Ling Tong

University of Wisconsin Milwaukee (BioDLP Lab) (Ling's Website)
Department of Health Informatics & Administration, College of Health Sciences
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SUMMARY

I am well-versed in medical informatics, artificial intelligence, applied statistics, and data science in medicine. I'm an analytical problem solver who is always looking for new ways to improve systems. I enjoy logical reasoning and solving complex problems. I'm a seasoned educator and researcher. I take part in professional conferences and research activities on a regular basis. I believe that students' desire of learning are the most important factors in their success. Also, I enjoy connecting students to their minds in order to transform their lives. I'm also a musician and an animal enthusiast.

ACADEMIC BACKGROUND

Ph.D. Biomedical and Health Informatics 2022
University of Wisconsin Milwaukee, Milwaukee, WI

- Research in Health Informatics under direction of Jake Luo.
- Dissertation: Transforming Electronic Health Records for Machine Learning Diagnostic Model

B.S. Computer Science 2017
University of South China, Hunan Province, P.R. China

- Thesis: Classifying Weibo Tweets for Tracking Influenza

RESEARCH EXPERIENCE

Research Assistant 2017 - Present
University of Wisconsin Milwaukee, BioDLP Lab, Milwaukee, WI

- Conduct exploratory and predictive analysis on health informatic topics.
- Machine Learning, Deep Learning, Data Mining, Language Processing, and Knowledge representation.
- Create statistical and computer-based methodologies for translational research.
- Identify social and diagnostic gaps in populations using Electronic Health Records.
- Collaborate with Medical College of Wisconsin clinicians to identify social determinants of clinical conditions.
- Deliver presentations, talks, and workshops on a variety of clinical and computer science topics at conferences.

Research Assistant 2015 - 2017
University of South China, PI: Lingyun Luo, Hunan, P.R. China

- Research: Quality Improvement of Biomedical Terminologies
- We created methodologies for detecting inconsistencies in large biomedical ontologies.
- Over 3000 misalignments, imbalances, and missing concepts are detected, identified, and corrected.
- Publication: Evaluating the granularity balance of hierarchical relationships within large biomedical terminologies towards quality improvement on Journal of biomedical informatics

TEACHING EXPERIENCE

Instructor 2019 - 2022
Computational Tools for Healthcare Professionals

- This lecture focuses on healthcare introduction of computational tools for information management.
- A undergraduate course focus on system architecture, process, and ethical concepts.
- Incorporates training in Microsoft Excel application software.
- We adopted a hybrid teaching in a mix of online and in-person format since 2020.

Teaching Assistant 2018
Health Big Data Processing Platforms. Instructor: Jake Luo

- Study of big data processing techniques in healthcare.
- Data analysis platform of Apache Spark.
- Responsibility: Grading Homework, in-class programming help, providing email support.

PUBLICATIONS *Journal Articles*

- **Tong L**, George B, Crotty B, Melek S, Taylor B, Osinski K, Luo J. Telemedicine and Health Disparities: Association between Patient Characteristics and Telemedicine, In-person, Telephone and message-based Care During the COVID-19 Pandemic. Ipem-translation. 2022.
- Luo, J., **Tong, L.**, Crotty, B. H., Somai, M., Taylor, B., Osinski, K., & George, B. (2021). Telemedicine Adoption during COVID-19 Pandemic: Gaps and Inequalities. Applied Clinical Informatics.
- Luo, L., **Tong, L.**, Zhou, X., Mejino Jr, J. L., & Liu, Y. (2017). Evaluating the granularity balance of hierarchical relationships within large biomedical terminologies towards quality improvement. Journal of Biomedical Informatics, 75, 129-137

- Anisuzzaman, D. M., Barzekar, H., **Tong, L.**, Luo, J., & Yu, Z. (2021). A deep learning study on osteosarcoma detection from histological images. Biomedical Signal Processing and Control, 69, 102931
- Thomas, A., Flanary, V., Friedland, D. R., Adams, J. A., **Tong, L.**, Osinski, K., Luo, J. (2021). The impact of social determinants of health and clinical comorbidities on post-tympanotomy tube otorrhea. International Journal of Pediatric Otorhinolaryngology, 110986.
- Shane W. White, Jonathan M. Bock, Joel H. Blumin, David R. Friedland, Jazzmyne A. Adams, **Ling Tong**, Kristen Osinski, Jake Luo. (2021). Analysis of socioeconomic factors in laryngology clinic utilization for treatment of dysphonia, Laryngoscope Investigative Otolaryngology
- Poetker, D. M., Friedland, D. R., Adams, J. A., **Tong, L.**, Osinski, K., & Luo, J. (2021). Socioeconomic Determinants of Tertiary Rhinology Care Utilization. OTO open, 5(2), 2473974X211009830.
- Harvey, E., Stark, K., Friedland, D. R., Adams, J. A., Harris, M. S., **Tong, L.**, & Luo, J. Impact of Demographics and Clinical Features on Initial Treatment Pathway for Vestibular Schwannoma. Otology and Neurotology, 10-1097.
- M, Patel., J, Bock., J, Blumin., D, Friedland., A, Jazzmyne., **Tong, L.**, K, Osinski., J, Luo, Demographic Differences in the Treatment of Unilateral Vocal Fold Paralysis, Laryngoscope Investigative Otolaryngology, 2022.

Conferences

- (Accepted) **Ling Tong**, Masoud Khani, Jake Luo, A Visualization Model for Diagnosing Diabetic Retinopathy Severity and Discovering Plaque Patterns in Retinal Images, Tong, Ling, Khani, Masoud, and Luo, Jake, AI in Aging and Age-related Diseases Conference, 2022.
- **Tong, L.**, Luo, J., Cisler, R., & Cantor, M. (2019, July). Machine learning-based modeling of big clinical trials data for adverse outcome prediction: A case study of death events. In 2019 IEEE 43rd Annual Computer Software and Applications Conference (COMPSAC) (Vol. 2, pp. 269-274). IEEE.
- **Tong, L.**, Luo, J., Adams, J., Osinski, K., Liu, X., & Friedland, D. (2022, June). A Clustering-Aided Approach for Diagnosis Prediction: A Case Study of Elderly Fall. In 2022 IEEE 46th Annual Computers, Software, and Applications Conference (COMPSAC) (pp. 337-342). IEEE.

- Hernandez, L., **Tong, L.**, Cofino, J., Johannessen, J. O., Guda, N. M., Muddana, V., & Luo, J. (2020). Tu1058 Association Between Attending Endoscopists' experience And Complication Rates For All Endoscopic Procedures: A 10-Year Longitudinal Study. Gastrointestinal Endoscopy, 91(6), Ab525.
- **Tong, L.**, Hernandez, L. V., & Luo, J. (2020). 41 Predicting Gastrointestinal (Gi) Hemorrhage Using A Machine Learning Approach: Risk Factors And Predictive Analysis In Clinical Studies. Gastroenterology, 158(6), S-16.
- **Ling Tong**, Lyndon V. Hernandez,Julia Cofino, Jack O. Johannessen, Nalini M. Guda,Jake Luo, Tu1981 Association Modeling Between Patients' Age And Complication Rate For Endoscopic Procedures, Gastroenterology, 2020.

In Revision

- (In Minor Revision) **Ling Tong**, Jake Luo, Jazzmyne Adams, Kristen Osinski, Xiaoyu Liu, David Friedland, Interpretable Machine Learning Text Classification for Computed Tomography Reports – A Case Study of Temporal Bone Fracture. Computer Methods and Programs in Biomedicine Update.
- (In Major Revision) Xiaoyu Liu, Hiba Abd, **Ling Tong**, Liu, Xiaoyu, Abd, Hiba, Tong, Ling and Mcroy, Susan. Visualizing the Interpretation of a Criterion-Driven System that Automatically Evaluates the Quality of Health News: an Exploratory Study of Two Approaches. JMIR AI.
- (In Major Revision) **Tong, Ling**, Khani, Masoud, Lu, Qiang and Taylor, Bradley, Osinski, Kristen, Luo, Jake. Association between Obesity-related Comorbidities and COVID-19-related Adverse Outcomes. Obesity Research and Clinical informatics. 2022.

INVITED PRESENTATIONS

- **Ling Tong**, Jake Luo, Jazzmyne adams, Kristen Osinski, Xiaoyu Liu, David Friedland, A Clustering-Aided Approach for Diagnosis Prediction: A Case Study of Elderly Fall. 2022 IEEE 46th Annual Computers, Software, and Applications Conferences.
- **Ling Tong**, Predicting the Clinical Outcomes from Clinical Trial Data using Machine Learning, presenting at 2019 Health Research Symposium at University of Wisconsin Milwaukee.
- **Ling Tong**, Jake Luo, Ron Cisler, Michael N. Cantor, Machine Learning-based Prediction of Death Events in Clinical Studies Using Big Clinical Trial Data, In 2019 IEEE 43rd Annual Computer Software and Applications Conference.

- **Ling Tong**, Jake Luo, From Phone to Medical Database: An Automatic Document Processing System for Clinical Laboratory Test, Presenting at 2019 Research Poster Competition, University of Wisconsin Milwaukee.
- Neil K. Osafo, BS; David R. Friedland, MD, PhD; Michael S. Harris, MD; Jazzmyne Adams, MPH; Chasity Davis; **Ling Tong**; Jake Luo, PhD, Standardization of Outcome Measures for Intratympanic Steroid Treatment for Idiopathic Sudden Sensorineural Hearing Loss, Combined Otolaryngology Specialties Meeting, Dallas, TX,
- Erin Harvey, MD; Katarina Stark, BS; David R. Friedland, MD, PhD; Jazzmyne A. Adams, Michael S. Harris, MD, **Ling Tong**, Jake Luo PhD, Impact of Demographics and Clinical Features on Initial Treatment Decision Making in Vestibular Schwannoma, 57th Annual Ans Spring Meeting, Dallas, TX,
- **Ling Tong**, Jake Luo, Ron Cisler, Michael N. Cantor, Machine Learning-based Prediction of Death Events in Clinical Studies Using Big Clinical Trial Data, 2018 Health Research Symposium University of Wisconsin Milwaukee.

PROFESSIONAL ACTIVITIES *Scholarly Reviews* 2019 - 2022

- Applied Clinical Informatics
- American Medical Informatics Association, 2022 Symposium
- Biomedical Signal Processing and Control
- Computers in Biology and Medicine
- Health Informatics Journal
- IEEE Journal of Biomedical and Health Informatics
- Journal of Medical Internet Research (JMIR)
- JMIR Public Health and Surveillance

Professional Memberships 2019 - 2022

- American Medical Informatics Association (AMIA)
- American Heart Association, Basic Life Support Provider
- Google Professional Data analytics
- IEEE Computer Society

WORK EXPERIENCE

Data Analysis Engineer 2020
Lubar School of Business, UWM. PI: Purush Papatla

- I worked part-time on data analysis, visualizations, and development of predictive model for DNC project - A Big Data Lens on the Elections.
- We tracked the major issues engaging both candidates and voters in the 2020 US election cycle. We applied a social curation technique to multiple sources of data ranging from traditional political polls and debate transcripts to political advertising and social media dialogue.

Test Engineer 2016
Software Test Center of Hunan Province, China

- During this internship, I focus on automatic test script and performance analysis using document management tool.
- I also developed a git to monitor use-case testing and defects maintenance work.

AWARDS AND FELLOWSHIP

Chancellor's Graduate Student Awards 2017 - 2019

- $16,000, Awarded by University of Wisconsin Milwaukee

Undergraduate Student Research and Innovative Project 2016 - 2017

- CN ¥10,000, Awarded by University of South China

LANGUAGES

- English: Full Professional Proficiency.
- Chinese: Native Proficiency.

REFERENCES

Jake Luo, PhD
- Associate Professor, Director of Health Care Informatics
- University of Wisconsin Milwaukee
- jakeluo@uwm.edu

Mor Peleg, PhD
- Editor-in-Chief, Journal of Biomedical Informatics
- Professor, University of Haifa, Haifa, Israel
- morpeleg@is.haifa.ac.il

Timothy Haas, PhD
- Associate Professor, Lubar College of Business
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Susan Mcroy, PhD
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