Fahad Kamran

Ph.D. Candidate
Computer Science and Engineering
University of Michigan

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Research Interests

My research is at the intersection of machine learning and healthcare. I am interested identifying challenges towards the use of machine learning in real clinical applications and building novel solutions to tackle these problems, particularly in the fields of causal inference and survival analysis. I also work in combining of machine learning and data from wearable sensors to learn valuable person specific insights as well as to detect and prevent physiological harm, using electronic health record (EHR) data to improve patient care across a multitude of settings and diseases, including COVID-19 and Sepsis, and sports analytics.

Education

University of Michigan *Ann Arbor, MI, USA*
Ph.D. Candidate in Computer Science and Engineering (CSE) Sep 2018–Present
GPA: 4.0/4.0
Thesis Topic: Learning From Observational Healthcare Data in Survival Analysis and Causal Inference
Advisor: Prof. Jenna Wiens

University of California, Berkeley *Berkeley, CA, USA*
B.A. in Computer Science, Mathematics, and Statistics Sep 2014–May 2018
GPA: 3.80/4.0
Research Advisor: Prof. Stuart Russell

Peer-Reviewed Publications

1. **Fahad Kamran**, Shengpu Tang, Erkin Otles, Dustin McEvoy, Sameh Saleh, Jen Gong, Benjamin Li, Sayon Dutta, Xinran Liu, Richard Medford, Thomas Valley, Lauren West, Karandeep Singh, Seth Blumberg, John Donnelly, Erica Shenoy, John Ayanian, Brahmajee Nallamothu, Michael Sjoding, Jenna Wiens. "Early Identification of Hospitalized Patients with COVID-19 at Risk of Clinical Deterioration: A Multi-Site Study" ***The British Medical Journal***. 2022.

2. **Fahad Kamran**, Kathryn Harrold, Jonathan Zwier, Wendy Carender, Tian Bao, Kathleen H Sienko, Jenna Wiens. "Automatically evaluating balance using machine learning and data from a single inertial measurement unit." In ***Journal of NeuroEngineering and Rehabilitation***. 2021.

3. Karandeep Singh, Thomas S Valley, Shengpu Tang, Benjamin Y Li, **Fahad Kamran**, Michael W Sjoding, Jenna Wiens, Erkin Otles, John P Donnelly, Melissa Y Wei, Jonathon P McBride, Jie Cao, Carleen Penoza, John Z Ayanian, Brahmajee K Nallamothu. "Evaluating a widely implemented proprietary deterioration index model among hospitalized patients with COVID-19." In ***Annals of the American Thoracic Society***. 2021.

4. **Fahad Kamran**, Jenna Wiens. "Estimating Calibrated Individualized Survival Curves with Deep Learning." In ***Proceedings of the AAAI Conference on Artificial Intelligence***. 2021.

5. Jeremiah Hauth, Safa Jabri, **Fahad Kamran**, Eyoel W Feleke, Kaleab Nigusie, Lauro V Ojeda, Shirley Handelzalts, Linda Nyquist, Neil B Alexander, Xun Huan, Jenna Wiens, Kathleen H Sienko. "Automated loss-of-balance event identification in older adults at risk of falls during real-world walking using wearable inertial measurement units." In ***Sensors***. 2021.

6. **Fahad Kamran**, Victor C Le, Adam Frischknecht, Jenna Wiens, Kathleen H Sienko. "Noninvasive Estimation of Hydration Status in Athletes Using Wearable Sensors and a Data-Driven Approach Based on Orthostatic Changes." In ***Sensors***. 2021.

7. Caleb Belth, **Fahad Kamran**, Donna Tjandra, Danai Koutra. "When to remember where you came from: node representation learning in higher-order networks." In ***International Conference on Advances in Social Networks Analysis and Mining (ASONAM)***. 2019.

Awards and Honors

Service Award for Excellence in Climate, Diversity, Equity, and Inclusion; Univ. of Michigan CSE	2020
Campus Outstanding GSI Award; Univ. of California, Berkeley	2019
Computer Science Outstanding Teaching and Leadership Award; Univ. of California, Berkeley	2019

Workshops, Presentations, and Talks

1. Fahad Kamran. "Augmenting Clinical Decision Making with Artificial Intelligence". To Center for Molecular and Clinical Epidemiology of Infectious Diseases and Michigan Center for Infectious Disease Threats Seminar Series. April 2022. Talk.

2. Fahad Kamran. "Estimating Calibrated Individualized Survival Curves with Deep Learning." *Michigan AI Symposium*. October 2021. Poster.

3. Fahad Kamran. "Estimating Calibrated Individualized Survival Curves with Deep Learning." *AAAI Conference on Artificial Intelligence*. April 2021. Poster.

4. Fahad Kamran. "Deep Calibrated Survival Analysis." *Michigan AI Symposium*. October 2020. Poster.

5. Fahad Kamran. "Deep Calibrated Survival Analysis." *Conference on Health, Inference, and Learning (CHIL) Workshop*. July 2020. Presentation.

Employment

Evidation Health *San Mateo, CA, USA*

Data Science Intern May 2022–Aug 2022

Analyzed the effects of missing confounders and omitted variable bias in intensive longitudinal data.
Built new theory on the effect of omitted variable bias in mixed-effect models.
Empirically analyzed the effect of missing lagged variables on statistical associations in mixed-effect models, both using simulations and real person generated health data.

84.51° *Cincinnati, OH, USA*

Data Analyst Intern Jun 2017–Aug 2017

Worked on utilizing machine learning to analyze purchase patterns and target coupons to interested customers.
Used natural language processing to understand customer sentiment towards Kroger stores across the nation.

Teaching

Introduction to Artificial Intelligence (EECS 492) *Ann Arbor, MI, USA*

GSI for Prof. Emily Mower Provost in undergraduate course at the University of Michigan Aug 2019–Dec 2019

Foundations of Data Science (Data 8) *Berkeley, CA, USA*

Course Instructor for undergraduate course at University of California, Berkeley May 2018–Aug 2018

Foundations of Data Science (Data 8) *Berkeley, CA, USA*

Head Teaching Assistant for Profs. Ani Adhikari, David Wagner, and John DeNero in undergraduate course at University of California, Berkeley Jan 2016–May 2016; Aug 2016–Dec 2016; Aug 2017–May 2018

Data Structures and Algorithms (CS 61B) *Berkeley, CA, USA*

Teaching Assistant for Prof. Josh Hug in undergraduate course at University of California, Berkeley Jan 2017–May 2017

Introduction to Artificial Intelligence (CS 188) *Berkeley, CA, USA*

Teaching Assistant for Jacob Andreas and Davis Foote in undergraduate course at University of California, Berkeley May 2016–Aug 2016

Professional Service and Activities

Reviewer

ICML 2022: Workshop on Spurious Correlations, Invariance and Stability, NeurIPS 2021 Workshop - Bridging the Gap: From Machine Learning Research to Clinical Practice, MLHC 2021, MLHC 2020, Scientific Reports, Nature Machine Intelligence, Nature Cardiovascular Research

CSEG Buddy Program Founder and President *Ann Arbor, MI, USA*

Founded and organized program for onboarding new graduate students at University of Michigan's Computer Science and Engineering department (CSE) Jun 2020–Present

CSEG President *Ann Arbor, MI, USA*

Manage leadership of CSEG and represent CSE graduate students Jun 2020–Sept 2021

CSEG Relations Chair *Ann Arbor, MI, USA*

Communicate with department leadership, faculty, and company sponsors on behalf of CSE graduate students Jun 2020–Sept 2021

CSEG Tea Chair *Ann Arbor, MI, USA*

Held social events for CSEG May 2019–May 2020

Explore Graduate Studies Volunteer *Ann Arbor, MI, USA*

Advised prospective students about graduate studies in computer science Oct 2018, Oct 2019

Lunch and Lab with a Grad Mentor Program Volunteer *Ann Arbor, MI, USA*

Mentored a student on how to prepare for graduate school in computer science Sep 2019

Graduate Admissions Recruit@Home Speaker *Berkeley, CA, USA*

Gave a recruitment talk at University of California, Berkeley of behalf of UMich CSE Sep 2019

Big Data Summer Institute Lecturer *Ann Arbor, MI, USA*

Created and delivered data science lectures to public health undergraduate students July 2019, July 2021

Computer Science Mentors President *Berkeley, CA, USA*

Managed large scale mentoring for introductory computer science courses June 2016–May 2017

Peer Advisor *Berkeley, CA, USA*

Held advising sessions for students interested in a mathematics degree June 2016–May 2017

Computer Science Mentors Secretary *Berkeley, CA, USA*

Assisted in communications for mentoring organization June 2015–May 2016

Technical Skills

Programming Languages: Fluent in Python, Java, R, and SQL

Languages

English: native
Urdu: advanced proficiency
Spanish: moderate proficiency