UNT EST. 1890

UNIVERSITY LIBRARIES

MEMO

To: **Elizabeth Vogt, Assistant Vice President, Accreditation & Institutional Effectiveness**

From: **Karen Harker, Head of Collection Assessment**

CC: **Diane Bruxvoort, Dean of Libraries**

Sian Brannon, Associate Dean of Collection Management

Chassidy Miles, Subject Librarian for the Department of Computer Science and Engineering

Subject: **Computer Science and Computer Engineering Academic Program Review**

Date: **July 28, 2023**

EXECUTIVE SUMMARY

The UNT Libraries Collection Assessment Department has reviewed the resources and materials in subjects which are relevant to the curricula of the Computer Science and Computer Engineering programs. While not comprehensive, this review provides insights into the needs of students and faculty who teach and the resources that the UNT Libraries provides to meet these needs. Recommendations for further review are provided, as well.

Our review indicated that **the UNT Libraries' collections appear to support the curricular needs of the Computer Science and Computer Engineering programs**. Subjects highlighted in this collection include:

Strong Subjects	Adequately Meets Needs	Needing Attention
Hypertext Systems (*QA76.76.H94)* Architecture *(QA76.9.A73)* Computer Science - History & Biography *(QA76.17-76.26)* Virtual Computer Systems *(QA76.9.V5)*	Computer Network Architecture *(TK5105.52)* Programming Languages *(QA76.7-76.73)* Software Engineering *(QA76.758)* Mobile, semantic, ubiquitous, and wearable computing. *(QA76.59)* Parallel Processing and Computers *(QA76.58)* Self-organizing systems. Machine Learning. Pattern Recognition, Perceptron Theory *(Q325-327)* Access Control, Security *(QA76.9.A25)* Blockchain *(QA76.9.B56)* Data Structures *(QA76.9.D35)*	Computer Science - Study & Teaching, Research *(QA76.27-76.36)* Human-Computer Interaction *(QA76.9.H85)* Big Data *(QA76.9.B45)* Data Mining *(QA76.9.D343)* Computer Games. Electronic Games. Video Games. *(GV1469.16-.37)* Artificial Intelligence *(Q334-342)* System Design *(QA76.9.S88)* Neural Computers. Neural Networks. *(QA76.87)*

ANALYSIS

Measures of Holdings	Computer Science and Engineering Collection	All Titles	All Collections *(Median)*
All titles	72,062	3,668,646	36,745
Books *(% of collection)*	90%	69%	85%
eBooks *(% of all books)*	52%	54%	27%
Journals *(% of collection)*	7%	8%	7%
Online journals *(% of all journals)*	72%	84%	70%
Open Access *(% of online journals)*	15%	30%	28%
Embargoed *(% of online journals)*	5%	3%	10%
Audiovisual *(% of collection)*	1%	14%	3%
Published since 2000 *(% of collection)*	63%	35%	38%

* Of all subject-based collections

The Computer Science and Engineering collection is nearly double the size of the typical subject-based collection with 72,062 total titles, likely due to the high interest in the subject, as well as the interdisciplinary applications of the field. It is largely comprised of monographs, of which more than half are ebooks. The collection is newer than most subject areas with 63% of titles having been published since the year 2000. Journals comprise 7% of the titles in the collection, and the vast majority are available online. While there are nearly half the portion of open access journals as the typical collection, there are also fewer embargoed titles, meaning that a larger portion of paywalled but recent articles are accessible to those studying Computer Science and Engineering collection.

Measures of Quality	Computer Science and Engineering Collection	All Titles	All Collections *(Median)*
Choice's OAT* books provided *(% of OAT)*	57.0%	67.9%	63.0%
JCR journals provided** *(% of JCR)*	75.8%	79.9%	82.5%
Interlibrary Loan requests *(% of all requests)*	0.7%	--	0.7%
Ratio of Borrowings to Holdings *(% of Holdings / % of ILL requests)*	0.57	--	1.08
Book Requests *(% of collection requests for books)*	50%	47%	48.5%

* *Choice's* Outstanding Academic Titles (OAT) are those with particularly strong reviews.

** Journal Citation Report (JCR) journals are journals that have high bibliometric scores.

The UNT Libraries provides access to a lower rate of *Choice's* **Outstanding Academic Titles (OAT)** titles than most other collections. It should be noted, however, that the percentage of OAT titles held is higher for the most recent decades than for items published before the year 2000. This is a positive indicator for the quality of the Computer Science and Engineering collection. Our holdings of journals show a similar pattern with our holdings of titles indexed in the **Journals Citation Report (JCR)**. Overall, UNT Libraries provides access to a smaller proportion of titles in the subjects supporting the Computer Science and Computer Engineering programs, but they remain

strong in most subjects of *primary* relevance, with the exception of mathematics and applied mathematics. **Interlibrary loan (ILL)** requests are trending downwards since 2016, both for requests for computer science and engineering items and for requests made by department members. While half of the overall percentage of requests made since 2016 have been for books (versus articles), there has been a distinct preference in recent years for articles.

Peer Group		Distinct	Gap	Shared	Grand Total
National Peers (10)	Held by UNT and Peers	**8%**	**69%**	**23%**	**100%**
	Held by Majority of Peers	**N/A**	**35%**	**65%**	**100%**
Texas Peers (7)	Held by UNT and Peers	**8%**	**65%**	**27%**	**100%**
	Held by Majority of Peers	**N/A**	**25%**	**75%**	**100%**

Comparisons of holdings with peer libraries is another measure of quality (see Appendix). A relatively large proportion of collective titles which are **unique** is important for supporting a **research** program, while a relatively larger proportion of titles which are **shared** amongst UNT and at least one other peer is important for supporting a program. Compared with our peer institutions, the UNT Libraries provides a collection that would appear to **support a master's level professional program**. There is smaller portion of collective titles which are unique to UNT and a moderate proportion of shared titles. Of titles shared by a majority of the Texas Peers, UNT Libraries provides 75%, indicating a strong "core" collection. There is a larger portion of shared books than journals, and the general science and mathematics/computer science ranges have some of the strongest core collections.

Measures of Usage	Computer Science and Engineering Collection	All Collections *(Median)*
Circulation to Holdings ratio *(% of circs / % of holdings)*	1.1	0.8
% of all circulations	*0.4%*	*0.2%*
% of total holdings	*0.4%*	*0.2%*
Online books used *(% of collection)*	36.0%	31.3%
Depth of online book usage *(# uses / title used)*	54.7	61.1
Breadth of online book usage *(# uses / total titles)*	19.7	19.4
Journal usage ratio *(% of all uses/% of all titles)*	1.2	2.09
% of all journal usage	*1.0%*	*0.8%*
% of all active titles	*0.8%*	*0.3%*

The **circulation** of physical materials has fully recovered from the COVID-19 dip, showing an upwards trend, particularly for graduate students. **Journal** usage is increasing over time for the Computer Science and Engineering collection although it is still lower than expected for the number of titles available. **Online book** usage, on the other hand, has been decreasing since fall of 2019. However, there are a larger portion of titles that have been used at least once with 36% of titles having seen at least one use.

KEY RESOURCES

Databases

- ACM Digital Library
- SciTech Premium Collection (via ProQuest)
- Computer Source (via EBSCOhost)

Journals

- *Procedia Computer Science*
- *Computers & Security*
- *Computer*

Digital Collections

- UNT Data Repository

RECOMMENDATIONS

Analyses of subjects were based on holdings, usage, interlibrary loan requests, and overlap with *Choice's* OAT. The Collection Assessment Department recommends continuing standard collection development methods, with stronger focus on neural networking, data mining, big data, artificial intelligence, interactive media, and human-computer interaction. A targeted enhancement of computer science and engineering materials is also planned for this coming fiscal year.

APPENDIX

PEER INSTITUTIONS

The National peers were selected from *The Chronicle of Higher Education*'s Who does your college think its peers are?. The Texas peers were selected based largely on data from the UNT Data Analysis and Institutional Research (DAIR) Insight's *Admitted Yet Enrolled Elsewhere* dashboard.

National Peers	**Texas Peers**
Arizona State University	Texas A&M University
Florida International University	Texas State University
Florida State University	Texas Tech University
Georgia State University	University of Houston
Indiana University - Bloomington	UT Arlington
SUNY at Albany	UT Dallas
University of Cincinnati	UT San Antonio
University of Central Florida	
University of California - Santa Barbara	
University of Oklahoma - Norman	