# Arianna Bunnell

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## Education

**PhD in Computer Science** August 2023 -*Present*
Department of Information & Computer Sciences, University of Hawai'i at Mānoa

**Master's of Science in Computer Science** Awarded May 2023
Department of Information & Computer Sciences, University of Hawai'i at Mānoa
Thesis Title: Early Breast Cancer Diagnosis via Breast Ultrasound and Deep Learning

**Bachelor's of Science in Statistics** Awarded May 2021
Department of Mathematics & Statistics, Utah State University

**Bachelor's of Science in Computer Science** Awarded May 2021
Department of Computer Science, Utah State University

## Research Experience

**Graduate Research Assistant** August 2021-*Present*
Perform original research under the supervision of Dr. Peter Sadowski (Information and Computer Sciences) and Dr. John Shepherd (Cancer Epidemiology) in the Information and Computer Sciences Department at the University of Hawai'i at Mānoa. Current projects include developing deep learning algorithms to predict breast cancer risk and density from portable ultrasound machines in underserved communities.

**Undergraduate Research Assistant** April 2020 - July 2021
Assisted Dr. John Stevens in the Mathematics and Statistics Department at Utah State University in his research in developing an adjustment to the Stuart-Maxwell test of marginal homogeneity for ordinal classes.

## Fellowships & Awards

**NIH AIM AHEAD HEART Fellow/Graduate Mentor** November 2022 - May 2023
Mentored two biology-focused undergraduate students in pursuing their own projects at the intersection of health equity and data science. Participated in data science training and development seminars and online modules.

## Publications

**A. Bunnell** and S. Rowe. The Effect of AI-Enhanced Breast Imaging on the Caring Radiologist-Patient Relationship. in *Pacific Symposium on Biocomputing*. 2023: Kohala Coast, Hawaii, USA, 3–7 January 2023. 2022. World Scientific.

## Presentations

**A. Bunnell** , D. Valdez, T. Wolfgruber, B. Quon, L. Leong, J. Fukui, B. Hernandez, Y. Shvetsov, P. Washington, P. Sadowski and J. A. Shepherd. Artificial Intelligence Predicts Mammographic Breast Density from Clinical Breast Ultrasound Images [oral presentation]. *10th International Breast Density & Cancer Risk Assessment Workshop*. Jun 2023.

L. Leong, T. Wolfgruber, B. Quon, **A. Bunnell**, J. Fukui, B. Hernandez, Y. Shvetsov, K. Kerlikowske and J. A. Shepherd. Image-Based Models for Predicting Advanced Breast Cancer Risk [oral presentation]. *10th International Breast Density & Cancer Risk Assessment Workshop.* Jun 2023.

**A. Bunnell**, D. Valdez, T. Wolfgruber, J. Fukui, P. Sadowski and J. A. Shepherd. Data Standardization of Clinical, Real-World Breast Ultrasound Imaging Data [poster presentation]. *Biomedical Sciences & Health Disparities Symposium.* Apr 2023.

**A. Bunnell** and S. Rowe. The Effect of AI-Enhanced Breast Imaging on the Caring Radiologist-Patient Relationship [oral presentation]. *Pacific Symposium on Biocomputing.* Jan 2023.

**A. Bunnell**, D. Valdez, T. Wolfgruber, B. Hernandez, P. Sadowski and J. A. Shepherd. Artificial Intelligence Detects, Classifies, and Describes Lesions in Clinical Breast Ultrasound Images [poster presentation]. *San Antonio Breast Cancer Symposium.* Dec 7, 2022. D. Valdez, **A. Bunnell**, T. Wolfgruber, A. Altamirano, B. Quon, G. Maskarinec, P. Sadowski and J. A. Shepherd. Can artificial intelligence derived ultrasound breast density provide comparable breast cancer risk estimates to density derived from mammograms [poster presentation]. *San Antonio Breast Cancer Symposium.* Dec 7, 2022.

D. Valdez, **A. Bunnell**, T. Wolfgruber, J. Fukui, P. Sadowski and J. A. Shepherd. A pilot study to evaluate breast cancer screening in low resource areas of the Pacific using portable ultrasound and artificial intelligence [poster presentation]. *Biomedical Sciences & Health Disparities Symposium.* Apr 8, 2022.

J. Stevens and **A. Bunnell**. Extending the Stuart-Maxwell Test to Account for Ordinal Category Levels [oral presentation]. *NCCC-170 Research Advances in Agricultural Statistics Annual Meeting.* June 25, 2021.

## Work Experience

**Data Science Intern, Milliman** May 2022 - August 2022
Designed and coded a multi-output regression deep neural network for predicting patient cost-based insurance risk scores from their diagnosis and treatment history.

**Analytics Engineer Intern, Health Catalyst** April 2021- July 2021
Worked on a project developing a new measure for health inequity for continuous-valued health outcomes in an inpatient facility based on the Gini coefficient. Also coded query auditing software for automated query performance and design analysis.

**Mathematics & Statistics Teaching Fellow, Utah State University** Jan 2019- May 2021
Supported instructor with grading, lesson planning, assessment design, and one-on-one student instruction at Utah State University. Experience in the following courses: Business Statistics, Biostatistics, Design of Experiments, Linear Regression & Time Series, and Introduction to Statistics.

**Research and Operations Intern, Principal Financial Group** May 2020- December 2020
Designed an internal tool for the research and deployment of investment products for the Data Science and Research Team at Principal Global Investors.

**Data Science Intern, UnitedHealth Group Research & Development** Jun 2019- Aug 2019
Led a team of three other interns to design and implement an algorithm in Python to predict hyperglycemic events in Type II diabetics in the Medicare population with over 89% accuracy. Presented findings at a company-wide conference.

## Leadership & Service Activities

**Sci-MI Volunteer Summer Mentor** April 2023 - *Present*

Mentor two underrepresented high school students one-on-one in computational neuroscience-focused research projects with the goal of getting them prepared for careers in science and college applications. Also composed and presented lecture content relating to deep learning and data visualiation in the sciences.

**Volunteer Data Analytics Consultant** Sept 2019-July 2021

Performed data analytics on behalf of the Student Nutrition Access Center (SNAC) pantry (a free on-campus food pantry for students and dependents) to prove their contribution to the Utah State University community. This report resulted in the creation of a university-funded full-time position to staff the SNAC pantry.

**Data Science Club President** Jun 2020- May 2021

President of the Utah State University Data Science Club. Responsible for organizing biweekly meetings, providing members with professional speakers, and assisting members with personal data science projects.

**Food Recovery Network Volunteer** Jan 2019- May 2020

Sorted, logged and collected food from dining locations around campus for students to obtain in the Student Nutrition Access Center on-campus food pantry for students and dependents.