Yue Guo

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Interests: Natural language processing, machine learning, and their applications in medical domain

Education and Training

University of Washington — Seattle, WA
Ph.D. in Biomedical & Health Informatics: Advanced Data Science — *2019 - present*

Johns Hopkins Hospital — Baltimore, MD
Postdoctoral Research Fellow — *2018 - 2019*

Johns Hopkins University — Baltimore, MD
Master of Health Science in Epidemiology — *2016 - 2018*

Capital Medical University — Beijing, China
M.B.B.S. in Preventive Medicine — *2011 - 2016*

Research Experience

Research Assistant with Trevor Cohen — 09/2019 - present
University of Washington School of Medicine

- Enhanced the external information generation by retrieval-augmented model in plain language summarization
- Identified a new task for translation from professional biomedical literature into plain language and constructed the first dataset for the task
- Applied deep neural networks BERT and RoBERTa to identify Alzheimer patients from cognitive task transcripts using TensorFlow and Gluon

Research Intern with Tal August — 05/2023 - current
Allen Institute (AI2) - Sementic Scholar

- Collect individualized data on entity familiarity and develop a pipeline for tailoring scientific abstracts to enhance interdisciplinary research efforts

Research Intern with Zebo Li and Taihua He — 06/2022 - 09/2022
Google

- Improved YouTube Themis model classifier calibration and designed evaluation metric and library for calibration

Research Intern with Kyle Williams — 06/2021 - 09/2021
Microsoft

- Developed a multi-task learning algorithm to generate clinical notes over 12M transcripts using PyTorch
- Designed an automatic labeling method for key sentence identification in patient-doctor conversation and improved the ROUGE score in generating clinical notes

Research Assistant with William Lober — 07/2020 - 03/2021
Cambia Palliative Care Center of Excellence at UW Medicine

- Applied machine learning models Random Forest and SVM to identify Goals of Care discussion in clinical notes

Postdoctoral Research Fellow with Todd McNutt — 06/2018 - 08/2019
Johns Hopkins Hospital, Radiation Oncology Department

- Developed the first outcome-based radiation therapy planning optimization algorithm and added it as a feature in the Treatment Planning software using Java
- Built a radiation-induced xerostomia prediction model based on spatially dependent radio-morphologic dose feature using ridge regression in PyTorch
- Managed Oncospace dataset and created online questionnaires in Mosaiq

Research Assistant with Avonne Connor — 03/2017 - 06/2018
Johns Hopkins University Bloomberg School of Public Health

- Conducted a case-control study to investigate the relationship between SNAPs in ALDH1A1 polymorphisms and the risk of breast cancer in different alcohol consumption categories using multinomial logistic regression in STATA

Research Assistant with Youlin Qiao 08/2015 - 06/2016

Cancer Institute & Hospital, Chinese Academy of Medical Sciences and Peking Union Medical College

Publications

Peer-Reviewed Articles

- **Yue Guo**, Tal August, Gondy Leroy, Trevor Cohen, Lucy Lu Wang. *APPLS: A Meta-evaluation Testbed for Plain Language Summarization.* Preprint, 2023
- **Yue Guo**, Wei Qiu, Gondy Leroy, Sheng Wang, Trevor Cohen. *CELLS: A Corpus for the Evaluation of Lay Language Summarization in the Biomedical Domain.* Preprint, 2022
- Alison M. Uyeda, J. Randall Curtis, Ruth A. Engelberg, Lyndia C. Brumback, **Yue Guo**, James Sibley, William B. Lober, Trevor Cohen, Janaki Torrence, Joanna Heywood, Sudiptho R. Paul, Erin K. Kross, Robert Y. Lee. *Mixed-methods evaluation of three natural language processing modeling approaches for measuring documented goals-of-care discussions in the electronic health record.* Journal of Pain and Symptom Management, 2022
- **Yue Guo**, Changye Li, Carol Roan, Serguei Pakhomov, Trevor Cohen. *Crossing the 'Cookie Theft' Corpus Chasm: Applying what BERT Learns from Outside Data to the ADReSS Challenge Dementia Detection Task.* Frontiers in Computer Science, 2021
- **Yue Guo**, Wei Qiu, Yizhong Wang, Trevor Cohen. *Automated Lay Language Summarization of Biomedical Scientific Reviews.* 35th AAAI conference in Artificial Intelligence, 2021
- Yu-Cong Li, Yu-Qian Zhao, Ting-Yuan Li, Wen Chen, Guang-Dong Liao, Hai-Rui Wang, Hai-Ke Lei, **Yue Guo**, Qi Zhou. *The Performance of Immunocytochemistry Staining as Triaging Tests for High-Risk HPV-Positive Women: A 24-Month Prospective Study.* Journal of Oncology, 2020
- **Yue Guo**, Wei Jiang, Pranav Lakshminarayanan, Xuan Hui, Peijin Han, Zhi Cheng, Michale Bowers, Ilya Shpitser, Sauleh Siddiqui, Russell H Taylor, Harry Quon, Todd McNutt. *Spatial radiation dose influence on xerostomia recovery and its comparison to acute incidence in head neck cancer patients.* Advances in Radiation Oncology, 2020
- Peijin Han, Pranav Lakshminarayanan, Wei Jiang, Ilya Shpitser, Xuan Hui, Sang Ho Lee, Zhi Cheng, **Yue Guo**, Russ Taylor, Sauleh Siddiqui, Michael Bowers, Khadija Sheikh, Junghoon Lee, Harry Quon, Todd McNutt. *Dose/Volume histogram patterns in Salivary Gland subvolumes influence xerostomia injury and recovery.* Scientific Reports, 2019
- Feng-qi Luo, **Yue Guo**, Yi-fei Lu, Yue Zhang, Qi Gao, Hui-ping Zhu. *Association between sleep and agricultural injuries among peach farmers during harvest time in Pinggu District, Beijing, China.* Injury Medicine Magazine, 2016

Presentations

- **Yue Guo**, Pranav Lakshminarayanan, Peijin Han, Khadija Sheikh, Zhi Cheng, Wei Jiang, Michael Bowers, Sauleh Siddiqui, Ilya Shpitser, Russell H Taylor, Harry Quon, Todd McNutt. *The feasibility of outcome-based treatment planning strategy to improve xerostomia symptom in head and neck cancer patients.* International Journal of Radiation Oncology, Biology, Physics, 2019
- **Yue Guo**, Zhi Cheng, Emily Cecil, Pranav Lakshminarayanan, Yifei Lu, Peijin Han, Ana Kiess, Todd McNutt, Harry Quon. *Evaluation of Patient vs. Provider Based Assessments of Xerostomia and Dysphagia Compared Against Weight Loss in the Irradiated Head and Neck Cancer Patient.* International Journal of Radiation Oncology Biology Physics, 2019
- Zhi Cheng, Khadijia Sheikh, Pranav Lakshminarayanan, Wei Jiang, Peijin Han, **Yue Guo**, Emily Cecil, L Sloan, Ana Kiess, Brandi Page, Junhoon Lee, Harry Quon, Todd McNutt. *Voxel Dose Pattern for Patient-Reported Dysphagia Among Head and Neck Cancer Patients Receiving Definitive Radiotherapy.* International Journal of Radiation Oncology Biology Physics, 2019
- Matthew Deek, Emily Cecil, L Sloan, Zhi Cheng, Peijin Han, Khadijia Sheikh, Chengcheng Gui, **Yue Guo**, Pranav Lakshminarayanan, C Fakhry, W Koch, CG Gourin, M Tan, W Mydlarz, NC Schmitt, Todd McNutt, Brandi Page, Ana Kiess, J Richmon, Harry Quon *Definitive Management of Early Stage Oropharyngeal Carcinoma: A Comparison of Long Term Outcomes Following Transoral Surgery or Definitive Chemoradiation.* International Journal of Radiation Oncology Biology Physics, 2019
- Brandi Page, **Yue Guo**, Peijin Han, Zhi Cheng, J. Harkness, C. Shen, Amanda Choflet, Chen Hu, Emily Cecil, Xuan Hui, Nicole Schmitt, I. Shpitser, Ana Kiess, Todd McNutt, and Harry Quon. *Quality of Life differences in Male and Female Patients with Head and Neck Cancer* Scientific reports, 2018
- Peijin Han, Pranav Lakshminarayanan, W Liang, I Shpitser, Xuan Hui, Sang Ho Lee, Zhi Cheng, **Yue Guo**, Russell Taylor, Sauleh Siddiqui, Michael Bowers, Khadija Sheikh, Junghoon Lee, Harry Quon, Tidd McNutt. *Head and Neck Salivary Gland Spatial Dose-Volume histogram (DVH) Patterns Predict Radiation-Induced Xerostomia, From Injury to Recovery.* Medical Physics, 2018

Technical Skills

Programming Languages: Python, Java, CUDA, SQL, R, SAS, LaTeX
Scientific Toolkits: PyTorch, TensorFlow, Gluon
Designer Tools: Axure, Adobe XD

Computer Science Courses

CSE 517 Natural Language Processing with Noah Smith CSE 546 Machine Learning with Kevin Jamineson
CSE 583 Software Development for Data Scientists with David Beck CSE 373 Data Structure and Algorithm with David Beck