Promoting Partnership & Interdisciplinarity for LIS Education

EST. 1890

MIRS
MULTI-DISCIPLINARY INFORMATION RESEARCH SYMPOSIUM

April 27, 2019
University of North Texas
Union

UNT®

Outline

- **Daniel Alemneh**– Head, Digital Curation Unit of the UNT Libraries and also Adjunct Professor at COI, will provide general background and moderate the discussions of this panel.

- **Oksana Zavalina –** Associate Professor, Department of Information Science, COI, will discuss the evolving academic programs and professional events, as well as research projects that foster synergies between LIS and other related disciplines.

- **Alexis Palmer –** Assistant Professor, Department of Linguistics, COI, will discuss the potential of language technology, the role of computational linguistics, and strategies for adapting current machine learning methods to handle more languages, and why every graduate student should learn a bit of programming.

- **Rose Baker** – Assistant Professor, Department of Learning Technologies, COI, will present the thinking behind the implementation of STEM education and how it is preparing students to address the complex and wicked problems of the future.

- **Mark Phillips,** Associate Dean for UNT Digital Libraries, will discuss UNT Libraries' experience in collaborating with COI colleagues and providing a real world environment for COI students.

Introduction

- The LIS schools evolve continuously adding new programs to advance the information field, and prepare students to meet the demands of the 21st Century.

- Professional organizations have provided forums in which information scholars, researchers, educators, and professionals could share their insights on the ever-expanding horizon in the field of library and information science.

- This panel aims to serve as another platform where such conversations continue to take place at a local level.

Emerging Trends

- **Various studies and conferences highlighted:**

  - The growing number of non-traditional LIS jobs.

    - Data/Information/Knowledge managements

  - The gaps between job requirements and the current LIS programs.

    - Interdisciplinary Collaboration in Curriculum Developments

iSchools

EST.1890

UNT®

Conferences on LIS

- **ALISE-2019:**
  - The Conference theme is *Exploring Learning in a Global Information Context*.
  - Hope to reiterate that education for LIS is truly a global enterprise.
  - Intended to encourage engagement across the globe from those in LIS, as well as those in cognate fields such as archives, knowledge management, information management, media studies, informatics, data science, computer science, communication, etc.

"Exploring learning in a global information context"

Linking, Informing, and Sharing

2019 International Conference on Library and Information Science (ICLIS) hopes to gather the intellectual minds of researchers, educators, practitioners, and students in the Library and Information Science field, to promote collaboration, action, and innovation in the era of globalization and digitalization. The Conference focuses on the main theme of "Linking, Informing, and Sharing" at four inter-related building blocks: sustainability, technology, society, and scholarly communication. The conference will be held in Taipei, Taiwan, on July 11-13, 2019. The Graduate Institute of Library and Information Studies, School of Learning Informatics, College of Education, National Taiwan Normal University will organize 2019 International Conference on Library and Information Science (2019-ICLIS) in partnership with Library Association of the Republic of China (LAROC), National Central Library, and International Library and Information Science Society (I-LISS) (formerly LISSASPAC), and in association with KISTI-Keimyung University, Chonbuk National University (Graduate School of Archives and Records Management & Institute of Culture Convergence Archiving), to bring diversity, creativity, and synergy into one venue.

Target Participants

Faculty, researchers, professionals and graduate students of LIS schools, as well as I-LISS member institutions, and practitioners in the LIS field.

Organizers

Graduate Institute of Library and Information Studies, National Taiwan Normal University

Co-Organizers

International Library and Information Science Society (I-LISS)

Library Association of the Republic of China (LAROC)

Institute of Research Excellence In Learning Sciences, National Taiwan Normal University

National Central Library

Chonbuk National University

Korea Institute of Science and Technology Information (KISTI) - Keimyung University

Dr. Oksana Zavalina – Associate Professor, Department of Information Science, College of Information.

The curriculum is the best barometer to reflect the changes and challenges LIS field face today. Dr. Zavalina will discuss the evolving academic programs and professional events, as well as research projects that foster synergies between library and information science and other related disciplines (data science, linguistics, etc.) to address these challenges. She will also talk about and collaborations between LIS educators and practitioners in preparing modern LIS professionals through practice-based learning, and discuss some research areas enabled by the availability of data (including metadata) collected as part of this collaboration.

UNT®

Interdisciplinary Nature of Information Science

Information science

From Wikipedia, the free encyclopedia

Not to be confused with information theory, information engineering, data science, library science, information systems (discipline), or informatics.

Information science is a field primarily concerned with the analysis, collection, classification, manipulation, storage, retrieval, movement, dissemination, and protection of information.[1] Practitioners within and outside the field study application and usage of knowledge in organizations along with the interaction between people, organizations, and any existing information systems with the aim of creating, replacing, improving, or understanding information systems.

Historically, information science is associated with computer science, psychology, and technology.[2] However, information science also incorporates aspects of diverse fields such as archival science, cognitive science, commerce, law, linguistics, museology, management, mathematics, philosophy, public policy, and social sciences.
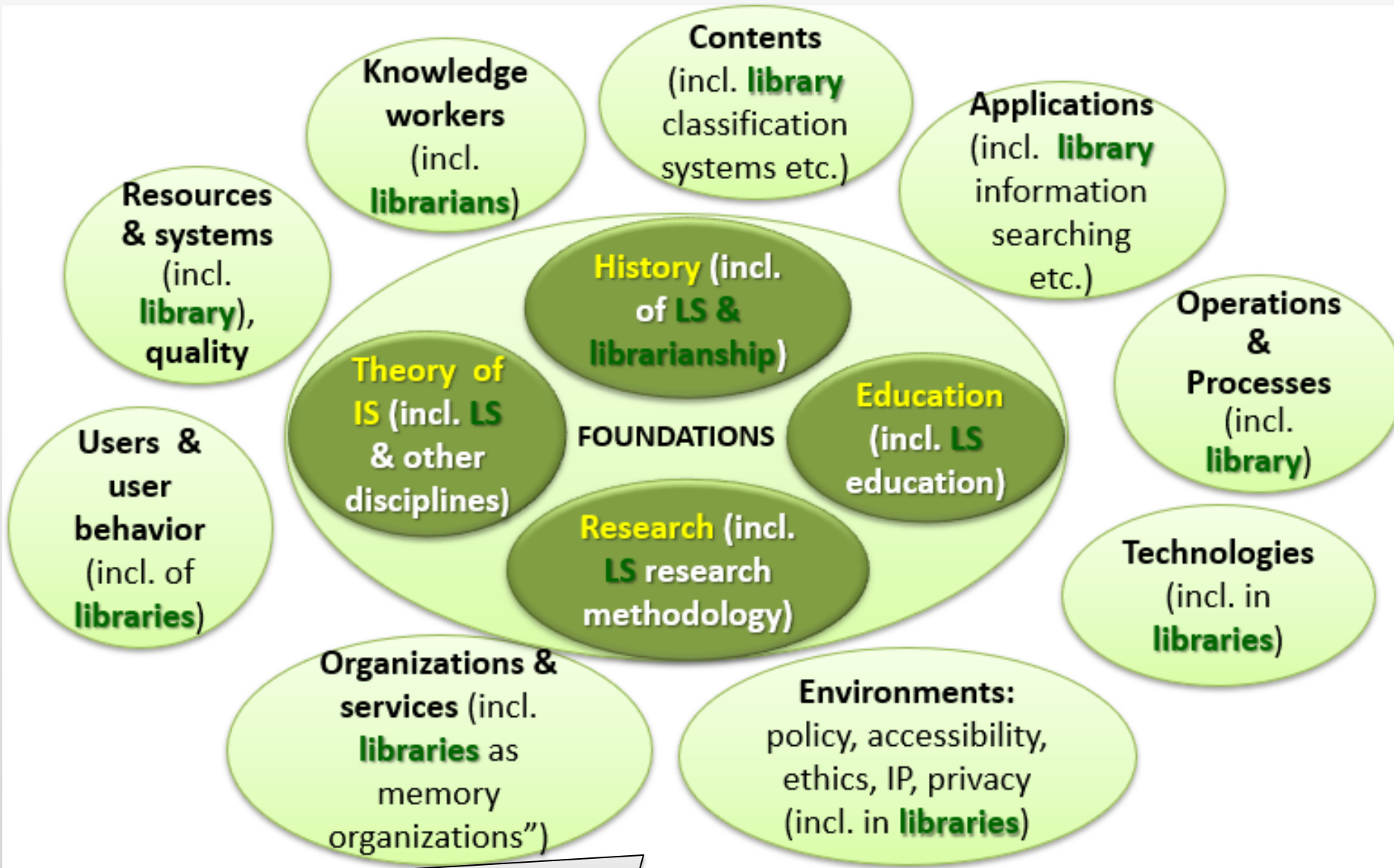
Contents [hide]

1 Foundations

   1.1 Scope and approach
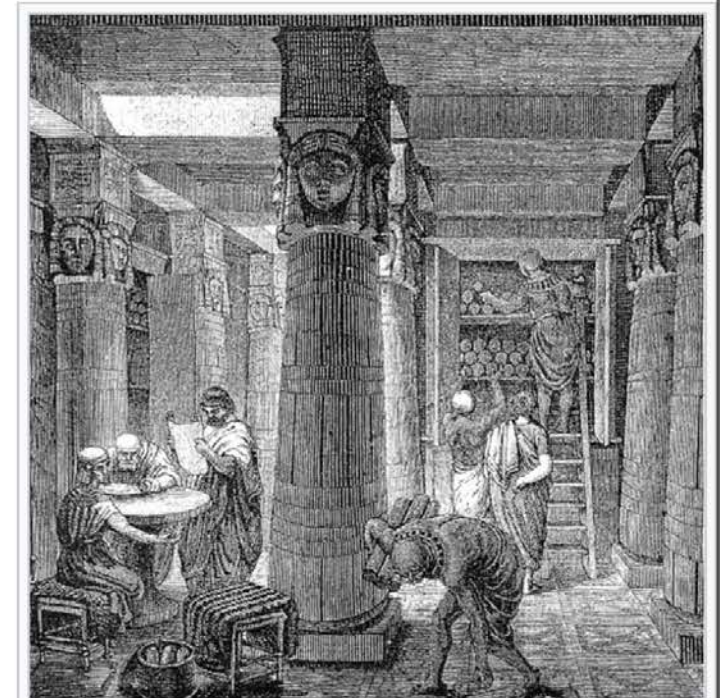
The Library of Alexandria, an early form of information storage and retrieval.

WIKIPEDIA
The Free Encyclopedia

Main page
Contents
Featured content
Current events
Random article
Donate to Wikipedia
Wikipedia store

Interaction

Help
About Wikipedia
Community portal
Recent changes
Contact page

Tools

What links here
Related changes
Upload file
Special pages

Structure of Information Science (IS)
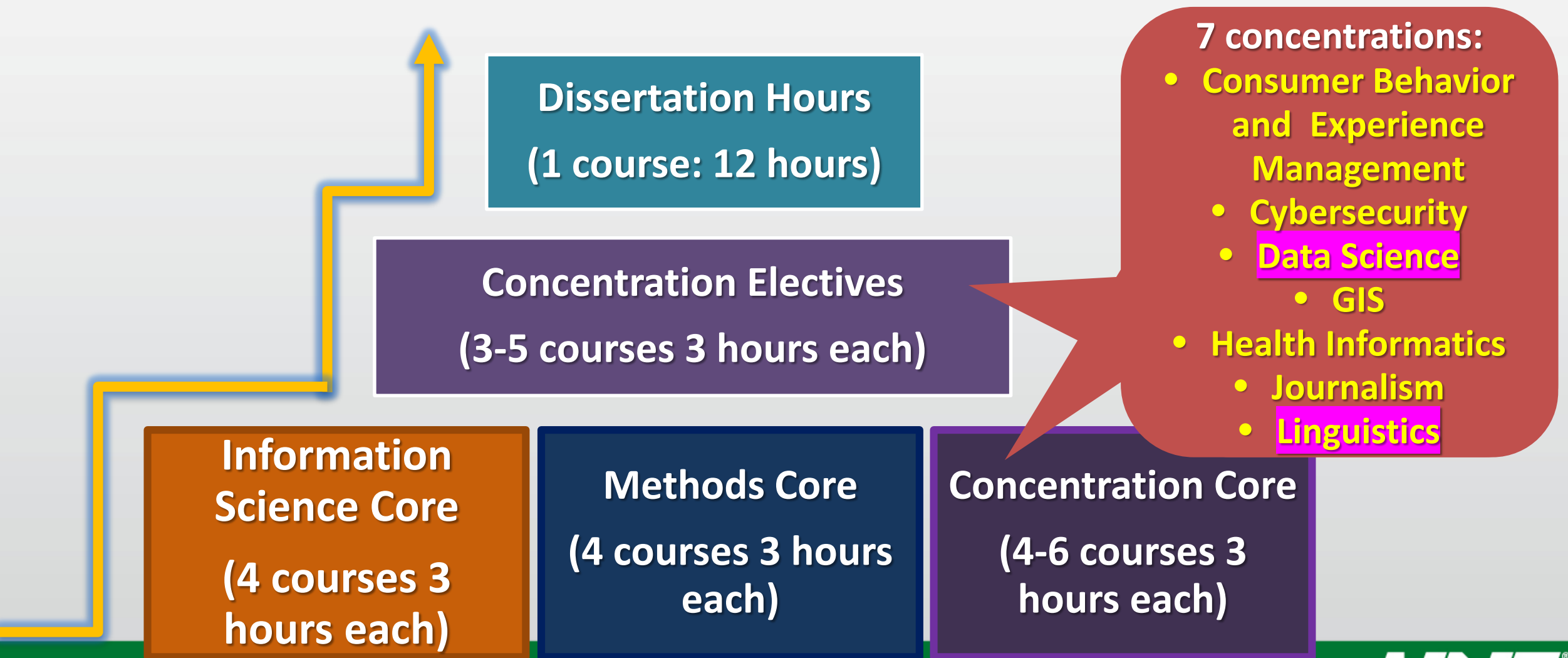
Data Science Closely Related to IS

Data science

From Wikipedia, the free encyclopedia

Not to be confused with information science.

Data science is a multi-disciplinary field that uses scientific methods, processes, algorithms and systems to extract knowledge and insights from structured and unstructured data.[1][2] Data science is the same concept as data mining and big data: "use the most powerful hardware, the most powerful programming systems, and the most efficient algorithms to solve problems".[3]

Data science is a "concept to unify statistics, data analysis, machine learning and their related methods" in order to "understand and analyze actual phenomena" with data.[4] It employs techniques and theories drawn from many fields within the context of mathematics, statistics, computer science, and information science. Turing award winner Jim Gray imagined data science as a "fourth paradigm" of science (empirical, theoretical, computational and now data-driven) and asserted that "everything about science is changing because of the impact of information technology" and the data deluge.[5][6]

In 2012, when Harvard Business Review called it "The Sexiest Job of the 21st Century",[7] the term "data science" became a buzzword. It is now often used interchangeably with earlier concepts like business analytics,[8] business

IS & DS Education & Research: National Collaboration

Examples of most recent professional events fostering interdisciplinary collaboration: LIS & DS

- ASIS&T 2018 workshop *Big Metadata Analytics*

- JCDL 2019 workshop *Organizing Information, Data & Knowledge in the Big Data Environment*

Collaborative project example:
COI-LING + COI-IS + UNT Libraries

Dr. Shobhana Chelliah
Mark Phillips
Mary Burke
Dr. Oksana Zavalina

IMLS-funded planning project to support information organization for Linguistics community (2018-2019)

EST.1890

UNT

LG-87-18-0197
IMLS-funded planning project to support information organization for Linguistics community (2018-2019)

Provide background information and preparation for future collaborative research & implementation project

to extend the usefulness of existing language archives through a user-centered design of systems incorporating the efficient Information Organization methods & techniques for providing digital access to language data collections at scale.

UNT®

IMLS-funded planning project to support information organization for Linguistics community (2018-2019)

GOAL: Identify the gaps

IO methods and techniques currently offered in existing language data archives

IO needs of actual and potential language data archive users.

EST.1890

UNT®

Completed Stage 1: Explorative Content Analysis of Language Archives

Focus on information organization:

1. Item-level and – if applicable – collection-level metadata scheme(s)
2. Extent to which metadata records are displayed to end users
3. Availability of metadata creation guidelines and/or documentation of a metadata application profile used in archive
4. Authority control (use of data value standards)
5. Options for advanced search against indexed metadata fields
6. Availability of harvesting/download of metadata records
7. Semantic Web applications (e.g., availability of metadata as Linked Data)
8. Availability of adaptive and personalized search, social tagging functionality etc.

EST.1890

UNT®

Dr. Palmer has been an active researcher and educator in linguistics, computational linguistics, and natural language processing for the last 15 years, with a particular focus on developing language technologies for less-studied, lower-resourced, and endangered languages. Dr. Palmer will discuss some of the following topics: working in an inherently interdisciplinary field, with all of its challenges and rewards; the potential of language technology to contribute to improving access to information and education for previously-marginalized populations; reasons why language technology has so far been dominated by research on a small number of the world's many languages; strategies for adapting current machine learning methods to handle more languages, more domains, and more styles of text; the role of computational linguistics in digital humanities; and why every graduate student should learn a bit of programming.

Dr. Alexis Palmer – Assistant Professor, Department of Linguistics, College of Information.

EST.1890

UNT®

Computational Linguistics & Language Technologies

- **Computational Linguistics (CL)**
  - Sometimes known as Natural Language Processing (NLP)
  - From one direction: intelligent machines with language capabilities
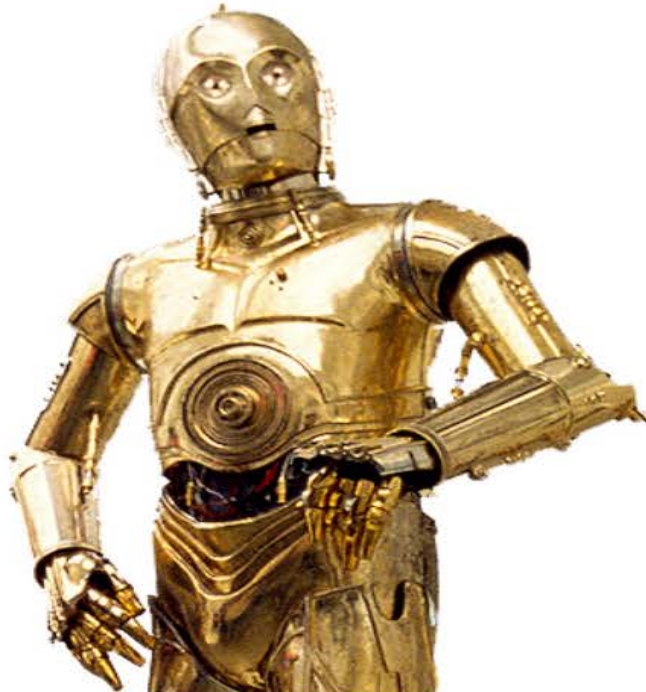
Computational Linguistics & Language Technologies

- **Computational Linguistics (CL)**
  - Sometimes known as Natural Language Processing (NLP)
  - From one direction: build intelligent machines with language capabilities
  - From another: use computational methods to better understand the nature of human language
  - Inherently interdisciplinary
    - Linguistics
    - Computer Science
    - Information Science
    - Cognitive Science
    - Others (Psychology, Human-Computer Interaction, …)

Computational Linguistics & Language Technologies

- **Language Technologies**
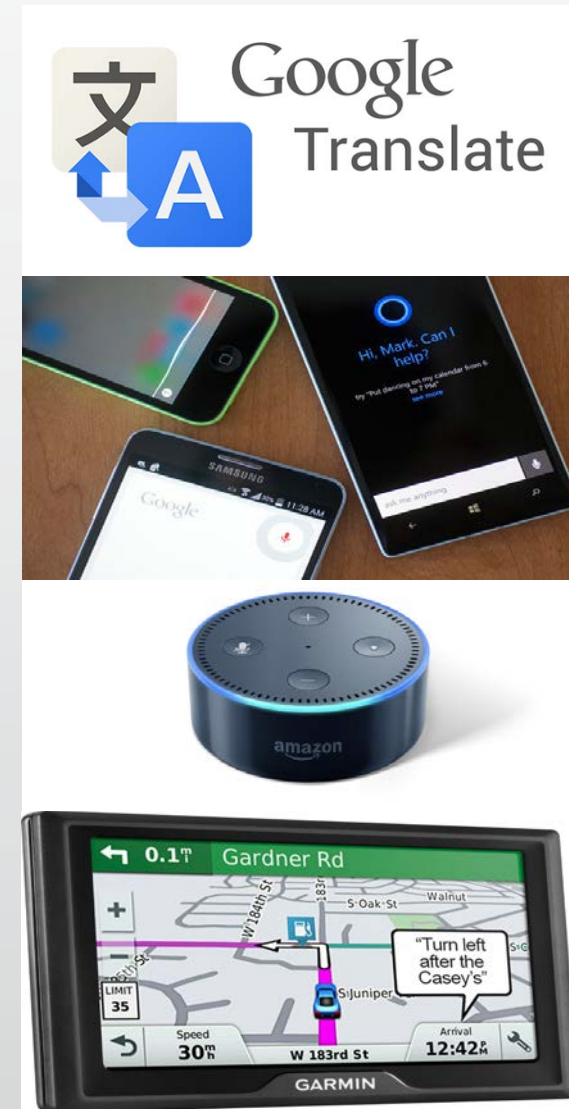 - Systems that perform language-related tasks
  - Some examples: keyboard input programs, machine translation, predictive text, text-to-speech, voice recognition, part-of-speech labeling, syntactic analysis, …

  - Applications using these systems: dialogue systems, digital assistants, search engines, health information systems, learning platforms, …
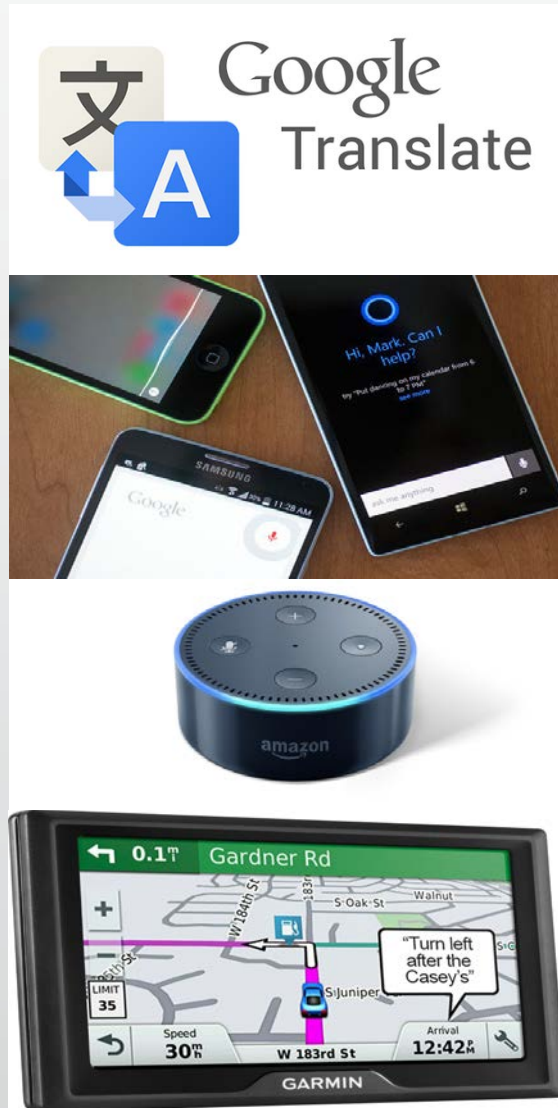
Language technologies support access to information, education, participation in global community

Language technologies support access to information, education, participation in global community

… for a handful of languages.

Low-resource languages

- More than 7000 languages spoken in the world
- Many of these endangered/threatened – losing speakers at a rapid rate
- Fewer than 10 can be considered high-resource from the perspective of language technologies

Languages as % of world population. 0.15% = 10M speakers. Source: WP, Mikael Parkvall

Languages as % of world population

0.15% = 10M speakers
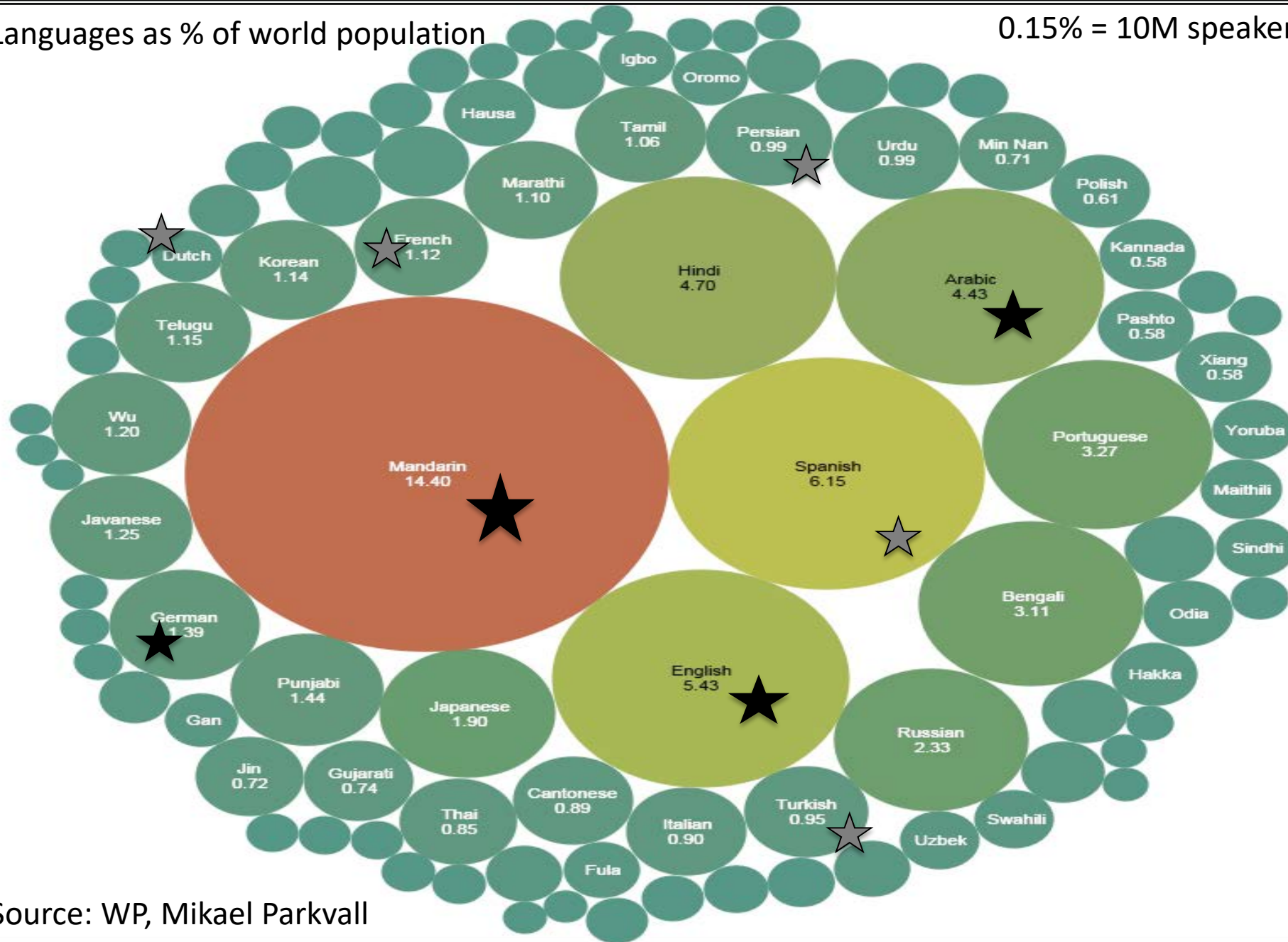
★ High-resource
★ Mid-resource

Igbo
Oromo
Hausa
Tamil 1.06
Persian 0.99
Urdu 0.99
Min Nan 0.71
Marathi 1.10
Polish 0.61
Dutch
Korean 1.14
French 1.12
Hindi 4.70
Arabic 4.43
Kannada 0.58
Telugu 1.15
Pashto 0.58
Xiang 0.58
Wu 1.20
Mandarin 14.40
Spanish 6.15
Portuguese 3.27
Yoruba
Javanese 1.25
Maithili
Bengali 3.11
Sindhi
German 1.39
English 5.43
Odia
Punjabi 1.44
Japanese 1.90
Russian 2.33
Hakka
Gan
Jin 0.72
Gujarati 0.74
Cantonese 0.89
Turkish 0.95
Swahili
Thai 0.85
Italian 0.90
Uzbek
Fula

Source: WP, Mikael Parkvall

EST.1890

UNT®

My research: broadening access

- Adapting current machine learning methods for low-resource languages, using cross-lingual approaches

- Developing computational methods to support documentation of endangered languages

- Improving data availability and standardization, for example with archival materials for endangered languages

- Collaborations with Information Science, Computer Science, Emergency Management, Communications

- Classes in Computational Linguistics and Linguistics

- One piece of advice: learn some programming!

To learn more:

Comput-EL workshop series on Computational Methods for Study of Endangered Languages: https://computel-workshop.org

Bird, Steven and Gary Simons. 2002. Seven Dimensions of Portability for Language Documentation and Description. *Language*, 79(3): 557-582.

Palmer, Alexis, Taesun Moon, Jason Baldridge, Katrin Erk, Eric Campbell, and Telma Can. 2010. Computational strategies for reducing annotation effort in language documentation. *Linguistic Issues in Language Technology*, 3(4): 1-42.

Kornai, András. 2013. Digital Language Death. *PLoS ONE*, 8(10).

Emerson, Guy, Liling Tan, Susanne Fertmann, Alexis Palmer, and Michaela Regneri. 2014. SeedLing; Building and using a seed corpus for the Human Language Project. In *Proceedings of ComputEL Workshop*, at ACL 2014.

Littauer, Richard, Rory Turnbull, and Alexis Palmer. 2012. Visualizing typological relationships: Plotting WALS with heat maps. In *Proceedings of the Joint Workshop of LINGVIS and UNCLH*, at EACL 2012.

Palmer, Alexis, and Michaela Regneri. 2014. Short-term projects, long-term benefits: Four student NLP projects for low-resource languages. In *Proceedings of ComputEL Workshop*, at ACL 2014.

Vakil, Anjana, Maximillian Paulus, Alexis Palmer, and Michaela Regneri. 2014. lex4all: A language-independent tool for building and evaluating pronunciation lexicons for small-vocabulary speech recognition. In *Proceedings of ACL 2014 Demo Session*.
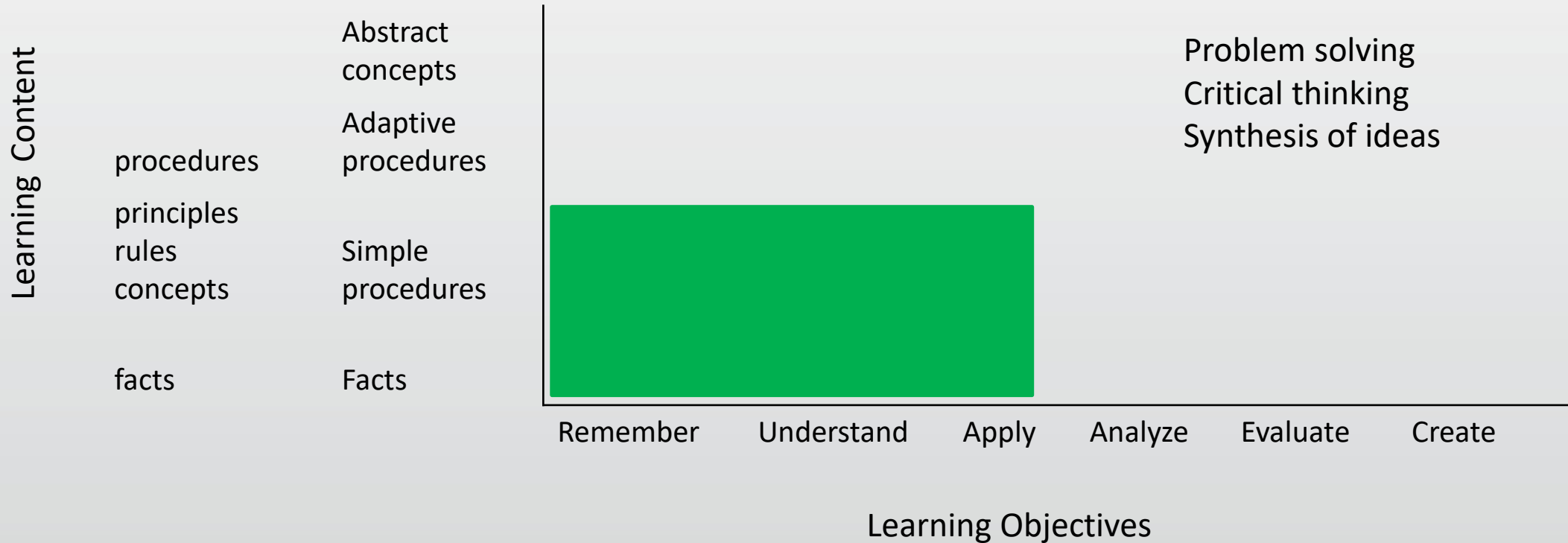
EST.1890

UNT®

Dr. Rose Baker –
**Assistant Professor, Department of Learning Technologies, College of Information.**

The preparation for careers in science, technology, engineering, and mathematics (STEM) is changing to include advances in technology such as 3D printing, virtual reality, mixed reality, and mobile technologies. The use of machine learning and artificial intelligence is making personalized learning environments more common. Dr. Baker will present the thinking behind the implementation of STEM education and how it is preparing students to address the complex and wicked problems of the future.

EST.1890

UNT®

We are very good at the lower left corner
… We are working to develop the rest

Learning Content

Abstract concepts

Adaptive procedures

procedures

principles rules concepts

Simple procedures

facts   Facts

Problem solving
Critical thinking
Synthesis of ideas

Remember   Understand   Apply   Analyze   Evaluate   Create

Learning Objectives

Cynefin framework

Cynefin™ and the Cynefin™ framework are trademarks of Cognitive Edge Pte Ltd. and are used under license by Cognitive Edge

EST.1890

UNT®
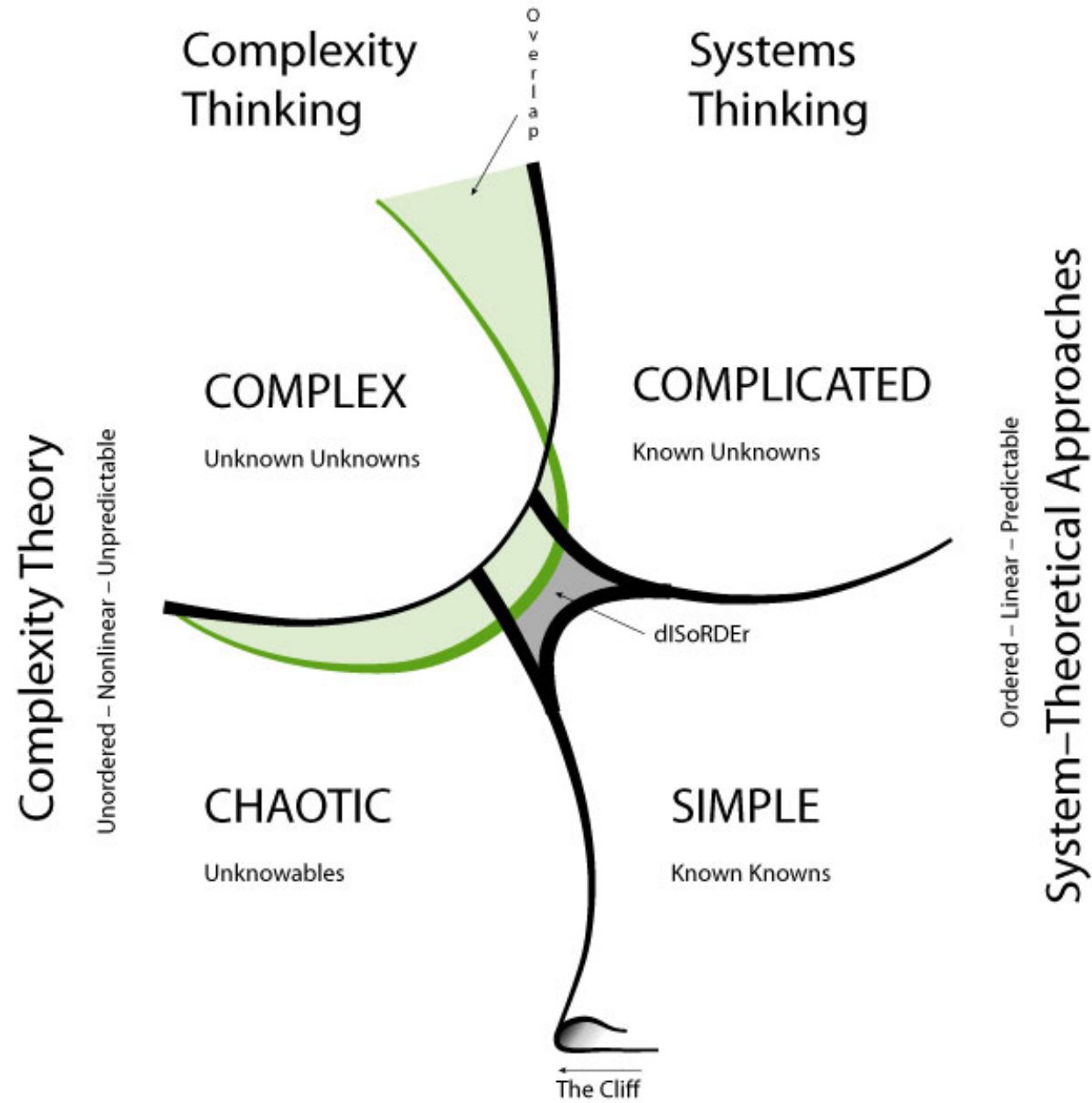
Mr. Phillips will discuss UNT Libraries' experience in collaborating with COI colleagues and providing a real world environment for COI students to practically experience the intersection of people, technology, and information. Mr. Phillips will also note the benefits of UNT's Libraries' local, state-wide, national, and international projects, ranging from harvesting UNT websites, to the Texas Register archive established through a partnership with the Office of the Texas Secretary of State, to the End-of-Term Presidential Harvest (EOT) and International Internet Preservation Consortium (IIPC), a global network of experts archiving the web for future generations. All these active and ongoing high profile projects provide a wealth of data and research questions to be investigated.

Mark Phillips – Associate Dean, **Digital Libraries Division, UNT Libraries**

Thanks!

EST.1890

UNT®