

# Islam Akef Ebeid

## Contact

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## My Website

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Texas Woman's University

MCL 412

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## About

I recently graduated with a Ph.D. in Computer and Information Science focusing on Data and Information Science at the University of Arkansas at Little Rock. I worked with the guidance and mentorship of John Talburt and Elizabeth Pierce.

Other mentors I worked with in the past years: Serdar Bozdogan, Mariofanna Milanova, Ningnig Wu, Ying Ding, Yan Zhang, Jacek Gwizdzka, Abhra Sarkar, Mohammed Yassine Belkhouche, Carolina Cruz Neira, Dirk Reiners, Roger Fang, Jerry Wood, Larry Morell.

## Hobbies

Poetry and writing, karate-kata, aikido and non-competitive martial arts, hiking, swimming, astronomy and star parties, jazz music, activism and community work, and investment.

## Research Interests

My research interests and experiences are centered around data quality, curation, integration, and engineering and their interdisciplinary applications in the sciences. I develop and adapt methods and frameworks theoretically rooted in graphical models, natural language processing, machine learning, and deep learning. I apply the developed methods in information retrieval (computer science), data mining of digital libraries and information networks (information science), biomedical informatics (biology), non-profit studies (social sciences), and human-computer interaction (psychology). My vision is to aid and automate the process of scientific discovery and inquiry by developing ethical and artificially intelligent systems capable of integrating, cleaning, organizing, and mining scientific information automatically and efficiently.

Main research specializations:

1. Entity resolution and matching with graph theory and natural language processing
2. Biomedical information retrieval with graph representation learning

Secondary research specializations:

1. Human factors in computing and information seeking with eye tracking

2. Scientific visualization of biological data

My current skillset (Python, C\C++, Java, SQL, Unix):

1. Graph theory and network mining algorithms
2. Applied linear algebra algorithms
3. Natural language processing algorithms
4. Machine learning and deep learning models and experimentation with TensorFlow
5. Setting up high-performance computing environments and data management systems

My older skillset (Python, C\C++, Java, SQL):

1. Experimental design and statistical analysis in eye-tracking studies
2. Image processing with OpenCV, mainly for filtering, localization, and mapping
3. Computer graphics with OpenGL and WebGL for creating scientific visualizations
4. Software engineering, especially web applications and services based on the MVC design pattern and backend ETL operations

### **Mission**

To contribute to the organization, integration, cleaning, archival, and mining of all scientific information.

To promote the collaboration between data science, artificial intelligence, and the sciences.

To contribute to making scientific computing and artificial intelligence more ethical and environmentally sustainable.

To empower underrepresented groups in computational, information, and data sciences, like women, refugees, and financially challenged populations.

### **Education**

University of North Texas, Denton, Texas (2022)

Postdoctoral Training in Computer Science

University of Arkansas at Little Rock, Little Rock, Arkansas (2014-2022)

MSc, Ph.D. in Computer & Information Science

The University of Texas at Austin, Austin, Texas (2017-2020)

Graduate work at the Ph.D. program in Information Science

Arkansas Tech University, Russellville, Arkansas (2011-2013)

Professional MSc in Computer & Information Science

Ain Shams University, Cairo, Egypt (2003-2008)

BSc in Electrical & Computer Engineering

The English School in Cairo (El Nasr School), Cairo, Egypt (2000-2003)

General Secondary Diploma in Mathematics

Certifications: FE, ITIL

### **Positions Held**

Assistant Professor of Computer Science, Texas Woman's University, Denton, Texas (2023-Current)

Assistant Professor of Computer Science, Southern Arkansas University, Magnolia, Arkansas (2023)

Postdoctoral Research Associate, Department of Computer Science & Engineering, University of North Texas, Denton, Texas, Funded by the NIH (2022-2023)

Research Assistant, Department of Information Science, University of Arkansas at Little Rock, Funded by the NSF (2021-2022)

Data Science Research Intern, AbbVie Inc., Urbana-Champaign, Illinois (2020)

Teaching Assistant, School of Information, The University of Texas at Austin (2019-2020)

Research Assistant, School of Information, The University of Texas at Austin, Funded by Lockheed Martin Inc. & the ALA (2018-2019)

Research Assistant, Texas Advanced Computing Center, The University of Texas at Austin, Funded by Intel Corporation (2018)

Research Fellow, School of Information, The University of Texas at Austin (2017-2018)

Software Engineering Intern, Intel Corporation, Santa Clara, California (2016-2017)

Research Assistant, Emerging Analytics Center, University of Arkansas at Little Rock (2014-2017)

Software Developer, Arkansas.gov/National Information Consortium Inc., Little Rock, Arkansas (2013-2014)

Graduate Assistant, International & Multicultural Student Services Office, Arkansas Tech University (2012)

Graduate Assistant, Department of Computer & Information Science, Arkansas Tech University (2011-2013)

Software Developer, WeDo Technologies, Cairo, Egypt (2010-2011)

Software Developer, Orange Telecom, Cairo, Egypt (2009-2010)

Software Developer, Xpress Integration, Cairo, Egypt (2009)

Electronics Engineer, Hanna Instruments, Cairo, Egypt (2008)

Software Engineering Intern, Giza Systems, Cairo, Egypt (2007-2008)

Software Engineering Intern, Vodafone, Cairo, Egypt (2005-2006)

### **Honors & Awards**

The Hanover Grants Academy Award, Texas Woman's University (2023)

Outstanding Doctoral Graduate, University of Arkansas at Little Rock (2022)

The Graduate School Professional Development Award, The University of Texas at Austin (2019)

Best Short Paper Award, ACM SIGCHI Symposium on Eye Tracking Research (2019)

The Graduate Recruitment Fellowship Award, The University of Texas at Austin (2017)

Distinctive Capstone Project, Ain Shams University (2008)

## Funding & Grants

Assisted with 1 NIH supplemental grant proposal during my postdoctoral training at the University of North Texas titled: Data-driven drug discovery for Alzheimer's disease using graph representation learning, PI: Serdar Bozdogan, Amount: \$150000, August (2022)  
Texas Woman's University negotiated startup funds, Amount: \$66000, August (2023)

## Scholarly Work & Disseminated Research

### *Journal Articles (refereed)*

- Ebeid, I. A. (2022). MedGraph: A semantic biomedical information retrieval framework using knowledge graph embedding for PubMed. *Frontiers in Big Data*, 5. [Link](#).
- Ebeid, I. A., Talburt, J. R., Hagan, N. K. A., & Siddique, M. A. S. (2022). ModER: Graph-based Unsupervised Entity Resolution using Composite Modularity Optimization locality-sensitive hashing. *International Journal of Advanced Computer Science & Applications*, 13(9). [Link](#).
- Yu, Q., Wang, Q., Zhang, Y. et al. Reply to issues about entity metrics & paper-entity citation network. *Scientometrics* 127, 2127–2129 (2022). [Link](#).
- Ma, J., Ebeid, I. A., De Wit, A., Xu, M., Yang, Y., Bekkers, R., & Wierking, P. (2021). Computational Social Science for Nonprofit Studies: Developing a Toolbox & Knowledge Base for the Field. *Voluntas*, 34(1), 52–63. [Link](#).
- Yu, Q., Wang, Q., Yang, Z., Chen, C., Ryu, H., Park, N., Baek, J., Li, K., Wu, Y., Li, D., Xu, J., Liu, M., Yang, J. J., Zhang, C., Lu, C., Zhang, P., Li, X., Chen, B., Ebeid, I. A., . . . Bu, Y. (2021). Analyzing knowledge entities about COVID-19 using entity metrics. *Scientometrics*, 126(5), 4491–4509. [Link](#).
- Xu, J., Kim, S., Song, M., Jeong, M., Kim, D., Kang, J., Rousseau, J. F., Li, X., Xu, W., Torvik, V. I., Bu, Y., Chen, C., Ebeid, I. A., Li, D., & Ding, Y. (2020). Building a PubMed knowledge graph. *Scientific Data*, 7(1). [Link](#).
- ### *Conference Papers and Proceedings (peer-reviewed)*
- Ebeid, I. A., Talburt, J. R., & Siddique, M. A. S. (2022, February). Graph-based hierarchical record clustering for unsupervised entity resolution. In the proceedings of the 19th *International Conference on Information Technology-New Generations ITNG 2022* (pp. 107-118). Cham: Springer International Publishing. [Link](#).
- Ebeid, I. A., Hassan, M., Wanyan, T., Roper, J., Seal, A., & Ding, Y. (2021). Biomedical Knowledge Graph Refinement & Completion Using Graph Representation Learning & Top-K Similarity Measure. In *the proceedings of iConference 2021 Springer eBooks* (pp. 112–123). [Link](#).
- Chen, C., Ebeid, I. A., Bu, Y., & Ding, Y. (2020). Coronavirus Knowledge Graph: A Case Study. *Workshop paper did not appear in the proceedings ACM SIGKDD International Conference on Knowledge Discovery in Databases KDD 2020*. [Link](#).

Ebeid, I. A., Bhattacharya, N., Gwizdka, J., & Sarkar, A. (2019). Analyzing gaze transition behavior using Bayesian mixed effects Markov models. In *Proceedings of the 2019 ACM SIGCHI Symposium on Eye Tracking Research & Applications ETRA 2019*. [Link](#).

Ebeid, I. A., & Zhang, Y. (2019). A systematic review of the literature in nature on human-computer interaction: Preliminary results. In *the proceedings of iConference 2019*. [Link](#).

Ebeid, I. A., & Gwizdka, J. (2018). Real-time gaze transition entropy. In *Proceedings of the 2018 ACM SIGCHI Symposium on Eye Tracking Research & Applications ETRA 2018*. [Link](#).

Ebeid, I. A., Cruz-Neira, C., Jaiswal, M., & Zybaylov, B. (2016). Protein Chemical Cross-linking/Mass Spectrometry: From raw data to fully immersive visualizations. *Electronic Imaging Symposium EI 2016*, 28(19), 1-1. [Link](#).

### **Theses & Dissertations (committee reviewed)**

Ebeid, I. A. (2022). Graph-Based Unsupervised Entity Resolution for Identifying Entity Profiles in Ambiguous Data (Doctoral dissertation, University of Arkansas at Little Rock). [Link](#).

Honorary mention in the following doctoral dissertation:

Jaiswal, M. S. (2015). Analysis of protein-protein interactions using chemical cross-linking mass spectrometry (CXMS): Novel computational approaches (Doctoral thesis, University of Arkansas at Little Rock). [Link](#).

Ebeid, Islam A. (2013). Displaying Data Structures & Algorithms in a Graphical User Interface for Genesis Programming Language. Arkansas Tech University. [Link](#).

Ebeid, Islam Akef., et al. (2008). Vehicle Infrastructure Integration & Intersection Collision Avoidance System for Automated Traffic Systems. [Link](#).

### **Books, Chapters, & Technical Reports (editor, advisor, or instructor-reviewed creative work)**

Ebeid, Islam Akef. (2021). Biomedical Multi-source Data Integration using Knowledge Graphs & Entity Resolution: Understanding author expertise in Cancer Epigenetics research. [Link](#).

Ebeid, Islam Akef. (2020). Knowledge Graph Mining: A Survey of Methods, Approaches, & Applications. [Link](#).

Ebeid, Islam Akef. (2020). Knowledge Profiling Using Biomedical Word Embedding & Knowledge Graph. [Link](#).

Ebeid, Islam Akef. (2019). A Literature Review On The Automatic Generation of Chest X-ray Medical Reports using Deep Learning. [Link](#).

Ebeid, Islam Akef. (2019). Promoting the evaluation of the credibility & quality of online health information through online web applications. [Link](#).

Ebeid, Islam Akef. (2018). A Comparison Between the Gaze Transition Entropy & The Bayesian Semi-Parametric Mixed Effects Markov Model in Comparing Scanpaths & Gaze Transitions. [Link](#).

Ebeid, Islam Akef. (2018). Simple Eye Tracker Calibration for Tiled Display Walls. [Link](#).

Ebeid, I. A., Bhattacharya, N., & Gwizdka, J. (2018). Evaluating The Efficacy of Real-time Gaze Transition Entropy. *Research Gate*, 1(1), 1-8. [Link](#).

Ebeid, Islam Akef. (2017). Analysis of Children's Reading Performance: An Eye Tracking Experiment. [Link](#).

Ebeid, Islam Akef. (2017). Intel VME Simultaneous Localization & Mapping. [Link](#).

Ebeid, I., & Arango, J. (2016). Mallet vs. Gensim: Topic modeling evaluation report. University of Arkansas at Little Rock. [Link](#).

Ebeid, Islam Akef. (2015). Global Big Data Management & Governance in Health Care Information Systems. [Link](#).

Ebeid, Islam Akef. (2015). Real-time Object Scanning & Manipulation in the CAVE. [Link](#).

Ebeid, Islam Akef. (2014). The National Visualization Laboratory. [Link](#).

***Published Op-eds and Blog entries (non-peer-reviewed creative work)***

Ebeid, I. A. (2023, July). Opinion: What distinguishes selective universities? *Illumination*. Medium. [Link](#).

Ebeid, I. A. (2023, June). Opinion: the link between information science theory and artificial intelligence explains the recent scare. *AI monks*. Medium. [Link](#).

***Invited Talks, Lectures, Seminars, and Conferences***

The MidSouth Computational Biology & Bioinformatics Society Talk: MedGCN: Query-time Character Level Embedding for Biomedical Named Entity Recognition via Bidirectional Graph Convolutional Neural Networks (2024)

University of Arkansas at Little Rock, Donaghy College of Engineering Science & Mathematics Graduate Seminar: Knowledge Representation & Data Mining using Knowledge Graphs. (2022)

Poster Participant, The MidSouth Computational Biology & Bioinformatics Society (2015-2016)

*Ebeid, I. A., Jaiswal, M., Cruz, C., & Zybaylov, B. (2016). VisInt-X: Visualizing Interactions in Cross-linked Proteins. ResearchGate. Link.*

*Ebeid, I. A., Jaiswal, M., Cruz, C., & Zybaylov, B. (2015). XLPM Map Viewer: A Protein-Protein Interaction Map Viewer. ResearchGate. Link.*

Poster Participant, University of Arkansas at Little Rock Research Expo Poster "Protein-protein interaction visualization." (2015)

**Service**

***Professional***

***Peer Reviewing***

*Journals*

*Journal of Nonprofit Management and Leadership* (2024)

*Journal of Natural Language Engineering*, Cambridge University Press (2022-2023)

*Journal of Imaging Science & Technology (JIST)* (2016-2018)

### *Conferences*

International Conference on Bioinformatics & Biomedicine (BIBM) (2022)  
29th ACM International Conference on Information & Knowledge Management (CIKM) (2020)  
26th ACM SIGKDD Conference on Knowledge Discovery & Data Mining, International Workshop on Knowledge Graphs (KDD) (2020)  
ACM SIGCHI Symposium on Eye Tracking Research & Applications (ETRA) (2018-2019)

### **Conference Participation**

Attendee, The Texas Advanced Computing Center Symposium (TACCSTER), Austin, Texas (2024)  
Attendee, ACM SIGCSE The Early Research Scholars Program Meeting, Virtual (2024)  
Attendee, Islamic Society of North America Conference (ISNA), Dallas, Texas (2024)  
Attendee, The MidSouth Computational Biology & Bioinformatics Society Meeting (MCBIOS), Atlanta, Georgia (2024)  
Student Volunteer, ACM SIGCHI Symposium on Eye Tracking Research & Applications (ETRA), Denver, Colorado (2019)  
Student Volunteer, International Conference on Advanced Technologies (ICAT), Little Rock, Arkansas (2017)  
Representative, The International Conference for High-Performance Computing, Networking, Storage & Analysis (SC), Salt Lake, Utah (2016)

### **Editing**

Editorial Fellow, The Journal of Information & Culture, published by The University of Texas Press (2019)  
Editor for the following publication (2017)  
*Emami, Yasaman, & Coskun Bayrak. "EEG analysis of evoked potentials of the brain to develop a mathematical model for classifying tinnitus datasets." 2017 IEEE International Symposium on Medical Measurements & Applications (MeMeA). IEEE, 2017.*

### **Professional Memberships**

Professional Member, ACM (2011)  
Professional Member, IEEE (2008)  
Professional Member, Egyptian Syndicate of Engineers (2008)  
Professional Member, American Association of University Professors (2024)

### **Institutional Service**

Member, Curriculum Committee, Division of Computer Science, Texas Woman's University (2024)  
Member, AI Initiative at TWU, Texas Woman's University (2024)  
Member, Sustainability Committee, Texas Woman's University (2024)  
Student Member, The Diversity & Inclusion Committee, School of Information, The University of Texas at Austin (2018-2019)

Faculty Advisor, The Computer Science Club, Southern Arkansas University (2023)  
Community Outreach Event Host, The Division of Computer Science, Texas Woman's University (2023, 2024)

***Dissertation, Thesis, and Capstone Advising and Committee Memberships***

Predicting Alzheimer's disease progression via machine learning - Capstone project - Jordan Frazier (Spring, 2024)

***Community Service***

Volunteer, Refugee Services of Texas, Austin, Texas (2018-2020)

Volunteer, Resala Foundation, Cairo, Egypt (2003-2008)

Court Appointed Special Advocate Volunteer in training, Dallas CASA, Dallas, Texas (2023)

Volunteer, Citizen's Climate Lobby, Dallas, Texas (2024)

Volunteer and Member, Islamic Association of North Texas (2024)

**Teaching**

***Texas Woman's University***

Instructor, CSCI 3603/5173, Foundations of Data Science, Fall (2023). [Syllabus](#).

Instructor, CSCI 5103 Fundamentals of Informatics, Fall (2023). [Syllabus](#).

Instructor, CSCI 5001 Programming for Informatics, Spring (2024). [Syllabus](#).

Instructor, CSCI 4513/5803 Data Warehousing, Spring (2024). [Syllabus](#).

Instructor, CSCI 5663 Statistical Programming, Summer (2024). [Syllabus](#).

Instructor, CSCI 3603, Foundations of Data Science, Fall (2024). [Syllabus](#).

Instructor, CSCI 5103 Fundamentals of Informatics, Fall (2024). [Syllabus](#).

***Southern Arkansas University***

Instructor, CSCI 2113 Computer Science II, Spring (2023). [Syllabus](#).

Instructor, MSIS 5133 Database Management Systems, Spring, Summer (2023). [Syllabus](#).

Instructor, MSIS 5033 The Unix Operating System, Summer (2023). [Syllabus](#).

***The University of Texas at Austin***

Instructor, Fundamentals of Computer Vision & Machine Learning, Summer (2018), Summer (2019). [Syllabus](#).

Teaching Assistant, INF 385T Presenting Information, Spring (2019)

Teaching Assistant, INF 380E Perspectives on Information, Spring (2019), Fall (2019), Spring (2020)

Teaching Assistant, INF 397C Understanding Research, Spring (2019)

Teaching Assistant, INF 385T Virtual Environments, Fall (2019), Spring (2020)

Teaching Assistant, INF 385T Artificial Intelligence in Healthcare, Spring (2020)

Teaching Assistant, INF 385T Data Semantics, Spring (2020)

Teaching Assistant, INF 385T Human-AI Interaction, Fall (2020)

***University of Arkansas at Little Rock***

Teaching Assistant, IFSC 4345 Information Visualization, Spring (2016)

Teaching Assistant, IFSC 5399 Programming in Python, Fall (2016)



***Arkansas Tech University***

Teaching Assistant, COMS 1411 Introduction to Computer Programming, Spring (2012), Fall (2012)

Teaching Assistant, INFT 5703 Computer Networks I, Fall (2012), Spring (2013)