CS IS

Careers in Computer Science and Information Systems

This document provides a comparison of the disciplines of Computer Science and Information Systems, and is expected to help a prospective student choose between the two majors. There is some overlap between the two disciplines, but each provides a very different problem-solving orientation and set of technical skills.

Computer Science

Computer Science (CS) grew out of the disciplines of mathematics and electrical engineering. It refers to the study of the machine itself and its use as a tool in various disciplines. A major in CS will know a considerable amount of mathematics which will help in technological applications such as computer networking, image processing, database design and development and artificial intelligence. A computer scientist's strength lies in his or her ability to solve problems of efficiency and overall performance of applications from a machine perspective, and an overall technical orientation to problem-solving.

A computer scientist focuses on the development of solutions to problems taking into account the limitations of the machine and its resources, as well as how to best utilize the resources. He/she should be able to develop algorithms and data structures that can work within the constraints of available hardware and software to produce an acceptable solution. Most of the development by such people will be done in high level languages, such as C and C++, that can take full advantage of the system hardware and software resources.

Information Systems

Information Systems (IS) is the application of information technology to organizational and managerial needs. An IS major needs to be aware of what information technology can contribute to an organization and how to bring that solution to fruition. The strength of an IS major lies in his/her ability to apply the knowledge of information systems and technology to help organizations compete more successfully in the marketplace or to streamline current operations.

IS professionals utilize their business-based backgrounds in working with managers and users to specify technology needs that benefits the organization. In addition, they write programs to codify that technology and later manage it. As such, the IS professional might develop code for business transaction processing systems, client/server systems or end-user support systems; they might implement such systems in languages as COBOL, C++, Visual Basic or JAVA. IS graduates also design and administer databases and data warehouses, analyze and implement enterprise-wide solutions to information problems and manage telecommunications efforts. Some IS graduates implement and manage corporate-wide Intranets. Finally, IS graduates can also provide project management skills, technical writing or training by melding their knowledge of information technology and business processes.

Employment Outlook for Entry-Level Positions

In both CS and IS, most entry-level positions begin with supporting existing technologies. In some organizations, there may be an overlap in the employment opportunities for the two majors. Both CS and IS majors enjoy high demand in the workplace at this time, and are expected to continue to be in demand in the future.

Computer Science

A CS major will find employment as a programmer working with state of the art hardware and software, using languages such as C and C++, and tools such as Oracle. They may be called upon to write new programs and develop applications individually or as part of a team.

Specifically, the CS graduates are most suited for:

- Applications software development
- business applications programming, including record keeping, transaction processing
- C/C++ and Visual Basic programming
- Client/server applications
- Scientific/engineering applications

Systems software development

- System internals, device drivers, I/O processors

Systems analysis/software engineering

- Software engineering, software integration

Systems programming

- Operating system configuration, performance measurement and analysis, capacity planning

Information center/Office automation

Database Management with SQL

EDP auditing/Quality assurance

Telecommunications planning/implementation

Security administration

Simulation and modeling

Disaster planning and recovery

Technical writing

Computer graphics

Human factors/interface design

Information Systems

IS majors typically find first employment as a programmer in either the private or public sector. They might be employed in a data processing environment supporting legacy applications or developing client/server applications. Also, they might be employed to support development and use of applications in a client department.

Specifically, the IS graduates are most suited for:

Applications software development

- business applications programming, including record keeping, and transaction processing
- COBOL, C++, Visual Basic and JAVA programming

Business applications development

- Information engineering and applications integration

Decision Support Systems design and support

Data warehousing and mining

Database management and administration

Intranet/Internet management

End-User computing support

Management of IS/IT operations

Hardware/Software sales representative

Information center/Office automation

EDP auditing/Quality assurance

Telecommunications planning and management

Disaster planning and recovery

Technical writing and training

Graphical User Interface (GUI) design

For more information, please view our Web pages:

Computer Science: http://www.cs.umsl.edu/

IS: http://mis.umsl.edu/