LIBRARY OF CONGRESS COLLECTIONS POLICY STATEMENTS

Computer Science, Telecommunication, and Artificial Intelligence (Classes QA75-76.9, TK5101-TK6720, TK7800-TK7895, and Q334-Q390)

Contents

I. Scope

This Collections Policy Statement covers a major subset of the subclass QA – QA75-QA76.9, which deals with the general theory and application of computers as well as data processing and computer systems. Other works relating to computer technology are classified in TK5101-TK6720, which encompasses telecommunication technologies (including telegraph, telephone, radio, radar, television and cable networks), TK7885-TK7895, which includes works on the design of computer hardware and circuitry as well as hardware and electronics, and Q334-Q390, which includes works on artificial intelligence and information theory. The advanced and interdisciplinary nature of the research connects computer science to such diverse subjects as analysis of algorithms, artificial intelligence, combinatorial optimization, computational biology, computational complexity, computational geometry, computer graphics, computer vision, computer-aided verification, concurrent data structures and architectures, constraint programming, database systems, agents and e-commerce, graph drawing, neural networks, software engineering, and static analysis, nanotechnology, scientific visualization and scientific computing, security and cryptography, theory of computation, theory of networking, internet computing, mobile and ubiquitous computing, randomized algorithms and probabilistic analysis, robotics, user interfaces and virtual reality. Works on applications of computers and artificial intelligence can also be found under their representative subjects (e.g. medicine, chemistry, military sciences).

The core group of archival collections in the history of computer science/data processing (along with the Library of Congress) include the Charles Babbage Institute, the Computer Museum, the Hagley Museum and Library, the National Archives and Records Administration, the Smithsonian Institution, and the Stanford University Libraries. IBM, AT&T, Texas Instruments, etc., have corporate archives. James W. Cortada's *Archives of Data-Processing History: a Guide to Major U.S. Collections* (New York, Greenwood Press, 1990) provides additional collections information as does *ArchiveGrid* (OCLC).

II. Diverse and Inclusive Collecting Statement

As the nation's de facto national library, the Library of Congress strives to build an expansive, yet selective, collection that records the creativity of the United States and is reflective of the nation's diversity and complexity. The Library's mandate is to have collections that are inclusive and representative of a diversity of creators and ideas. A priority includes acquiring material of underrepresented perspectives and voices in the Library's collections to ensure diverse authorship, points of view, cultural identities, and other historical or cultural factors. The Library also seeks to build a research collection that comprises a globally representative sample of international materials that are diverse in voice and perspective, relative to their places of origin, further supporting the Library's mission to sustain and preserve a universal collection of knowledge and creativity for Congress and future generations.

Diverse collecting is mentioned within many of the Library's Collections Policy Statements. In addition, the Library has adopted several specific collection policies in an effort to ensure it is building an inclusive and representative collection. For more information, see the Library's Collections Policy Statements on *Ethnic Materials*, *LGBTQIA+ Studies*, *Women's and Gender Studies*, *Independently Published and Self-Published Textual Materials*, and *Countries and Regions with Acquisitions Challenges*.

III. Research Strengths

A. General

The major strength of the Library's computer sciences and telecommunications collections lies in its breadth and depth in both English and non-English language materials, and in its current collecting intensity, primarily at the research level.

The Library has roughly ninety percent of the publications of the major professional associations in the field of computer science and artificial intelligence: the Association for Computing Machinery (ACM) which has a mathematical or theoretical orientation, the Society for Industrial and Applied Mathematics (SIAM) which has an engineering or applications orientation, the Institute for Electrical and Electronics Engineers (IEEE), and the American Association for Artificial Intelligence (AAAI).

The Library's Reading Rooms, in an effort to improve currency and discoverability, provide access not only to abstracting and indexing services in electronic format but also to full text databases. Databases of interest to the computer science researcher include:

- *INSPEC* and *INSPEC Archive - Science Abstracts 1898-1968*
- *ACM Digital Library* from the Association for Computing Machinery
- *ProQuest SciTech Premium Collection* (including *ProQuest Computer Science Database*)

Other electronic resources that provide support for the interdisciplinary areas of computer science include

- *Engineering Village (Compendex),*
- *IEEE Conference Proceedings Archive,*

- *IEEE XPlore Digital Library,*
- *National Technical Reports Library,*
- *Applied Science and Technology,* and
- *ProQuest Dissertations & Theses Global*.

B. Areas of Distinction

Even though the history of computers, data processing and technology is still fairly brief, the Library has a significant collection of materials in its Manuscript Collections including the papers of Herman Hollerith (inventor of punch card system for mechanical tabulation), John von Neumann (pioneer in game theory), Vannevar Bush (analog computing), Claude Elwood Shannon ("father" of information theory) and John W. Backus (FORTRAN). These collections are complemented by several seminal papers in the field of information theory that were first published in technical report form and are therefore part of the Library's collections. The growth of the telecommunication industry and its history can be documented through the papers of Samuel F. B. Morse, the Bell Family papers, Lee De Forest papers (radio/sound recording), and Harold Sunde (engineer, RCA). The Library's website also provides digital collections including the Samuel F. B. Morse Papers at the Library of Congress and the Alexander Graham Bell Family Papers at the Library of Congress.

The Library collects domestic technical reports through the National Technical Information Service. Older reports emphasizing computer science theory are of interest. While pre-prints are a major communications medium in the fields of computer science, in accordance with the Library's collections policy on pre-prints, they are excluded from the collections.

IV. Collecting Policy

The overall context for this policy is the Library's position as the *de facto* national library of the United States. The Library acquires materials in the fields of computer science regardless of format and language, e.g., print materials, microforms, and electronic, and from a variety of sources, including copyright deposits, Cataloging in Publication (CIP), the overseas offices, purchase, and gift and exchange. Computer science materials are significant regardless of format and language, and we collect broadly to ensure full representation of the literature.

Conference proceedings are currently collected extensively. However, significant portions of computer science proceedings are migrating to electronic only (CD-ROM, electronic or digital mediums, or participant only access). Materials that do come into the collection in electronic format (such as CD-ROM or DVD) or with mixed print/electronic material are in the custody of the Microform and Electronic Resources Center or the Automation, Collections Support and Technical Reports Section.

Although some of the mechanics associated with the Library's acquisition, storage and display of born-digital materials and e-journals have not yet been resolved, we strive to acquire and capture electronic materials in the fields of computer science, telecommunication and artificial intelligence as they continue to proliferate.

Materials in the fields of computer science, telecommunication and artificial intelligence are collected

primarily at research and comprehensive levels. The Library holds an extensive collection of dissertations issued by ProQuest (formerly UMI) and strives to permanently acquire doctoral dissertations accepted by universities in the United States; non-U.S. dissertations are acquired selectively. Related Library policies include Best Edition of Published Copyright Works for the Collections of the Library of Congress, Supplementary Guidelines for *Electronic Resources* and *Web Archiving*, and Collections Policy Statements on *Library and Information Science, and Bibliography*; *Dissertations and Theses*; *Societies and Associations*; and *Technical Reports, Working Papers and Preprints*.

A significant number of requests come into the Library of Congress for older versions of computer software or their accompanying manuals. However current Library of Congress practice is to not select software that is designed exclusively for servers or mainframes, software that is designed for onetime use (demo discs), software packages that are not "stand-alones," or software that is not compatible with IBM type PCs. Significantly, even more so than print versions, it is difficult to track the many versions and releases of software that may be published. When usage of software depends on the availability of an earlier version (updates to a system), a fee, or a restriction imposed by registration, then the software title is generally not selected. The Library also does not select software or hardware manuals except those released by mainstream publishers.

V. Best Editions and Preferred Formats

For guidance regarding best editions for material acquired via the Copyright Office, see: http://copyright.gov/circs/circ07b.pdf.

For guidance regarding recommended formats for material acquired via all other means; e.g., purchase, exchange, gift and transfer, see: http://www.loc.gov/preservation/resources/rfs.

For information regarding electronic resources, open digital content, web archiving, and data sets, see the following Supplementary Guidelines: http://www.loc.gov/acq/devpol/electronicresources.pdf, https://www.loc.gov/acq/devpol/opencontent.pdf, http://www.loc.gov/acq/devpol/webarchive.pdf, and https://www.loc.gov/acq/devpol/datasets.pdf.

VI. Acquisition Sources

Whenever possible the Library attempts to acquire materials through non-purchase means, such as copyright, exchange, gift, or the Cataloging in Publication program. The Library of Congress collections are heavily dependent upon materials received through the copyright deposit provisions of U.S. copyright law (17 USC section 407 & 17 USC section 408). For copyright demand, the U.S. regulations allow for the Library to receive analog and some digital materials. When items are offered in both formats the Library's default is normally the Best Edition print version, unless the publisher has arranged a special relief agreement with the Copyright Office. For materials not available to the Library through copyright deposit, or other non-purchase means, the Library acquires materials through purchase. Purchase is used predominately for non-U.S. publications that are not widely available within the United States. The Library utilizes an array of traditional methods of library acquisition (firm orders, subscriptions, and approval plans) with vendors located in different areas of the world. In addition, the

Library uses its six Overseas Operations Offices to broaden its acquisitions opportunities outside the United States.

VII. Collecting Levels

Meeting the Library's Diverse and Inclusive Collecting Statement (see Section II) and the collecting levels outlined below requires continual evaluation of the publishing landscape, sources of expression, current events, and socio-cultural trends to thus maintain effective collecting policies and acquisitions methods. Changes in publishing or in the creation of materials covered by this policy statement may necessitate collecting efforts not explicitly referenced here. Such efforts will be handled on a case-by-case basis while the Library evaluates the need for policy statement updates.

For explanation of the Collecting Levels used by the Library, see https://www.loc.gov/acq/devpol/cpc.html.

Computer Science; Telecommunication; and Artificial Intelligence

LC Classification	Subject	U.S. Levels	Non-U.S. Levels	Comments
QA75-QA76	Computer science	4	4	
QA76.38	Hybrid computers	4	4	
QA76.4	Analog computers	4	4	
QA76.5	Digital computers	4	4	Includes: microcomputers; minicomputers; personal computers
QA76.6	Programming	4	4	
QA76.7	Programming languages	4	4	
QA76.75	Software	4	4	
QA76.76	Operating systems	4	4	
QA76.8	Computer systems	4	4	Includes: fault-tolerant computing; interactive systems; virtual computer systems; distributed processing

LC Classification	Subject	U.S. Levels	Non-U.S. Levels	Comments
QA76.9	Other topics A-Z: algorithms, computers and civilization, computers and family	4	4	Includes: database management; computer architecture; computer arithmetic; computers and civilization; economic and psychological aspects; computer literacy
QA76.9	Computers and children	5	4	
QA76.9	Computer simulation	4	4	
QA76.9	Computer standards, codes, specifications	5	5	International standards

The following appropriate subclasses of Q are also in *Science - General* and are repeated here for convenience in identifying collection levels for Computer Science.

LC Classification	Subject	U.S. Levels	Non-U.S. Levels	Comments
Q334-342	Artificial intelligence	5	4	
Q350-390	Information theory	5	4	

Telecommunication; Electronics--Applications of Electronics

LC Classification	Subject	U.S. Levels	Non-U.S. Levels	Comments
TK5101-TK6720	Telecommunication (telegraph, telephone, radio, radar, television)	4	4	
TK7880-TK7895	Electronics--applications of electronics	4	4	

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