Joyce C. Ho

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Education

2011–2015	**University of Texas at Austin**, *Ph.D in Electrical and Computer Engineering*
2003–2004	**Massachusetts Institute of Technology**, *M.A. in Electrical Engineering and Computer Science*
1999–2003	**Massachusetts Institute of Technology**, *B.S in Electrical Engineering and Computer Science*

Professional Experience

2022–Present	**Computer Science Department at Emory University**, *Associate Professor*
2016–Present	**Guest Researcher**, *Centers for Disease Control and Prevention*
2016–2022	**Computer Science Department at Emory University**, *Assistant Professor*
2014–2016	**ORISE Fellow**, *Centers for Disease Control and Prevention*
2013–2016	**Co-founder, Chief Data Scientist**, *Accordion Health Inc.*
2004–2011	**System Engineer**, *Lawrence Livermore National Laboratory*

Publications

[*] Graduate students working under my supervision.
[°] Undergraduate students working under my supervision.

Peer-Reviewed Journals

[J14] Carrie Gu°, Eric W Lee[*], Wenhui Zhang, Roy L Simpson, Vicki Stover Hertzberg, and **Joyce C Ho**. "Evaluating natural language processing packages for predicting hospital-acquired pressure injuries from clinical notes." In: *Computers, informatics, nursing: CIN* (2023).

[J13] Jasmine Nakayama, Emily Cartwright, **Joyce C Ho**, Roy Simpson, and Vicki Hertzberg. "Hepatitis C care cascade in a large academic healthcare system, 2012-2018." In: *Medicine* (2023).

[J12] Mani Sotoodeh[*], Wenhui Zhang, Roy L Simpson, Vicki Stover Hertzberg, and **Joyce C Ho**. "EHAPI: A comprehensive and improved definition for hospital-acquired pressure injury classification based on electronic health records." In: *JMIR Medical Informatics* (2023).

[J11] **Joyce C Ho**, Lisa R Staimez, K M Venkat Narayan, Lucila Ohno-Machado, Roy L Simpson, and Vicki Stover Hertzberg. "Evaluation of available risk scores to predict multiple cardiovascular complications for patients with type 2 diabetes mellitus using electronic health records." In: *Computer Methods and Programs in Biomedicine Update* (2022), p. 100087.

[J10] Jeannette M Beasley, **Joyce C Ho**, Sarah Conderino, Lorna E Thorpe, Megha Shah, Unjali P Gujral, Jennifer Zanowiak, and Nadia Islam. "Diabetes and hypertension among South Asians in New York and Atlanta leveraging hospital electronic health records." In: *Diabetology & metabolic syndrome* 13.1 (2021), pp. 1–7.

[J9] Wenhui Zhang, Mani Sotoodeh[*], **Joyce C Ho**, Roy L Simpson, and Vicki Stover Hertzberg. "Examination of the accuracy of coding pressure injury amount, site, and stage in MIMIC-III." In: *Applied Clinical Informatics* 12.04 (2021), pp. 897–909.

[J8] Jasmine Nakayama, **Joyce C Ho**, Emily Cartwright, Roy L Simpson, and Vicki Stover Hertzberg. "Predictors of progression through the cascade of care to a cure for hepatitis C patients using decision trees and random forests." In: *Computers in Biology and Medicine* 134 (2021), p. 104461.

[J7] Yubin Park and **Joyce C Ho**. "Tackling overfitting in boosting for noisy healthcare data." In: *IEEE Transactions on Knowledge and Data Engineering* 33.7 (2021), pp. 2995–3006.

[J6]   Jithin Sam Varghese, **Joyce C Ho**, Ranjit Mohan Anjana, Rajendra Pradeepa, Shivani A Patel, Saravanan Jebarani, Viswanathan Baskar, KM Venkat Narayan, and Viswanathan Mohan. "Profiles of intra-day glucose in Type 2 Diabetes and their association with complications: An analysis of continuous glucose monitoring data." In: *Diabetes Technology and Therapeutics* 23 (8 2021), pp. 555–564.

[J5]   Robert Chen, **Joyce C Ho**, and Jin-Mann S Lin. "Extracting medication information from unstructured public health data: a demonstration on data from population-based and tertiary-based samples." In: *BMC Medical Research Methodology* 20.1 (2020), pp. 1–11.

[J4]   Zelalem Gero* and **Joyce C Ho**. "PMCVec: Distributed phrase representation for biomedical text processing." In: *Journal of Biomedical Informatics* (2019), p. 100047.

[J3]   Jette Henderson, Junyuan Ke°, **Joyce C Ho**, Joydeep Ghosh, and Byron C Wallace. "Phenotype instance verification and evaluation tool (PIVET): A scaled phenotype evidence generation framework using web-based medical literature." In: *Journal of Medical Internet Research* 20.5 (2018), e164.

[J2]   **Joyce C Ho**, Joydeep Ghosh, Steve R Steinhubl, Walter F Stewart, Joshua C Denny, Bradley A Malin, and Jimeng Sun. "Limestone: High-throughput candidate phenotype generation via tensor factorization." In: *Journal of Biomedical Informatics* 52 (2014), pp. 199–211.

[J1]   **Joyce C Ho**, Cheng H Lee, and Joydeep Ghosh. "Septic shock prediction for patients with missing data." In: *ACM Transactions on Management Information Systems* 5.1 (2014), 1:1–1:15.

Peer-Reviewed Conferences

[C56]   Eric W Lee* and **Joyce C Ho**. "PGB: A PubMed Graph Benchmark for Heterogeneous Network Representation Learning." In: *Proceedings of the 32nd ACM International Conference on Information & Knowledge Management*. 2023.

[C55]   Kevin Wu°, Jing Zhang*, and **Joyce C Ho**. "CONSchema: Schema matching with semantics and constraints." In: *Proceedings of the 27th European Conference on Advances in Databases and Information Systems*. 2023.

[C54]   Ran Xu*, Yue Yu, **Joyce Ho**, Chao Zhang, and Carl Yang. "Weakly-supervised scientific document classification via retrieval-augmented multi-stage training." In: *Proceedings of the 46th International ACM SIGIR Conference on Research and Development in Information Retrieval*. 2023, pp. 2501–2505.

[C53]   Eric W Lee* and **Joyce C Ho**. "SR-CoMbEr: Heterogeneous Network Embedding Using Community Multi-view Enhanced Graph Convolutional Network for Automating Systematic Reviews." In: *European Conference on Information Retrieval*. Springer. 2023, pp. 553–568.

[C52]   Ran Xu*, Mohammed K Ali, **Joyce C Ho**, and Carl Yang. "Hypergraph transformers for EHR-based clinical predictions." In: *AMIA Informatics Summit*. 2023.

[C51]   Ran Xu*, Yue Yu, Hejie Cui, Xuan Kan, Yanqiao Zhu, **Joyce C Ho**, Chao Zhang, and Carl Yang. "Neighborhood-regularized self-training for learning with few labels." In: *Proceedings of the Thirty-Seventh AAAI Conference on Artificial Intelligence*. 2023, pp. 10611–10619.

[C50]   Ran Xu*, Yue Yu, Chao Zhang, Mohammed K Ali, **Joyce C Ho**, and Carl Yang. "Counterfactual and factual reasoning over hypergraphs for interpretable clinical predictions on EHR." In: *Proceedings of the 2nd Machine Learning for Health symposium*. 2022, pp. 259–278.

[C49]   Jiasheng Sheng°, Zelalem Gero*, and **Joyce C Ho**. "PubMed Author-assigned Keyword Extraction (PubMedAKE) Benchmark." In: *Proceedings of the 31st ACM International Conference on Information & Knowledge Management*. 2022, pp. 4470–4474.

[C48]   Huan He*, Shifan Zhao, Yuanzhe Xi, **Joyce Ho**, and Yousef Saad. "GDA-AM: On the effectiveness of solving minimax optimization via Anderson Mixing." In: *International Conference on Learning Representations*. 2022.

[C47]   Jing Ma*, Qiuchen Zhang, Jian Lou, Li Xiong, Sivasubramanium Bhavani, and **Joyce C Ho**. "Communication efficient tensor factorization for decentralized healthcare networks." In: *Proceedings of the 21st IEEE International Conference on Data Mining*. 2021, pp. 1216–1221.

[C46]   Jing Ma*, Qiuchen Zhang, Jian Lou, Li Xiong, and **Joyce C Ho**. "Temporal network embedding via tensor factorization." In: *Proceedings of the 30th ACM International Conference on Information & Knowledge Management*. 2021, pp. 3313–3317.

[C45]   Zelalem Gero[*] and **Joyce C Ho**. "Uncertainty-based self-training for keyphrase extraction." In: *2021 IEEE EMBS International Conference on Biomedical and Health Informatics*. 2021, pp. 1–4.

[C44]   Jing Zhang[*], Bonggun Shin[*], Jinho Choi, and **Joyce C Ho**. "SMAT: An attention-based deep learning solution to the automation of schema matching." In: *Proceedings of the 25th European Conference on Advances in Databases and Information Systems*. 2021, pp. 260–274.

[C43]   Wenqin Dong[o], Eric W Lee[*], Vicki Stover Hertzberg, Roy L Simpson, and **Joyce C Ho**. "GASP: Graph-based approximate sequential pattern mining for electronic health records." In: *Proceedings of the 25th European Conference on Advances in Databases and Information Systems*. 2021, pp. 50–60.

[C42]   Zelalem Gero[*] and **Joyce C Ho**. "CATAN: Chart-aware temporal attention network for clinical text classification." In: *IEEE International Conference on Healthcare Informatics*. 2021, pp. 83–92.

[C41]   Sergey Volokhin, **Joyce C Ho**, Oleg Rokhlenko, and Eugene Agichtein. "You sound like someone who watches drama movies: Towards predicting movie preferences from conversational interactions." In: *Proceedings of the 2021 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies*. 2021, pp. 3091–3096.

[C40]   Mani Sotoodeh[*], Li Xiong, and **Joyce C Ho**. "CrowdTeacher: Robust Co-teaching with noisy answers & sample-specific perturbations for tabular data." In: *Proceedings of the 25th Pacific-Asia Conference on Knowledge Discovery and Data Mining*. 2021, pp. 181–193.

[C39]   Jing Ma[*], Qiuchen Zhang, Jian Lou, Li Xiong, and **Joyce C Ho**. "Communication efficient federated generalized tensor factorization for collaborative health data analytics." In: *Proceedings of the Web Conference 2021*. 2021, pp. 171–182.

[C38]   Bonggun Shin[*], Sungsoo Park, JinYeong Bak, and **Joyce C Ho**. "Controlled molecule generator for optimizing multiple chemical properties." In: *Proceedings of the Conference on Health, Inference, and Learning*. 2021, pp. 146–153.

[C37]   Chen Lin, **Joyce C Ho**, and Eugene Agichtein. "Cross-modal memory fusion network for multimodal sequential learning with missing values." In: *43rd European Conference on Information Retrieval*. 2021, pp. 312–319.

[C36]   Ardavan Afshar, Kejing Yin, Sherry Yan, **Joyce C Ho**, Haesun Park, and Jimeng Sun. "SWIFT: Scalable Wasserstein factorization for sparse tensors." In: *Proceedings of the Thirty-Fifth AAAI Conference on Artificial Intelligence*. 2021, pp. 6548–6556.

[C35]   Eric W Lee[*], Li Xiong, Vicki Stover Hertzberg, Roy L Simpson, and **Joyce C Ho**. "Privacy-preserving sequential pattern mining in distributed EHRs for predicting cardiovascular disease." In: *AMIA Informatics Summit*. 2021.

[C34]   Huan He[*], Yuanzhe Xi, and **Joyce C Ho**. "Fast and accurate tensor decomposition without a high performance computing machine." In: *Proceedings of the 2020 IEEE International Conference on Big Data*. 2020, pp. 163–170.

[C33]   Mani Sotoodeh[*], Zelalem H Gero[*], Wenhui Zhang, Roy L Simpson, Vicki Stover Hertzberg, and **Joyce C Ho**. "Pressure ulcer injury in unstructured clinical notes: Detection and interpretation." In: *AMIA Annual Symposium*. 2020, pp. 1160–1169.

[C32]   Yifei Ren, Jian Lou, Li Xiong, and **Joyce C Ho**. "Robust irregular tensor factorization and completion for temporal health data analysis." In: *Proceedings of the 29th ACM International Conference on Information & Knowledge Management*. 2020, pp. 1295–1304.

[C31]   Jing Ma[*], Qiuchen Zhang, Li Xiong, and **Joyce C Ho**. "Spatio-temporal tensor sketching via adaptive sampling." In: *Machine Learning and Knowledge Discovery in Databases*. 2020, pp. 490–506.

[C30]   Kejing Yin, Ardavan Afshar, **Joyce C Ho**, William Cheung, Chao Zhang, and Jimeng Sun. "LogPar: Logistic PARAFAC2 factorization for temporal binary data with missing values." In: *Proceedings of the 26th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining*. 2020, pp. 1625–1635.

[C29]   Yubin Park and **Joyce C Ho**. "CaliForest: Calibrated random forest for health data." In: *Proceedings of the ACM Conference on Health, Inference, and Learning*. 2020, pp. 40–50.

[C28]   Eric W Lee[*], Byron C Wallace, Karla I Galaviz, and **Joyce C Ho**. "MMiDaS-AE: Multi-modal missing data aware stacked autoencoder for biomedical abstract screening." In: *Proceedings of the ACM Conference on Health, Inference, and Learning*. 2020, pp. 139–150.

[C27] Ardavan Afshar, Ioakeim Perros, Haesun Park, Christopher deFilippi, Xiaowei Yan, Walter Stewart, **Joyce C Ho**, and Jimeng Sun. "TASTE: Temporal and static tensor factorization for phenotyping electronic health records." In: *Proceedings of the ACM Conference on Health, Inference, and Learning*. 2020, pp. 193–203.

[C26] Payam Karisani, **Joyce C Ho**, and Eugene Agichtein. "Domain-guided task decomposition with self-training for detecting personal events in social media." In: *Proceedings of The Web Conference*. 2020, pp. 2411–2420.

[C25] Jing Ma*, Qiuchen Zhang, Jian Lou, **Joyce C Ho**, Li Xiong, and Xiaoqian Jiang. "Privacy-preserving tensor factorization for collaborative health data analysis." In: *Proceedings of the 28th ACM International Conference on Information & Knowledge Managements*. 2019, pp. 1291–1300.

[C24] Zelalem Gero* and **Joyce C Ho**. "NamedKeys: Unsupervised keyphrase extraction for biomedical documents." In: *Proceedings of the 10th ACM Conference on Bioinformatics, Computational Biology, and Health Informatics*. 2019, pp. 328–337.

[C23] Bonggun Shin*, Sungsoo Park, Keunsoo Kang, and **Joyce C Ho**. "Self-attention based molecule representation for predicting drug-target interaction." In: *Machine Learning for Healthcare*. 2019, pp. 230–248.

[C22] Huan He*, Jette Henderson, and **Joyce C Ho**. "Distributed tensor decomposition for large scale health analytics." In: *Proceedings of The Web Conference*. 2019, pp. 659–669.

[C21] Jette Henderson, Bradley A Malin, Joshua C Denny, Abel N Kho, Jimeng Sun, Joydeep Ghosh, and **Joyce C Ho**. "CP tensor decomposition with cannot-link intermode constraints." In: *Proceedings of the 2019 SIAM International Conference on Data Mining*. 2019, pp. 711–719.

[C20] Eric W Lee* and **Joyce C Ho**. "FuzzyGap: Sequential pattern mining for predicting chronic heart failure in clinical pathways." In: *AMIA Informatics Summits*. 2019, pp. 222–231.

[C19] Jasmine Y Nakayama, Vicki Hertzberg, and **Joyce C Ho**. "Making sense of abbreviations in nursing notes: A case study on mortality prediction." In: *AMIA Informatics Summits*. 2019, pp. 275–284.

[C18] Mani Sotoodeh* and **Joyce C Ho**. "Improving length of stay prediction using a hidden Markov model." In: *AMIA Informatics Summits*. 2019, pp. 425–434.

[C17] Jette Henderson, Huan He*, Bradley A Malin, Joshua C Denny, Abel N Kho, Joydeep Ghosh, and **Joyce C Ho**. "Phenotyping through Semi-Supervised Tensor Factorization (PSST)." In: *AMIA Annual Symposium*. 2018, pp. 564–573.

[C16] Ardavan Afshar, Ioakeim Perros, Evangelos E Papalexakis, Elizabeth Searles, **Joyce C Ho**, and Jimeng Sun. "COPA: Constrained PARAFAC2 for sparse & large datasets." In: *Proceedings of the 27th ACM International Conference on Information and Knowledge Management*. 2018, pp. 793–802.

[C15] Ardavan Afshar, **Joyce C Ho**, Bistra Dilkina, Ioakeim Perros, Elias B Khalil, Li Xiong, and Vaidy Sunderam. "CP-ORTHO: An orthogonal tensor factorization framework for spatio-temporal data." In: *Proceedings of the 25th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems*. 67. 2017, pp. 1–4.

[C14] Jette Henderson, **Joyce C Ho**, and Joydeep Ghosh. "gamAID: Greedy CP tensor decomposition for supervised EHR-based disease trajectory differentiation." In: *Proceedings of the 2017 39th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*. 2017, pp. 3644–3647.

[C13] **Joyce C Ho** and Yubin Park. "Learning from different perspectives: Robust cardiac arrest prediction via temporal transfer learning." In: *Proceedings of the 2017 39th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*. 2017, pp. 1672–1675.

[C12] Jette Henderson, **Joyce C Ho**, Abel N Kho, Joshua C Denny, Bradley A Malin, Jimeng Sun, and Joydeep Ghosh. "Granite: Diversified, sparse tensor factorization for electronic health record-based phenotyping." In: *2017 IEEE International Conference on Healthcare Informatics*. 2017, pp. 214–223.

[C11] Jette Henderson, Ryan Bridges, **Joyce C Ho**, Byron C Wallace, and Joydeep Ghosh. "PheKnow-Cloud: A tool for evaluating high-throughput phenotype candidates using online medical literature." In: *AMIA 2017 Joint Summits on Translational Science*. 2017, pp. 149–157.

[C10] Ryan Bridges, Jette Henderson, **Joyce C Ho**, Byron C Wallace, and Joydeep Ghosh. "Automated verification of phenotypes using PubMed." In: *Proceedings of the 7th ACM International Conference on Bioinformatics, Computational Biology, and Health Informatics*. 2016, pp. 595–602.

[C9]   **Joyce C Ho**, Joydeep Ghosh, and Jimeng Sun. "Marble: High-throughput phenotyping from electronic health records via sparse nonnegative tensor factorization." In: *Proceeding of the 20th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining*. 2014, pp. 115–124.

[C8]   **Joyce C Ho**, Joydeep Ghosh, and Jimeng Sun. "Extracting phenotypes from patient claim records using nonnegative tensor factorization." In: *Proceedings of the 2014 International Conference on Brain Informatics and Health*. 2014, pp. 142–151.

[C7]   **Joyce C Ho**, Yubin Park, Carlos M Carvalho, and Joydeep Ghosh. "DYNACARE: Dynamic cardiac arrest risk estimation." In: *Proceedings of the 16th International Conference on Artificial Intelligence and Statistics*. 2013, pp. 333–341.

[C6]   **Joyce C Ho**, Joydeep Ghosh, and K P Unnikrishnan. "Risk prediction of a multiple sclerosis diagnosis." In: *2013 IEEE International Conference on Healthcare Informatics*. 2013, pp. 175–183.

[C5]   Yubin Park, **Joyce C Ho**, and Joydeep Ghosh. "Multivariate temporal symptomatic characterization of cardiac arrest." In: *Proceedings of the 35th International Conference of the IEEE Engineering in Medicine and Biology Society*. 2013, pp. 3222–3225.

[C4]   Cheng H Lee, Natalia M Arzeno, **Joyce C Ho**, Haris Vikalo, and Joydeep Ghosh. "An imputation-enhanced algorithm for ICU mortality prediction." In: *Computing in Cardiology*. 2012, pp. 253–256.

[C3]   **Joyce Ho**, John Fisher, Joshua Gordon, Larry Lagin, and Susan West. "Java tool framework for automation of hardware commissioning and maintenance procedures." In: *Proceedings of ICALEPCS07*. 2007, p. 547.

[C2]   John Fisher, Greg Bowers, Robert Carey, Stephanie Daveler, Kelley H Ford, **Joyce Ho**, Larry Lagin, Chris Lambert, Jessica Mauvais, Eric Stout, and Susan West. "User interface framework for the National Ignition Facility (NIF)." In: *Proceedings of ICALEPCS07*. 2007, p. 146.

[C1]   **Joyce Ho** and Stephen S Intille. "Using context-aware computing to reduce the perceived burden of interruptions from mobile devices." In: *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. 2005, pp. 909–918.

Refereed Workshops

[W11]   Hejie Cui, Jiaying Lu, Shiyu Wang, Ran Xu[*], Wenjing Ma, Shaojun Yu, Yue Yu, Xuan Kan, Tianfan Fu, Chen Ling, **Joyce Ho**, Fei Wang, and Carl Yang. "A survey on knowledge graphs for healthcare: Resources, application progress, and promise." In: *ICML 3rd Workshop on Interpretable Machine Learning in Healthcare (IMLH)*. 2023.

[W10]   Jing Zhang[*], Daesung Choi, Shivani A Patel, and **Joyce C Ho**. "Exploring the temporal dynamics of county-level vulnerability factors on COVID-19 outcomes." In: *NeurIPS Machine Learning in Public Health workshop*. 2021.

[W9]   Huan He[*], Shifan Zhao, Difeng Cai, Yuanzhe Xi, and **Joyce C Ho**. "AGE: Enhancing the convergence on GANs using alternating extra-gradient with gradient extrapolation." In: *NeurIPS workshop on Deep Generative Models and Downstream Applications*. 2021.

[W8]   Zelalem Gero[*] and **Joyce C Ho**. "Word centrality constrained representation for keyphrase extraction." In: *Proceedings of the 20th Workshop on Biomedical Language Processing*. 2021, pp. 155–161.

[W7]   Huan He[*], Yuanzhe Xi, and **Joyce C Ho**. "Accelerated SGD for tensor decomposition of sparse count data." In: *ICDM Workshop on High Dimensional Data Mining*. 2020, pp. 284–291.

[W6]   Sergey Volokhin, **Joyce C Ho**, and Eugene Agichtein. "You sound like you watch action movies: Towards predicting movie preferences from conversational interactions." In: *WSDM Workshop on Conversational Systems for E-Commerce Recommendations and Search*. 2020.

[W5]   Jette Henderson, Bradley A Malin, **Joyce C Ho**, and Joydeep Ghosh. "PIVETed-Granite: Computational phenotypes through constrained tensor factorization." In: *KDD Workshop on Machine Learning for Medicine and Healthcare*. 2018.

[W4]   Yubin Park, **Joyce C Ho**, and Joydeep Ghosh. "ACDC: -Carving Decision Chain for Risk Stratification." In: *2016 ICML Workshop on Human Interpretability in Machine Learning*. 2016.

[W3]   Jette Henderson, **Joyce C Ho**, Joydeep Ghosh, Suriya Gunasekar, and Jimeng Sun. "Personalized diversified tensor factorization for phenotyping." In: *Neural Information Processing Systems 2015 Workshop on Machine Learning in Healthcare*. 2015.

[W2]   **Joyce C Ho**, Carlos M Carvalho, and Joydeep Ghosh. "DYNACARE-OP: Dynamic cardiac arrest risk estimation incorporating ordinal features." In: *2013 International Conference on Machine Learning Workshop: Role of Machine Learning in Transforming Healthcare*. 2013.

[W1]   **Joyce C Ho**, Cheng H Lee, and Joydeep Ghosh. "Imputation-enhanced prediction of septic shock in ICU patients." In: *2012 ACM SIGKDD Workshop on Health Informatics*. 2012.

Refereed Abstracts

[A8]   Aniruddha Deshpande, Alanna A Morris, **Joyce C Ho**, and Shivani A Patel. "Comparative performance of recurrent heart failure prediction models: Incorporating social determinants and applying machine learning." American Heart Association's Scientific Sessions. 2022.

[A7]   Juhao Zhang°, Samantha Lin°, Yunjie Wu°, Jing Zhang*, Alanna A Morris, Shivani A Patel, and **Joyce C Ho**. "Deriving and validating novel neighborhood data for investigation of adverse outcomes in patients hospitalized for heart failure: A feasibility study." American Heart Association's Scientific Sessions. 2022.

[A6]   Wenhui Zhang, Mani Sotoodeh*, **Joyce C Ho**, Roy L Simpson, and Vicki Stover Hertzberg. "Comparing the documented pressure injury in MIMIC-III: An "UpSet" visualization." American Nursing Informatics Association Annual Conference. 2021.

[A5]   Yubin Park, **Joyce C Ho**, Ash Damle, and Meghan Sapia. "Medication profiling through tensor factorization: A case study on commercial pharmacy claims." Rocky Bioinformatics Conference. 2019.

[A4]   Robert Chen, **Joyce C Ho**, and Jin-Mann Sally Lin. "Extracting medication information from unstructured public health data: A demonstration on data from population-based and tertiary-based samples." CSTE Annual Conference. 2019.

[A3]   **Joyce C Ho**, Lisa Staimez, K M Venkat Narayan, Roy L Simpson, and Vicki S Hertzberg. "Comparison of the Framingham risk score, SCORE, and UKPDS risk engine for predicting cardiovascular disease complications in people with diabetes." American Diabetes Association's 79th Scientific Sessions. 2019.

[A2]   Robert Chen, **Joyce C Ho**, and Jin-Mann Sally Lin. "Application of tensor factorization technique to uncover medication usage patterns in Myalgic Encephalomyelitis/Chronic Fatigue Syndrome (ME/CFS): Population-based and tertiary-based samples." American Public Health Association Annual Meeting. 2017.

[A1]   **Joyce C Ho**, Jin-Mann S Lin, Brian M Gurbaxani, Jimeng Sun, and Joydeep Ghosh. "Uncovering medication usage patterns of patients with chronic fatigue syndrome via nonnegative tensor factorization." AMIA Joint Summits on Translational Science. 2015.

Working Papers

[P1]   Suriya Gunasekar, **Joyce C Ho**, Joydeep Ghosh, Stephanie Kreml, Abel N Kho, Joshua C Denny, Bradley A Malin, and Jimeng Sun. *Phenotyping using structured collective matrix factorization of multi-source EHR data*. In arXiv. 2016.

Presentations

Invited Talk[1]   ○ "Improving Prediction of 30-day Hospital Readmission for Patients with Heart Failure through the Integration of Neighborhood-Level Measures", Columbia University Biomedical Informatics Seminar Series, October 2023

○ "Federated tensor learning and its application in healthcare", Workshop on Sparse Tensor Computations, University of Illinois Urbana-Champaign, October 2023

○ "Integration of Novel Data Streams to Capture Neighborhood-Level Measures", Workshop on Applications of Artificial Intelligence/Machine Learning in Health Disparities Research and Workforce Diversity, University of Georgia, September 2023

○ "Tensor factorization for biomedical representation learning", Data Science Institute, Lawrence Livermore National Laboratory, July 2023

○ "Integration of Novel Data Streams to Capture Neighborhood-Level Measures", Workshop on Advances in Multimodal Artificial Intelligence to Enhance Environmental and Biomedical Data Integration, The National Academies of Sciences, Engineering, and Medicine, June 2023

- "Art in machine learning: A case study on pressure injury", Guest lecture in NRSG 741 Big Data Analytics, Emory University, 2023
- "Assessing machine learning methods for predicting cardiovascular disease complications in people with diabetes", Guest lecture in NRSG 741 Big Data Analytics, Emory University, 2022
- "Identifying patient subgroups in health data using tensor models", Kaiser Permanente Machine Learning Seminar Series, 2022
- "Can you trust your computational phenotyping algorithm?", Emory University Constructive Collisions Event Lightening Talk, 2022
- "Assessing machine learning methods for predicting cardiovascular disease complications in people with diabetes", Guest lecture in NRSG 741 Big Data Analytics, Emory University, 2021
- "Can you trust your phenotyping algorithm?", AAAI Workshop: Trustworthy AI for Healthcare, 2021
- "The automation of evidence matching and systemic reviews using web-based medical literature", Center for Health Analytics & Informatics Seminar, Georgia Tech, 2020
- "Assessing machine learning methods for predicting cardiovascular disease complications in people with diabetes", Guest lecture in NRSG 741 Big Data Analytics, Emory University, 2020
- "Developing an Evidence Matching Framework Using Web-based Medical Literature" (keynote), Rocky Mountain Bioinformatics Conference 2019
- "Assessing machine learning methods for predicting cardiovascular disease complications in people with diabetes", Guest lecture in NRSG 741 Big Data Analytics, Emory University, 2019
- "Assessing machine learning methods for predicting cardiovascular disease complications in people with diabetes", Global Health Seminar, Emory University, 2019
- "Building "healthier" tensor models: A case study on learning computational phenotypes from EHRs", Center for Health Analytics & Informatics Seminar, Georgia Tech, 2019
- "Transforming healthcare byte by byte", Emory College Alumni Board, Emory University, 2018
- "Bridging the gap between electronic health records and tensor factorization", Department of Computer Science and Engineering, the Chinese University of Hong Kong, 2017
- "Understanding high-dimensional health data via tensor factorization", School of Nursing, Emory University, 2017
- "Clinically interpretable models for healthcare data", Guest lecture in CSE 8803 Big Data for Healthcare, Georgia Tech, 2017
- "Extracting medically interpretable concepts from complex health data", Department of Computer Science, University of Southern California, 2015
- "Extracting medically interpretable concepts from complex health data", Mathematics and Computer Science Department, Emory University, 2015
- "Computational phenotyping from electronic health records using tensor factorization", INFORMS Annual Meeting, 2015
- "Septic shock prediction for patients with missing data", INFORMS Annual Meeting, 2014

Tutorial
- "Large-scale Spatiotemporal Analysis using Tensor Factorization", SIAM International Conference on Data Mining, 2019

Panel
- "AI: Our Today and Tomorrow", Discovering Emory, 2022
- "First Look at the Global Diabetes Research Center", Emory Ambassadors, 2022
- "Diversifying Data Science", Emory Department of Quantitative Theory and Methods, 2022
- "Trustworthy AI Panel Discussion", AAAI Workshop: Trustworthy AI for Healthcare, 2021
- "Computational Phenotyping on Diverse Data Sources", AMIA Annual Symposium, 2017

Grants & Contracts

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[1]Most peer-reviewed conference papers were accepted as an oral talk and presented by the first author of the paper.

- Leveraging modern analytics approaches to improve diabetes outcomes
  National Institute of Health, National Library of Medicine, 1K01LM012924
  $520,869, 07/10/2018-06/30/2021
  Role: PI
- TIMES: A tensor factorization platform for spatio-temporal data
  National Science Foundation, Big Data Science & Engineering, IIS-1838200
  $943,057 (Emory portion), 10/1/2018-09/30/2022
  Role: PI
  Co-PIs: Li Xiong (Emory), Jimeng Sun (Georgia Tech)
- Computational Prediction and Functional Validation of Novel Risk Loci of Alzheimer's Disease
  National Institute of Health, National Institute of Aging, 1R56AG060757
  $788,200, 09/30/2018-08/31/2019
  Role: Co-Investigator
  PIs: Peng Jin, Zhaohui Qin, Thomas Spurgeon Wingo
- SCH: INT Re-envisioned chart assessment for real-time investigation of nursing and guidance
  National Institute of Health, National Library of Medicine, 1R01LM013323
  $930,000, 09/13/2019-07/31/2023
  Role: Co-PI
  PI: Vicki Hertzberg
- COVID 19 Health Equity Dashboard
  Robert Wood Johnson Foundation
  $195,000, 06/15/2020-12/14/2020
  Role: Co-Investigator
  PI: Shivani Patel
- PREMED: Privacy-Preserving and Robust Computational Phenotyping using Multisite EHR Data
  National Science Foundation, Division Of Computer and Network Systems, CNS-2124104
  $900,000, 10/01/2021-09/30/2025
  Role: Co-PI
  PI: Li Xiong
- Machine Learning for Atrial Fibrillation Ablation
  National Institute of Health,National Heart, Lung, and Blood Institute, 1R21HL156184
  $336,595, 09/08/2021-07/31/2023
  Role: Co-Investigator
  PI: Vicki Hertzberg
- Social Determinants of Health Insight Tool
  Johnson and Johnson Decoding Disparities QuickFire Challenge
  $200,000, 01/01/2022-2/28/2023
  Role: Co-PI
  PI: Shivani Patel
- CAREER: Aequitas: A comprehensive machine learning framework to decode health disparities
  National Science Foundation, Division Of Information & Intelligent Systems, IIS-2145411
  $499,980, 07/15/2022-06/30/2027
  Role: PI
- Feasibility of Thermography to Detect Pressure Injuries in a Diverse Population of Emory Healthcare Patients
  Healthcare Innovation Program/Georgia CTSA Seed Grant Award
  $25,000, 03/01/2023-03/02/2024
  Role: co-PI PI: Sharon Sonenblum

Awards & Honors

2022   Outstanding Paper Award at Machine Learning for Health
2022   NSF Career Award
2020   Emory Computer Science Researcher of the Year

2019	Nomination for Best Student Paper at the 2019 AMIA Informatics Summits
2018	Best Student Paper at KDD Workshop on Machine Learning for Medicine and Healthcare
2018	Grace Hopper Conference Faculty Scholar
2018	Emory Center for Faculty Development and Excellence Teaching Fellow
2017	Distinguished Clinical Research Informatics Paper Award
2015	INFORMS Annual Meeting Artificial Intelligence Cluster Travel Award Winner
2014	Dr. Brooks Carlton Fowler Endowed Presidential Graduate Fellowship in Electrical and Computer Engineering
2014	KDD Student Travel Award Winner
2012	Innovative Signal Analysis Fellowship
2011–2014	Cockrell School of Engineering Doctoral Fellowship
2011	Microelectronics and Computer Development Fellowship

Teaching

Emory Assistant Professor.
- CS171 Introduction to Computer Science II (undergraduate): Fall 2017/Fall 2021/Spring 2022 (34/36/63 students)
- CS334 Machine Learning (undergraduate): Fall 2019/Fall 2023 (42/52 students)
- CS377 Database Systems (undergraduate): Spring 2016/Spring 2017/Spring 2018/Fall 2021 (46/58/56/57 students)
- CS534 Machine Learning (graduate): Spring 2017/Fall 2017/Fall 2018/Fall 2023 (21/34/33/50 students)
- CS584 Big Data Analytics (graduate): Spring 2016 (14 students)

UT-Austin Teaching Assistant.
- MIS382N Advanced Predictive Analytics (graduate): Spring 2014 (40 students)
- EE380L Data Mining (graduate): Spring 2013 (45 students)

Student Advising

PhD
- Ran Xu, 3rd year PhD Student
- Eric W Lee, PhD 2023
  Dissertation: Automating biomedical abstract screening using network embedding Employment: Post-doctoral researcher, Oak Ridge National Laboratory
- Jing Zhang, PhD 2023
  Dissertation: Attention-enhanced deep learning models for data cleaning and integration
  Recognition: 2022 COVID Innovation for Teaching and Research Award (Emory Laney Graduate School Award)
  Employment: Postdoctoral researcher, Emory University
- Huan He, PhD 2022, co-advised with Yuanzhe Xi
  Dissertation: Acceleration algorithms for machine learning models
  Employment: Postdoctoral researcher, Harvard University
- Yifei Ren, PhD 2021, co-advised with Li Xiong
  Dissertation: Novel approaches in high-dimensional temporal data analysis
  Employment: Microsoft
- Zelalem Gero, PhD 2021
  Dissertation: Machine learning methods for biomedical keyphrase extraction
  Employment: Microsoft Research
- Mani Sotoodeh, PhD 2021, co-advised with Li Xiong
  Dissertation: Crowdsourcing and semi-supervised learning for detection and prediction of hospital acquired pressure ulcer injury
  Employment: Postdoctoral researcher, University of Montreal

○ Jing Ma, PhD 2021, co-advised with Li Xiong
Dissertation: Federated tensor factorization for collaborative health data analytics
Recognition: 2021 Schoettle Research Award (Emory CS Outstanding Research Award), 2021 The Web Conference Student Scholarship Award, 2019 SIGIR Student Travel Grant
Employment: Facebook

○ Bonggun Shin, PhD 2020
Dissertation: Deep learning approaches towards computerized drug discovery
Recognition: 2020 Schoettle Research Award (Emory CS Outstanding Research Award)
Employment: Deargen Incorporated

Honors ○ Ruby Wu, BS 2023 (Highest honors)
Honors Thesis: ClusT: Interactive Visualization Tool for Deep Constrained Clustering on Tweets

○ Kevin Wu, BS 2023 (Highest honors)
Honors Thesis: CONSchema: Schema matching with semantics and constraints

○ Tiantian Li, BS 2023 (Highest honors)
Honors Thesis: Improving biomedical abstract screening using contrastive learning
Recognition: 2023 Emory Outstanding Undergraduate Award

○ Linghui Zeng, BS 2022 (Highest honors)
Honors Thesis: Understanding spatial-temporal trends using communication-efficient federated tensor factorization for incomplete data

○ Wenqin Dong, BS 2020 (Highest honors)
Honors Thesis: GASP: Graph-based approximate sequential pattern mining
Recognition: 2020 Emory CS Academic Excellence Award

○ Yilin Dong, BS 2020 (High honors)
Honors Thesis: Medaboost - An improved ensemble learning algorithm in classification with multiple annotations

○ Sihan Yue, BS 2019 (Highest honors)
Honors Thesis: Smoothing tensor factorization on spatio-temporal data
Recognition: 2019 Emory Math Evans Award (Outstanding Academic Achievement)

○ Tianhui Mao, BS 2019 (Highest honors, co-advised with Yuanzhe Xi)
Honors Thesis: Smart initialization for smooth and sparse tensor factorization

Undergraduate ○ Yijie Hao, BS 2025
○ Samantha Lin, BS 2024
○ Ruby Wu, BS 2023, CMU Masters student
○ Jerry Zhang, BS 2023
○ Tiantian Li, BS 2023, Emory PhD
○ Kevin Wu, BS 2023, Capital One
○ Carrie Gu, BS 2023, Stanford Masters student
○ Jinghao (Austin) Cai, BS 2022, Georgia Tech Masters student
○ Linghui (Helen) Zeng, BS 2022, Yale Masters student
○ Jiasheng (Leo) Sheng, BS 2022, CMU Masters student
○ Colin Jiang, BS 2020, Facebook
○ Wenqin (Cynthia) Dong, BS 2020, CMU Masters student
○ Yilin (Elaine) Dong, BS 2020, CMU Masters student
○ Timothy Davidson, BA 2019, Accenture
○ Tianhui Mao, BS 2019, MIT Masters student
○ Sihan Yue, BS 2019, CMU Masters student
○ Jian Chen, BA 2018, University of Southern California Masters student
○ Junyuan Ke, BA 2018, UT Austin PhD Student
○ Weixing Tang, BS 2018, Georgia Tech Masters student
○ Zining Wang, BS 2017, UC San Diego Masters student
○ Jiayu Yao, BS 2017, Harvard PhD student

PhD Thesis Committee	○ Wenjing Ma, Emory University, 2023

PhD Thesis Committee

○ Wenjing Ma, Emory University, 2023
Dissertation: Cell type identification in single-cell genomics and its applications
Advisor: Hao Wu

○ Fereshteh Razmi Marani, Emory University, 2023
Defensive machine learning techniques for countering adversarial attacks
Advisor: Li Xiong

○ Zihao Wang, Emory University, 2023
Dissertation: Contextual embedding representations for dialogue systems
Advisor: Jinho Choi

○ Liyan Xu, Emory University, 2023
Enhancing document understanding through the incorporation of structural inference
Advisor: Jinho Choi

○ Jianghong Zhou, Emory University, 2022
Dissertation: Improving interactive search with user feedback
Advisor: Eugene Agichtein

○ Yuyang Gao, Emory University, 2022
Dissertation: Interpretable and interactive representation learning on dynamic attributed graphs
Advisor: Liang Zhao

○ Rongmei Lin, Emory University, 2022
Dissertation: Exploring invariance in single and multi-modal deep representation learning
Advisor: Li Xiong

○ Qiuchen Zhang, Emory University, 2021
Dissertation: Differentially private deep learning
Advisor: Li Xiong

○ Farnaz Tahmasebian, Emory University, 2021
Dissertation: Robust crowdsourcing and federated learning under poisoning attacks
Advisor: Li Xiong, Vaidy Sunderam

○ Jasmine Nakayama, Emory University, 2020
Dissertation: The hepatitis C cascade of care in a 1945-1965 birth cohort in Southern United States
Advisor: Vicki Hertzberg

○ Safoora Yousefi, Emory University, 2019
Dissertation: Neural networks for cancer survival analysis using high-dimensional genomic data
Advisor: Lee Cooper

○ Samy Wu Fung, Emory University, 2019
Dissertation: Large-scale parameter estimation in Geophysics and machine learning
Advisor: Lars Ruthotto

○ Xiaobo Sun, Emory University, 2018
Dissertation: The applications of NoSQL systems and ensemble learning in managing, processing and analyzing big omics data
Advisor: Zhaohui (Steve) Qin

○ Daniel Garcia Ulloa, Emory University, 2017
Dissertation: Recommender systems and information fusion in spatial crowdsourcing
Advisor: Li Xiong, Vaidy Sunderam

○ Layla Pournajaf, Emory University, 2017
Dissertation: Privacy preserving task management for mobile crowd sensing
Advisor: Li Xiong, Vaidy Sunderam

○ Haoran Li, Emory University, 2016
Dissertation: Privacy preserving data release and analytics
Advisor: Li Xiong

MS / Honors Thesis Committee	○ Jiasheng Sheng, Emory University, 2022 Honors Thesis: A comparison study on low rank matrix completion algorithms in image and painting restoration

MS / Honors Thesis Committee

- ○ Jiasheng Sheng, Emory University, 2022
  Honors Thesis: A comparison study on low rank matrix completion algorithms in image and painting restoration
- ○ Rocky Luo, Emory University, 2022
  Honors Thesis: Efficient preconditioner for dense covariance matrices using geometric information
- ○ Mingyang Sun, Emory University, 2019
  Honors Thesis: Towards personality trait prediction from chatbot conversations using machine learning with domain adaptation
- ○ Jennifer A McGuire, Emory University, 2018
  Honors Thesis: Role of glassy-rubbery interfaces on the physical gging of glassy polymer thin films
- ○ Rongmein Lin, Emory University, 2017
  MS Thesis: A Decision Support System for Heparin Dosing

Service

Org Committee

AHLI Conference on Health, Inference, and Learning 2023 General Co-chair

AHLI Conference on Health, Inference, and Learning 2022 General Co-chair

SIAM International Conference on Data Mining 2021 Doctoral Forum Co-chair

ACM Conference on Health, Inference, and Learning 2021 Finance Co-chair

SIAM International Conference on Data Mining 2020 Scholarship Co-chair

ACM Conference on Health, Inference, and Learning 2020 Finance Co-chair

ACM Conference on Health, Inference, and Learning 2020 Applications Track Co-chair

ACM International Conference on Information and Knowledge Management 2017 Short Research Papers Track Co-chair

PC Member

TheWebConf (2019, 2020, 2021, 2022, 2023)

KDD (2022, 2023)

AISTATS (2021)

CIKM (2018, 2019, 2020)

SIAM International Conference on Data Mining (2020, 2021, 2022)

ECML/PKDD (2020)

International Joint Conference on Artificial Intelligence (2021, 2022, 2023)

AAAI Conference on Artificial Intelligence (2021, 2022)

Grace Hopper Data Science program (2018)

ACM Conference on Bioinformatics, Computational Biology, and Health Informatics (2017)

IEEE International Conference on Healthcare Informatics (2015, 2016, 2017)

IEEE DSAA 2021 Workshop on Tensor Analytics for Emerging Analytics

KDD 2019 Workshop on Applied Data Science for Healthcare

KDD 2019 Workshop on Tensor Methods for Emerging Data Science Challenges

AMIA 2016 Workshop on Data Mining for Medical Informatics

NIPS 2016 Workshop on Machine Learning for Health

ACM-BCB 2016 Workshop on Methods and Applications in Healthcare Analytics

AIME 2015 Workshop: Matrix Computations for Biomedical Informatics

AMIA 2014 Workshop on Data Mining for Medical Informatics: Electronic Phenotyping

BigMUD 2013: ICDM Workshop on Mining and Understanding from Big Data

Reviewer

NeurIPS Workshops (2019)

Machine Learning for Healthcare (2016, 2017, 2018, 2019, 2020, 2021, 2022)

AMIA Annual Symposium (2018, 2019, 2020, 2021)

AMIA Informatics Summits (2019, 2020, 2021)

AMIA Joint Summits on Translational Science (2015, 2016, 2017, 2018)

Journal of the American Medical Informatics Association

Journal of Machine Learning
Computer Methods and Programs in Biomedicine
IEEE Transactions on Knowledge and Data Engineering
Data Mining and Knowledge Discovery
ACM Transactions on Knowledge Discovery from Data
Scientific Reports
BMJ Open Diabetes Research & Care
WIREs Data Mining and Knowledge Discovery
ACM Transactions on Intelligent Systems and Technology
Artificial Intelligence In Medicine
Computer Methods and Programs in Biomedicine
Computers, Informatics, Nursing

Panel Reviewer National Science Foundation (2018, 2019, 2021, 2022)

National Institutes of Health, National Center for Advancing Translational Sciences (2019)

Georgia Center for Diabetes Translation Research Pilot and Feasibility (2022, 2023)

Institutional Faculty Experience Master Planning Committee, Emory University, 2018-2019

University Research Review Committee (2018, 2020, 2022)

Emory University Women's Club Memorial Fellowship for Graduate Research Committee, 2022

Faculty Search Committee, Department of Mathematics and Computer Science (2017-2018), Department of Computer Science (2020-2021, 2021-2022)

CSI PhD Graduate Student Committee (2017-2018, 2021-2022), Department of Computer Science

Faculty Advisor, Girls Who Code, Emory University, 2016-Present

Faculty Advisor, Association for Computing Machinery-Women in Computing, Emory University, 2016-Present

Faculty Advisor, Emory ProgramHers, Emory University, 2019-Present

Faculty Advisor, Emory Computer Science Club, Emory University, 2022-Present