system

In 1971, Case Western Reserve University in Cleveland, Ohio, launched the nation's first degree programme in computer engineering. There were 250 computer engineering programmes in the United States as of 2015. Numerous organizations affiliated with the EQANIE network accredit computer engineering schools across Europe. Some postsecondary schools around the world offer a bachelor's degree in computer engineering due to the growing demand for engineers who can simultaneously design hardware, software, firmware, and manage all types of computer systems used in industry. Programs in electronic engineering and computer engineering both cover analogue and digital circuit design [7].

Like most engineering fields, computer engineering requires a strong background in science and mathematics. Some universities refer to computer engineering as computer science and engineering. The majority of entry-level computer engineering positions call for at least a bachelor's degree in the field (or computer science and engineering). A variety of mathematics, including calculus, algebra, trigonometry, and some computer science studies, are typically required. It's critical for computer engineers to stay current with the field's swift technological advancements. Consequently, a lot of people keep studying throughout their careers. This can be advantageous, particularly when acquiring new skills or enhancing ones that already exist.

For instance, generating and testing for quality code as early as feasible in the process, especially before release, can result in larger cost savings because the relative cost of correcting a fault rises the further along it is in the software development cycle [8,9].

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