

Iowa State University Library
Collection Development Policy
Computer Science

I. General Purpose

The collection supports the faculty and students of the Department of Computer Science in their research and curriculum needs. In addition, there are other programs at Iowa State University whose students and faculty use this collection.

II. History

Computing activities began at Iowa State University in the 1930s with Professor John Vincent Atanasoff's work on designing and building the world's first automatic digital computer. This first digital computer was built by John Vincent Atanasoff and Clifford Berry at Iowa State University during 1937-42, and introduced the concepts of binary arithmetic, regenerative memory, and logic circuits.

The Department of Computer Science at Iowa State University was established in 1969, offering from the outset, B.S., M.S., and Ph.D. degrees.

III. Iowa State University Program

Computer science—the theory, representation, processing, and use of information—is fundamentally transforming every aspect of science, technology, and society. As a result, human endeavor is no longer constrained only by what is physically possible, but by what is computationally realizable. Being an informed citizen in this information age requires the ability to apply computational ways of thinking to design, analysis, experimentation, creative expression, and problem solving. Indeed, it is impossible to pursue scientific research in virtually any discipline without in the process doing computer science. Hence, every modern university, especially one emphasizing science and technology as Iowa State does, must have a strong Department of Computer Science.

The Department of Computer Science embraces its mission in research and graduate education (discovery), undergraduate education (learning) and outreach (engagement) in computer science. Excellent faculty, state-of-the-art research laboratories, a well-funded research program, opportunities provided by the Center for Bioinformatics and Biostatistics, DOE Ames Laboratory, Virtual Reality Applications Center, provide a stimulating academic environment that nurtures leading edge research and innovative education in Computer Science.

The Department currently has about 28 full time tenure track faculty and several adjunct faculty and instructors. The Department currently has about 100 resident Ph.D. students, about 50 M.S. students, and approximately 400 undergraduate majors.

The undergraduate program in Computer Science is designed to prepare students for positions as computer scientists with business, industry, or government, or for graduate study in computer science. The main objectives are to impart to students an understanding of the basics of computer science, to develop proficiency in the practice of computing, and to prepare them for continued professional development. The Computer Science Department offers an undergraduate minor.

The Department of Computer Science together with the Department of Electrical and Computer Engineering also offer a curriculum leading to an undergraduate degree in software engineering. The software engineering curriculum offers emphasis areas in software engineering principles, process, and practice.

The Department offers work for the degrees Master of Science and Doctor of Philosophy with a major in Computer Science. The Doctor of Philosophy degree may also be earned with computer science as a co-major with some other discipline. The Computer Science department also participates in interdepartmental Ph.D. programs in Bioinformatics and Computational Biology (BCB), Human-Computer Interaction (HCI), and Neuroscience, and an interdepartmental MS degree program in Information Assurance. Additionally, the department offers a graduate minor to students majoring in other departments.

The Department of Computer Science has strong research programs in several areas. Faculty and graduate students routinely collaborate on research projects that cross multiple areas of computer science. Departmental faculty are engaged in interdisciplinary projects that advance the theoretical foundations and applications of computer science, and contribute to enhancements in other disciplines (e.g., biological sciences, engineering).

IV. Subject Boundaries

This collection primarily includes materials classed in the Library of Congress call number ranges listed in Section XII below. The research interests of some departmental faculty can overlap with the focus of other ISU departments or programs. A conscious effort is made to purchase publications that support these other research efforts from other appropriate funds or to refer these candidates to the appropriate bibliographer. The major overlapping programs or subject areas are:

- Electrical and Computer Engineering
- Design
- General Engineering
- Industrial and Manufacturing Systems Engineering
- Library Science
- Management Information Systems
- Mathematics
- Mechanical Engineering
- Statistics

Representative textbooks are considered and selectively acquired, particularly those that are a later edition of titles owned by the ISU library and showing documented use. Proceedings are selectively acquired.

Books on the use of specific computer programs and related technical issues, although classified in the LC ranges in part XII, are not purchased with the fund for Computer Science unless they are of particular interest to computer science researchers. A work focusing on a computer program used predominantly by researchers in another discipline should be purchased with the fund for that discipline; works on programs that are very generally used, such as word processing or spreadsheet software, should be acquired through the General Engineering fund. Works on the technology of the Internet and on computer networking are also generally in the purview of the Electrical and Computer Engineering or General Engineering collections.

V. General Collection Guidelines

A. Linguistic

English is the primary collection language.

B. Geographical Areas

The content of the publication is the basis for considering its selection rather than its geographical origin. Works which emphasize the law, regulations or standards that apply in the United States are collected more comprehensively than those emphasizing the law, regulations or standards specific to any other country or group of countries not including the United States.

C. Types of Materials Collected

Monographs and serials form the core of the collections that support this program. Significant national and international conference proceedings are also selectively acquired.

D. Format of Materials Collected

Online versions of materials in this collection are preferred as long as their quality, price, archiving options and licensing conditions meet the Library's needs. No format is excluded except in cases when special equipment not owned by the Library would be needed to use the work in question.

VI. Specific Collection Guidelines

In general, a conscious effort is made to acquire the monographic and serial literature that supports the broad and specific research interest of departmental faculty.

VII. Detailed Subject Areas

The following are general areas in which current faculty have research interests:

- Algorithms
- Artificial Intelligence, Intelligent Agents and Multiagent Systems
- Bioinformatics and Computational Biology
- Complex Adaptive Systems
- Computational Complexity
- Computational Geometry
- Computational Learning Theory
- Database Systems
- Distributed Computing and Networks
- Human Computer Interaction
- Information Integration and Information Retrieval
- Information Security
- Machine Learning and Data Mining
- Multi-Agent Systems
- Multimedia Systems
- Neural Networks and Evolutionary Computation
- Parallel Computing
- Programming Languages and Compilers
- Robotics
- Semantic Web
- Services Computing
- Software Engineering
- Software Systems
- Theory of Computation

Research laboratories and groups within the Department:

- Artificial Intelligence Research Laboratory
- Computational Biology Laboratory
- Innovative Networking and Systems Group
- Java Modeling Language
- Laboratory for Information System Technology
- Laboratory for Software Design
- Laboratory for Software Safety
- MultiJava Group
- Multimedia Research Laboratory
- Software Engineering Research Group

The Department of Computer Science is involved with the following multidisciplinary research and education efforts:

- Bioinformatics and Computational Biology Graduate Program
- Complex Adaptive Systems Graduate Minor
- Center for Computational Intelligence, Learning, and Discovery
- Human-Computer Interaction
- Information Assurance Center
- Neuroscience Graduate Program
- Scalable Computing Laboratory
- Virtual Reality Applications Center

VIII. Other Resources Available

Databases: ACM Digital Library; CiteSeer; Compendex ; Computer and Information Systems Abstracts; Computer Science Index; IEEE Xplore (IEL); Internet and Personal Computing Abstracts; Biosis Previews; PubMed; arXiv.org E-print Archive; ScienceDirect.

Among the factors that influence the selection of monographic works are state, regional, and national availability. Availability is determined by reviewing the holdings of candidate publications by our state and regional interlibrary loan partners in the OCLC WorldCat database.

IX. Cross-references to Collection Policies

The following subject areas, programs or collection development funds overlap part of the research focus of the Computer Science department:

- Electrical and Computer Engineering
- Design
- General Engineering
- Industrial and Manufacturing Systems Engineering
- Library Science
- Management Information Systems
- Mathematics
- Mechanical Engineering

X. Creation date

2001 (Gerry McKiernan)

XI. Revision History

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XII. LC Ranges

Q295-390
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T385

XIII. Bibliographer name

Kristine K. Stacy-Bates