Alex Okeson

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Interests: Exploratory data analysis, applied ML/AI, ML interpretability, data science, health tech, user centered design

Technical Skills

Programming: Python, SQL, R, Git, VSCode, Jupyter Notebooks
ML/Data Science: sklearn, numpy, pandas, InterpretML, SHAP, quantitative and exploratory data analysis, familiar with Spark and Keras
Visualization: Matplotlib, Seaborn, D3, R Shiny, data dashboarding

Education

PhD, Computer Science & Engineering – *University of Washington* *2022*
Thesis: Strategies for Selecting and Adapting Machine Learning Systems to Support Different Types of Experts
Advisor: James Fogarty. Thesis Committee: James Fogarty, Tim Althoff, Sean Munson, Amy Ko.
MS, Computer Science & Engineering – *University of Washington* *2021*
BS, Computer Science – *University of Colorado Boulder* (GPA: 4.0) *2017*

Professional Experience

Senior Research Engineer I – *iRhythm Technologies* *Nov 2022-July 2024*
- Led data acquisition and data analysis project planning for product feasibility analysis using an external dataset
- Performed data acquisition, helped develop project requirements, and collaborated in writing peer-reviewed publications for ML research projects
- Developed and refactored R&D codebases in Python to enable data processing, data analysis, and feasibility testing

Graduate Research Assistant – *University of Washington* *Feb 2019-June 2022*
Project: Actionable Bayesian Analysis for Evolving Health Goals (Publication under review)
Advisor: James Fogarty
- Designed and built a Bayesian network based analytics and data visualization platform in R for chronic health condition patients enabling adaptive, goal-oriented data analysis in real-world contexts
- Designed and conducted a qualitative user study to evaluate the tool and identify further improvements

Software Engineering Intern – *Google Health/Fitbit* *June 2021-Sept 2021*
Project: Personal Health Records Machine Learning Tool
Hosts: Hui Wu and Mukil Kesavan
- Developed a notebook style ML sandbox tool to support ranking and classification evaluation experiments on personal health data

Research Intern – *Microsoft Research, FATE Group* *June 2020-Sept 2020*
Project: Interpretability Tool Workflows and Uses of Ranked Aggregations (Publication Link)
Advisors: Jenn Wortman Vaughan and Hanna Wallach
- Designed and evaluated alternative global ranking visualization scheme for ML interpretability tools to expedite common workflows and avoid common pitfalls
- Conducted qualitative research to uncover interpretability tool usage patterns, best practices, common pitfalls, and evaluate alternative visualizations

Graduate Research Assistant – *University of Washington* *Jan 2019-Feb 2021*
Project: Dementia Onset Prediction with Explanations (Publication Link)
Advisors: Tim Althoff and Su-In Lee
- Iteratively built interpretable ML models and analyzed outputs to derive near-term dementia diagnostic insights
- Designed and validated a proof-of-concept dementia diagnostic test that is 5 times shorter and simpler than current clinical standard of care diagnostic tests with similar accuracy
- Built globally and personally explainable models in Python for near-term dementia risk prediction

Graduate Research Assistant – *University of Washington* *Sept 2019-June 2022*
Project: ICU Blood Glucose Measurement Validity
Advisors: James Fogarty, Tim Althoff, and Brent Wisse

- Trained and validated ML model to predict validity of ICU blood glucose tests
- Evaluated how glucose test uncertainty affects ICU decision making and potential for explainable ML predictions

Graduate Research Assistant – *University of Washington* *June 2018-Jan 2019*
Project: Computational Psychiatry
Advisor: Bing Brunton

- Explored new classification and variable encoding schemes for mental illness using unsupervised ML methods

Graduate Research Assistant – *University of Washington* *Sept 2017-June 2018*
Project: Machine Learning for the Operating Room
Advisor: Su-In Lee

- Implemented proportional hazards ML model to predict if/when a surgery patient will experience hypoxemia
- Contributed to SHAP interpretability package open-source code

Graduate Research Assistant – *University of Washington* *April 2018-June 2018*
Project: Customizable Anesthesia Monitoring
Advisor: Jeff Heer

- Designed customizable surgical anesthesia monitor using D3 based on interviews with doctors

Database and Data Lead – *Wise Cork* *Aug 2016-May 2017*

- Designed, built, and tested wine cellar tracking and education iOS app
- Wrote Python and Swift based web scrapers for data acquisition and data quality assurance

Software Engineering Intern – *Avanade Inc.* *June 2016-Aug 2016*

- Built retail customer experience bot with Innovation Lab team

Discovery Learning Apprentice – *University of Colorado Boulder* *Aug 2015-May 2016*
Project: Artificial Pancreas Verification Algorithm
Advisor: Sriram Sankaranarayanan

- Created and implemented algorithm to generate human blood glucose curves to test artificial pancreas

Office of Engineering and Technology Intern – *Federal Communications Commission* *June 2015-July 2015*

- Debugged and analyzed internet service provider performance data in SQL database
- Edited and fact-checked Measuring Broadband America 2015 Report

Undergraduate Research Assistant – *Laboratory for Atmospheric and Space Physics* *Oct 2014-May 2015*

- Streamlined data collection and created analysis software for NASA's New Horizons mission

Research and Development Intern – *Next Energy Technologies* *June 2014-July 2014*

- Programmed CNC milling machine operations to increase solar cell geometric efficiency by over 5%

Publications

Alex Okeson. Strategies for Selecting and Adapting Machine Learning Systems to Support Different Types of Experts. *PhD Thesis, University of Washington, 2022.*

Alex Okeson, Rich Caruana, Nick Craswell, Kori Inkpen, Scott M. Lundberg, Harsha Nori, Hanna Wallach, Jennifer Wortman Vaughan. Summarize with Caution: Comparing Global Feature Attributions. *IEEE Data Engineering Bulletin on Responsible AI and Human-AI Interaction, 2021.*

Nicasia Beebe-Wang*, **Alex Okeson***, Tim Althoff**, Su-In Lee**. Efficient and Explainable Risk Assessments for Imminent Dementia in and Aging Cohort Study. *IEEE Journal of Biomedical and Health Informatics, 2021*.

Alex Okeson, James Fogarty. Opportunities for Bayesian Network Learning in Personal Informatics Tools. *CHI 2020 Workshop on Artificial Intelligence for HCI: A Modern Approach*.

(* and ** indicate equal contribution)

Other Interests

- **Travel:** Spent a year (Aug 2024-Aug 2025) traveling to 19 countries across 5 continents

Awards and Honors

UW CSE 1st Year Research Fellowship	*2017-18*
Outstanding Graduate of the College of Engineering for Academic Achievement	*2017*
CU Boulder Chancellor's Recognition Award	*2017*
CU Boulder CS Best Capstone Project Award	*2017*
Rocky Mountain Celebration Women in Computing 1st Place Undergraduate Poster Competition	*2016*
Tang Fund Scholar for Study Abroad in Xi'an China	*2016*
University of Colorado Engineering Honors Program	*2014-17*
American Collegiate Rowing Association Academic All American	*2015*

Teaching Assistant Experience

UW CSE547: Machine Learning for Big Data with Prof. Tim Althoff	*Spring 2019*
UW CSE417: Algorithms and Computational Complexity with Prof. Walter Ruzzo	*Winter 2019*
UW CSE373: Data Structures and Algorithms with Prof. Ben Jones	*Summer 2018*
CU CSCI2400: Computer Systems with Prof. Rick Han	*Spring 2017*
CU EHON1151: Critical Encounters with Prof. Scot Douglass	*Fall 2015, Fall 2016*

Service

DUB (Design Use Build) Group Student Coordinator	*2021-2022*
UW CSE First Year Grad Student Mentoring Coordinator	*2018-2019*
CU Boulder Grace Hopper Conference Student Leader	*2015*