



## Computer Engineering Overview

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Career Path Forecast - Professional Organizations

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### The Field

Computer engineers analyze, design, and evaluate computer systems, both hardware and software. They might work on system such as a flexible manufacturing system or a "smart" device or instrument. Computer engineers often find themselves focusing on problems or challenges which result in new "state of the art" products, which integrate computer capabilities. They work on the design, planning, development, testing, and even the supervision of manufacturing of computer hardware -- including everything from chips to device controllers.



They work on the interface between different pieces of hardware and strive to provide new capabilities to existing and new systems or products. The work of a computer engineer is grounded in the hardware -- from circuits to architecture -- but also focuses on operating systems and software. They may also focus on computer networks for the transmission of data and multimedia. Computer engineers must understand logic design, microprocessor system design, computer architecture, computer interfacing, and continually focus on system requirements and design. It is primarily software engineers who focus on creating the software systems used by individuals and businesses, but computer engineers may also design and develop some software applications.

### Preparation

Students studying computer engineering may choose to focus on specialty areas including artificial intelligence (intelligent systems for applications such as robotics, language understanding, knowledge acquisition, reasoning, computer vision, and pattern recognition), computer systems (the design and analysis of computers including the topics of VLSI (Very Large Scale Integration) systems, computer architecture, computer networks, and integrated circuits), or systems and computations (including the integration of both hardware and software into a coherent system). They must have strong analytical skills and be detail oriented. In addition, they must work well in team situations as they are often called upon to work in a group setting with other engineers and with others outside of engineering.

#### "Computer Engineering Overview"

Prepared as part of the Sloan Career Cornerstone Center ([www.careercornerstone.org](http://www.careercornerstone.org))

Note: Some resources in this section are provided by the US Department of Labor, Bureau of Labor Statistics.

## ► Computer Science vs. Computer Engineering vs. Information Science

Most four year degree programs in computer science and computer engineering are accredited by the Accreditation Board for Engineering and Technology (ABET). Typically these degree programs reside in the university's College of Engineering. The computer engineering degree program resides in the Department of Computer Science and Engineering, or the Department of Electrical and Computer Engineering, or it may be a stand alone Department of Computer Engineering. In some cases, such as, MIT and University of California at Berkeley, these degrees are offered in the Department of Electrical Engineering and Computer Science.

Typically there is considerable overlap in the computer science and the computer engineering degree programs. The major difference between the two accredited degree programs is that an engineering design component is required in the accredited computer engineering degree program.

Information science degree programs are tailored to prepare students for careers in the application of computers in business. Therefore these degree programs typically reside in business colleges and are not accredited by ABET. Although there are a few ABET accredited programs offered in engineering colleges. In addition to computer science courses in programming, computer organization and operation, computer networks, databases, these degree programs require courses in business and management, and fewer courses are required in mathematics and the sciences than in computer science and engineering degree programs.

## ► Computer Engineering Programs

A bachelor's degree in engineering is required for almost all entry-level engineering jobs. Accredited computer engineering programs usually provide broad studies in electrical engineering and computer science. It is important to select a program that is accredited in Computer Engineering.



## ► Admission Requirements

Admissions requirements for undergraduate engineering schools include a solid background in mathematics (algebra, geometry, trigonometry, and calculus) and science (biology, chemistry, and physics), and courses in English, social studies, humanities, and computer and information technology. Bachelor's degree programs in engineering typically are designed to last 4 years, but many students find that it takes between 4 and 5 years to complete their studies. In a typical 4-year college curriculum, the first 2 years are spent studying mathematics, basic sciences, introductory engineering, humanities, and social sciences. In the last 2 years, most courses are in engineering, usually with a concentration in one branch. For example, a computer engineering program might include courses in computer hardware, microcomputers, software engineering, digital signal and image processing, electromagnetic fields, electronic devices and circuits, and computer organization and design.

## ► Co-ops

Internships and Coops provide students with a great opportunity to gain real-world experience while still in school. Many universities offer co-op and internship programs for students studying Computer Engineering.

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### ► Courses of Study

Students specializing in Computer Engineering will study computer hardware, microcomputers, software engineering, digital signal and image processing, electromagnetic fields, electronic devices and circuits, and computer organization and design. They will likely take courses in linear algebra, data structures and software principles. Computer Engineers also need to develop strong communication skills.



### ► Ongoing Study

Technological advances come so rapidly in the computer field that continuous study is necessary to keep one's skills up to date post graduation. Employers, hardware and software vendors, colleges and universities, and private training institutions offer continuing education. Additional training may come from professional development seminars offered by professional computing societies. At some point in the career of the engineer typically the engineer must make a choice between following strictly a technical career path or a career path that involves both technology and management. State-of-the-art research and development teams are usually led by individuals with an M.S. or Ph.D. degree in engineering or science. The Ph.D. degree is typically required for individuals aspiring to be university research professors. Some engineers elect the technology management path. Typically they take advanced courses in accounting and finance, business management, business or patent law, and entrepreneurship and may acquire an MBA degree or an advance degree in technology management.

### ► Accredited Programs

Those interested in a career in Computer Engineering should consider reviewing engineering programs that are accredited by the Accreditation Board for Engineering and Technology, Inc. (ABET). ABET accreditation is based on an evaluation of an engineering program's student achievement, program improvement, faculty, curricular content, facilities, and institutional commitment. The following is a partial list of universities offering accredited degree programs in Computer Engineering.

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|---|---|
| <ul style="list-style-type: none"><li>• <b>Air Force Institute of Technology (Masters)</b></li><li>• <b>The University of Akron</b></li><li>• <b>The University of Alabama in Huntsville</b></li><li>• <b>The University of Alabama</b></li><li>• <b>Arizona State University</b></li><li>• <b>University of Arizona</b></li><li>• <b>University of Arkansas</b></li><li>• <b>Auburn University</b></li><li>• <b>Baylor University</b></li><li>• <b>Boston University</b></li><li>• <b>University of Bridgeport</b></li><li>• <b>Brigham Young University</b></li><li>• <b>Brigham Young University - Idaho</b></li><li>• <b>Brown University</b></li><li>• <b>Bucknell University</b></li><li>• <b>California Polytechnic State University, San Luis Obispo</b></li><li>• <b>California State Polytechnic University, Pomona</b></li><li>• <b>California State University, Chico</b></li></ul> | <ul style="list-style-type: none"><li>• <b>Michigan Technological University</b></li><li>• <b>University of Michigan</b></li><li>• <b>University of Michigan-Dearborn</b></li><li>• <b>Milwaukee School of Engineering</b></li><li>• <b>University of Minnesota Duluth</b></li><li>• <b>University of Minnesota-Twin Cities</b></li><li>• <b>Mississippi State University</b></li><li>• <b>Missouri University of Science and Technology</b></li><li>• <b>University of Missouri-Columbia</b></li><li>• <b>University of Missouri-Kansas City</b></li><li>• <b>Montana State University - Bozeman</b></li><li>• <b>University of Nebraska-Lincoln</b></li><li>• <b>University of Nevada-Las Vegas</b></li><li>• <b>University of Nevada-Reno</b></li><li>• <b>University of New Hampshire</b></li><li>• <b>University of New Haven</b></li><li>• <b>New Jersey Institute of Technology</b></li><li>• <b>College of New Jersey</b></li><li>• <b>University of New Mexico</b></li></ul> |
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- California State University, Fresno
- California State University, Long Beach
- California State University, Sacramento
- University of California, Berkeley
- University of California, Davis
- University of California, Irvine
- University of California, Los Angeles
- University of California, Riverside
- University of California, Santa Cruz
- Carnegie Mellon University
- Case Western Reserve University
- Cedarville University
- University of Central Florida
- Christopher Newport University
- University of Cincinnati
- Clarkson University
- Clemson University
- Cleveland State University
- University of Colorado at Boulder
- University of Colorado at Colorado Springs
- University of Colorado at Denver and Health Sciences Center
- Colorado State University
- Colorado Technical University
- University of Connecticut
- Cornell University
- University of Dayton
- University of Delaware
- University of Denver
- Drexel University
- Duke University
- Embry-Riddle Aeronautical University - Daytona Beach
- Embry-Riddle Aeronautical University - Prescott
- University of Evansville
- Fairfield University-School of Engineering
- Florida A & M University/Florida State University (FAMU-FSU)
- Florida Atlantic University
- Florida Institute of Technology
- Florida International University (University Park)
- University of Florida
- George Mason University
- The George Washington University
- Georgia Institute of Technology
- Gonzaga University
- Harding University
- University of Hartford
- University of Houston
- University of Houston-Clear Lake
- University of Idaho
- University of Illinois at Chicago
- University of Illinois at Urbana-Champaign
- Illinois Institute of Technology

- State University of New York at Binghamton
- State University of New York at Buffalo
- State University of New York at New Paltz
- New York Institute of Technology
- City University of New York, City College
- University of North Carolina at Charlotte
- North Carolina State University at Raleigh
- North Dakota State University
- Northwestern University
- University of Notre Dame
- Oakland University
- Ohio Northern University
- The Ohio State University
- Oklahoma Christian University
- The University of Oklahoma
- Old Dominion University
- Franklin W. Olin College of Engineering
- Oregon State University
- Pacific Lutheran University
- University of the Pacific
- Pennsylvania State University
- Pennsylvania State University, Behrend College
- University of Pennsylvania
- University of Pittsburgh
- Polytechnic University
- Portland State University
- University of Puerto Rico, Mayaguez Campus
- Purdue University at West Lafayette
- Purdue University Calumet
- Rensselaer Polytechnic Institute
- University of Rhode Island
- Rochester Institute of Technology
- University of Rochester
- Rose-Hulman Institute of Technology
- Rowan University
- Rutgers, The State University of New Jersey
- San Diego State University
- San Jose State University
- Santa Clara University
- University of South Alabama
- University of South Carolina
- South Dakota School of Mines and Technology
- University of South Florida
- University of Southern California
- Southern Illinois University at Carbondale
- Southern Illinois University-Edwardsville
- Southern Methodist University
- Stevens Institute of Technology
- Stony Brook University
- Syracuse University
- University of Tennessee at Knoxville
- Tennessee Technological University
- Texas A & M University
- University of Texas at Arlington
- University of Texas at Austin

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<ul style="list-style-type: none"> <li>• Indiana University-Purdue University Fort Wayne</li> <li>• Indiana University-Purdue University Indianapolis</li> <li>• Iowa State University</li> <li>• Jackson State University</li> <li>• The Johns Hopkins University</li> <li>• Kansas State University</li> <li>• The University of Kansas</li> <li>• Kettering University</li> <li>• Lafayette College</li> <li>• Lake Superior State University</li> <li>• Lawrence Technological University</li> <li>• Lehigh University</li> <li>• Lipscomb University</li> <li>• Louisiana State University and A&amp;M College</li> <li>• University of Louisville</li> <li>• University of Maine</li> <li>• Manhattan College</li> <li>• Marquette University</li> <li>• University of Maryland Baltimore County</li> <li>• University of Maryland College Park</li> <li>• University of Massachusetts Amherst</li> <li>• University of Massachusetts Dartmouth</li> <li>• Massachusetts Institute of Technology</li> <li>• University of Massachusetts Lowell</li> <li>• The University of Memphis</li> <li>• University of Miami</li> <li>• Michigan State University</li> </ul>	<ul style="list-style-type: none"> <li>• Texas Tech University</li> <li>• The University of Toledo</li> <li>• Tufts University</li> <li>• Tulane University</li> <li>• Union College</li> <li>• United States Air Force Academy</li> <li>• Utah State University</li> <li>• University of Utah</li> <li>• Valparaiso University</li> <li>• Vanderbilt University</li> <li>• Villanova University</li> <li>• Virginia Commonwealth University</li> <li>• Virginia Military Institute</li> <li>• Virginia Polytechnic Institute and State University</li> <li>• University of Virginia</li> <li>• Washington State University</li> <li>• Washington University</li> <li>• University of Washington</li> <li>• West Virginia University</li> <li>• Western Michigan University</li> <li>• Wichita State University</li> <li>• University of Wisconsin-Madison</li> <li>• Worcester Polytechnic Institute</li> <li>• Wright State University</li> <li>• University of Wyoming</li> </ul>
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## Specialty Areas

Most computer engineers are further classified by specific areas of focus. The following is a list of several major specialty areas within computer engineering:

- ▶ Coding, Cryptography, and Information Protection
- ▶ Communications and Wireless Networks
- ▶ Compilers and Operating Systems
- ▶ Computational Science and Engineering
- ▶ Computer Networks, Mobile Computing, and Distributed Systems
- ▶ Computer Systems: Architecture, Parallel Processing, and Dependability
- ▶ Computer Vision and Robotics
- ▶ Embedded Systems
- ▶ Integrated Circuits, VLSI Design, Testing, and CAD
- ▶ Signal, Image, and Speech Processing

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### ► Coding, Cryptography, and Information Protection

Computer engineers in this area are developing novel methods for protecting digital images, music, and other information from errors in transmission or storage, copyright infringement and other forms of tampering. Coding theory is used to detect and correct errors caused by distortions in the transmission or storage of digital information, or to compress information. In particular, wireless communications, multi-antenna systems, optical transmission, and other realistic communication systems pose important open challenges for the reliable transmission and protection of information. Digital watermarking is the process of embedding codes, usually secret, in the images/information to be stored to deter hackers from downloading information obtained illegally, and to efficiently manage large image databases.



### ► Communications and Wireless Networks

This specialty area focuses on a broad range of topics that will advance the frontiers of communications systems and networks (with particular attention to wireless), modulation and error-control coding, and information theory. Computer engineers working in this area may explore wireless communication opportunities to take advantage of new frequency bands and increase the efficiency of current bands. Other areas of focus are design techniques for high-speed networks, interference suppression and modulation, design and analysis of fault-tolerant systems, and storage and transmission schemes.



### ► Compilers and Operating Systems

Those focusing on the specialty area of compilers and operating systems design future computer operating systems, libraries, and applications to be automatically customized for each deployment environment. They might develop new operating system architectures, transparent program analysis techniques, post-link-time code transformation algorithms, and novel quality assurance techniques.

### ► Computational Science and Engineering

In this area, computational methods are applied to formulate and solve complex mathematical problems in engineering and in the physical and the social sciences. Computer simulation methods are developed for all kinds of systems, and effective display techniques are employed to communicate the computational results to the user. Examples include aircraft design, the plasma processing of nanometer features on semiconductor wafers, VLSI circuit design, radar detection systems, ion transport through biological channels, and much more.

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## ► Computer Networks, Mobile Computing, and Distributed Systems

Individuals working in this area would build integrated environments for computing, communications, and information access over heterogeneous underlying technologies. Specific projects might include shared-channel wireless networks, adaptive resource management in dynamic distributed systems including mobile systems, improving the quality of service in mobile and ATM environments, a platform for adaptive computing and seamless memory over heterogeneous wireless networks, and reliable and efficient communication on a fast Ethernet cluster.



## ► Computer Systems: Architecture, Parallel Processing, and Dependability

The Computer Systems area encompasses a broad spectrum of research projects that address all aspects of reliable, testable, secure, high-performance computer systems. Specific projects might include designing a super-pipelined single-chip coprocessor for executing multi-threaded digital signal processing applications; investigating how to build highly-available and secure computer hardware, software, network, and telecommunication systems; and developing new theory, algorithms, and tools to predict the availability of computer hardware, software, network, and telecommunication systems.

## ► Computer Vision and Robotics

In this area computer engineers focus on (a) visual sensing, in which images of a scene are taken as input and estimates of the three-dimensional characteristics of the scene are output, (b) representation, which addresses efficient visual depiction and communication of the environment, and (c) manipulation of the environment, in which the acquired three-dimensional information is used to perform tasks such as navigation and assembly. Applications offer the promise of improved human modeling, image communication, and human-computer interfaces, as well as devices such as special-purpose cameras with versatile vision sensors.



## ► Embedded Systems

Computer engineers working in this area focus on enhancing the speed, reliability, and performance of systems, by means of computer technology - for example, consumer products, and business and industrial machines. Most functions of the modern automobile are controlled by embedded microprocessors. Embedded systems are currently being developed that coordinate systems such as automated vehicles and equipment to conduct search and rescue, automated transportation systems, and human-robot coordination to repair equipment in space.

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## ► Integrated Circuits, VLSI Design, Testing, and Computer Aided Design

Computer engineers working in this area focus on enhancing the speed, reliability, and energy efficiency of next-generation Very Large-Scale Integration (VLSI) circuits and microsystems, as well as automating the design process. Projects might include low-power VLSI algorithms and architectures, noise-tolerance for VLSI and DSP (digital signal processors), mixed-signal analog IC (integrated circuit) design, MEMS (Micro Electro Mechanical Systems) for integrated passive RF (radio frequency) components, electrothermal simulation and electrostatic discharge protection for silicon-on-insulator CMOS (complementary metal-oxide-semiconductor) circuits, and a theoretical exploration of the fundamental bounds of efficiency and reliability of VLSI computation.

## ► Signal, Image, and Speech Processing

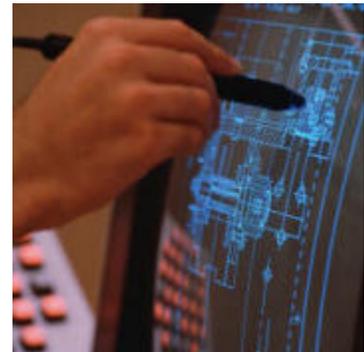
Computer engineers working in this area might focus on developing improvements in human-computer interaction, speech recognition and synthesis, medical and scientific imaging, or communications systems. Computer vision tasks such as facial feature recognition, when combined with multimedia databases and novel schemes for representation and compression, are examples of work in this area. Work in speech and language engineering would seek to understand human language faculties and to develop computer systems with comparable faculties. Dynamic MRI (Magnetic Resonance Imaging), fast computed tomography, electron microscopy, laser imaging of ocean mines, and passive radar imaging of aircraft using radio and television signals are among the imaging systems currently being developed. Signal processing projects might focus on developing new advances in hearing aid technology.



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## Day in the Life

Computer engineers are concerned with the design, development, and implementation of computer technology into a wide range of consumer, industrial, commercial, and military applications. In automobiles design, for example, computers are integrated into many systems, including air conditioning, navigation, audio and video systems, and even tire pressure alert systems. As more and more products incorporate or interact with computers, computer engineers are challenged to develop computer applications that improve the quality of life while being sensitive to manufacturing and distribution costs.



## ► Teams and Coworkers

Almost all jobs in engineering require some sort of interaction with coworkers. Whether they are working in a team situation, or just asking for advice, most engineers have to have the ability to communicate and work with other people. Engineers should be creative, inquisitive, analytical, and detail-oriented. They should be able to work as part of a team and to communicate well, both orally and in writing. Communication abilities are important because engineers often interact with specialists in a wide range of fields outside engineering. Writing and presentation skills are also vital so engineers can share their research and experiences with colleagues through topical meetings, professional associations, and various publications.

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## ► Tasks

Computer engineers work on hardware, software and the interface between the two. They work in teams with other engineers and others from other areas to design, build, and maintain systems that incorporate or use computers. Working as a computer engineer requires expertise in both computer hardware and software, and requires the engineer to be able to recommend tradeoffs between hardware and software to create a system or product design that is cost effective and useful.



## ► The Workplace

Computer engineers usually work in offices or laboratories in comfortable surroundings. They usually work about 40 hours a week -- the same as many other professional or office workers do. However, evening or weekend work may be necessary to meet deadlines or solve specific problems. Given the technology available today, telecommuting is common for computer professionals. As networks expand, more work can be done from remote locations through modems, laptops, electronic mail, and the Internet. Computer Engineers are employed in industry, government, education, and consulting. It is difficult to find a company that doesn't require the expertise of computer engineers for its products or systems.

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## Earnings

Earnings for engineers vary significantly by specialty, industry, and education. Even so, as a group, engineers earn some of the highest average starting salaries among those holding bachelor's degrees. According to the U.S. Department of Labor, Bureau of Labor Statistics, the median income for computer engineers is \$88,470.

Entry-level salaries vary based on your areas of expertise, experience, education, supervisory responsibility, accountability for projects, and the geographic location, size, and industry of the employer. In terms of starting salaries, the average starting salary for computer engineers who have earned a Bachelor's degree is \$56,201, while those with a Master's were offered \$60,000. Ph.D. computer engineers received average starting salaries of \$92,500.



According to a 2007 salary survey by the National Association of Colleges and Employers, the average offer to computer engineering bachelor's graduates rose 3.2 percent to \$55,946.

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# Employment

According to the U.S. Bureau of Labor Statistics, computer engineers hold about 79,000 jobs. This represents 5.3% of the 1.5 million jobs held by engineers in the U.S. Computer engineers are employed in industry, government, education, and consulting. They usually work in teams with other engineers and individuals from other functional areas. They may be working on a new design of an electronic component for an individual project, focused on the development of software specific to a new product, or one being redesigned, or may work in sales or in supporting research activities. Computer engineers frequently work on new applications of computers, such as advances in digital television and photography, virtual meeting technology, intelligent highways, control systems, and new technologies for cars, phones, security systems, telescopes, airplanes, and space vehicles. The following is a partial list of employers of Computer Engineers:

<p><b>Technology Intensive Firms</b></p> <ul style="list-style-type: none"><li>▪ Apple Computer</li><li>▪ AT&amp;T</li><li>▪ Cisco Systems</li><li>▪ Dell</li><li>▪ Fujitsu Siemens Computers</li><li>▪ Google</li><li>▪ Hewlett-Packard</li><li>▪ IBM</li><li>▪ Intel</li><li>▪ Iomega</li><li>▪ Microsoft</li><li>▪ Motorola</li><li>▪ Panasonic</li><li>▪ Raytheon Company</li><li>▪ Sony Electronics</li><li>▪ Sun Microsystems</li><li>▪ Texas Instruments</li><li>▪ Toshiba</li><li>▪ Verizon</li><li>▪ Yahoo</li></ul> <p><b>U.S. Federal Government and State and Local Affiliates</b></p> <ul style="list-style-type: none"><li>▪ Federal Bureau of Investigation</li><li>▪ Federal Emergency Management Agency</li><li>▪ NASA</li><li>▪ National Institute of Standards and Technology</li><li>▪ US Air Force</li><li>▪ US Army</li><li>▪ US Central Intelligence Agency</li><li>▪ US Department of Energy</li><li>▪ US Department of Defense</li><li>▪ US Department of Transportation</li><li>▪ US Naval Research Lab</li><li>▪ US Navy</li></ul>	<p><b>Other Firms</b></p> <ul style="list-style-type: none"><li>▪ 3M Worldwide</li><li>▪ Adelphia Communications</li><li>▪ ADT</li><li>▪ Advanced Micro Systems</li><li>▪ Alcatel</li><li>▪ Alcoa</li><li>▪ Ansys</li><li>▪ Applied Digital</li><li>▪ Blackberry</li><li>▪ BMW International</li><li>▪ Boeing</li><li>▪ Delphi-Packard Electric</li><li>▪ Toyota Motor Sales, USA, Inc.</li><li>▪ Federal Express</li><li>▪ Ford</li><li>▪ Genentech</li><li>▪ General Dynamics</li><li>▪ General Electric</li><li>▪ General Motors Corporation</li><li>▪ Honda</li><li>▪ Honeywell</li><li>▪ Hughes Network Systems</li><li>▪ Johnson &amp; Johnson</li><li>▪ Lockheed Martin</li><li>▪ Meade Instruments Corporation</li><li>▪ Merrill Lynch &amp; Co.</li><li>▪ New Piper Aircraft</li><li>▪ Nuance Communications, Inc.</li><li>▪ Procter &amp; Gamble Company</li><li>▪ Samsung</li><li>▪ Siemens Automotive Corporation</li><li>▪ Toyota Motor Sales, Inc.</li><li>▪ UPS</li><li>▪ Westinghouse</li></ul> <p><b>Other Employers</b></p> <ul style="list-style-type: none"><li>▪ K-16 Education</li><li>▪ Professional Associations</li></ul>
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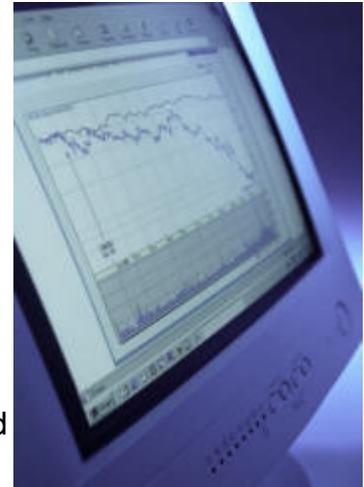
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## Career Path Forecast

According to the US Department of Labor, Bureau of Labor Statistics, computer hardware engineers are expected to have 5 percent employment growth over the projections decade, slower than the average for all occupations.

Although the use of information technology continues to expand rapidly, the manufacture of computer hardware is expected to be adversely affected by intense foreign competition.

As computer and semiconductor manufacturers contract out more of their engineering needs to both domestic and foreign design firms, much of the growth in employment of hardware engineers is expected in the computer systems design and related services industry.

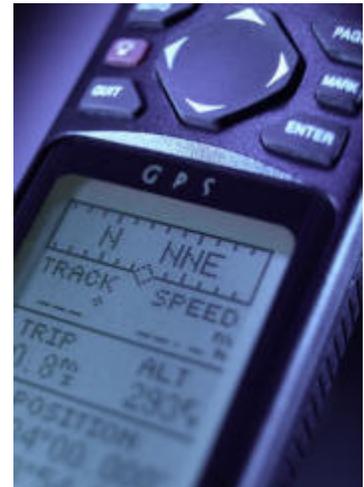


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## Professional Organizations

Professional organizations and associations provide a wide range of resources for planning and navigating a career in Computer Engineering. These groups can play a key role in your development and keep you abreast of what is happening in your industry.

Associations promote the interests of their members and provide a network of contacts that can help you find jobs and move your career forward. They can offer a variety of services including job referral services, continuing education courses, insurance, travel benefits, periodicals, and meeting and conference opportunities. A broader list of professional associations is also available at [www.careercornerstone.org](http://www.careercornerstone.org).



### ► Association for Computing Machinery ([www.acm.org](http://www.acm.org))

ACM is the world's oldest and largest educational and scientific computing society. Since 1947 ACM has provided a vital forum for the exchange of information, ideas, and discoveries. Today, ACM serves a membership of computing professionals and students in more than 100 countries in all areas of industry, academia, and government.

### ► Association for Women in Computing ([www.awc-hq.org](http://www.awc-hq.org))

The Association for Women in Computing is a non-profit professional organization for women and men who have an interest in information and technology. The Association is dedicated to the advancement of women in the technology fields.

### ► IEEE Computer Society ([www.computer.org](http://www.computer.org))

With nearly 100,000 members, the IEEE Computer Society is the world's leading organization of computer professionals. Founded in 1946, it is the largest of the 39 societies of the IEEE. The IEEE Computer Society's vision is to be the leading provider of technical information, community services, and personalized services to the world's computing professionals. The Society is dedicated to advancing the theory, practice, and application of computer and information processing technology.

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