Charles Dickens

Email: cadicken@ucsc.edu GitHub: github.com/dickensc Phone: (831)-419-7656

EDUCATION

PhD | Computer Science and Engineering — Expected 2024
University of California Santa Cruz — GPA: 4.0

BS Summa Cum Laude | Computer Engineering and Mathematics Minor — 2019
University of Hawaii Manoa — GPA: 3.9

ASNS | Pre-Engineering — 2016
University of Hawaii Community Colleges — GPA: 3.9

RESEARCH EXPERIENCE

PhD Student Researcher | University of California Santa Cruz — Fall 2019–Present
I am a researcher with the LINQS statistical relational learning (SRL) group led by Prof. Lise Getoor.

Undergraduate Researcher | University of Hawaii Manoa — Summer 2018–Spring 2019
I was a member of the Collaborative Software Development Lab (CSDL) led by Prof. Philip Johnson.

Research Fellow | Hawaii Data Science Institute — Summer 2018–Summer 2019
I was in the first cohort of research fellows with the Hawaii Data Science Institute (HiDSI) directed by Dr. Gwen Jacobs and Dr. Jason Leigh.

Undergraduate Researcher | University of Hawaii Manoa — Winter 2017–Spring 2019
I was an undergraduate researcher with the UH big data lab led by Prof. Narayana Santhanam.

PROJECTS & PUBLICATIONS

Probabilistic Soft Logic | UCSC LINQS — Fall 2019–Present
Probabilistic Soft Logic (PSL) is a widely used SRL framework for performing structured prediction. I specialize in extending the expressive power of PSL and improving its scalability by leveraging modern ideas in optimization.

- Sriram Srinivasan, Charles Dickens, Eriq Augustine, Golnoosh Farnadi, and Lise Getoor. A taxonomy of weight learning methods for statistical relational learning. *Machine Learning*, 2021
- Charles Dickens*, Eriq Augustine*, Connor Pryor, and Lise Getoor. Negative weights in hinge-loss markov random fields. In *Workshop on Tractable Probabilistic Modeling (TPM)*, 2021a

Neuro-Symbolic Transfer Learning | UCSC LINQS — Fall 2021–Present
The framework of PSL has been extended to support neural architectures. I am working on developing principled algorithms for integrating the neural and PSL parameter learning processes. We then aim to transfer the learned neuro-symbolic parameters to related tasks and domains.

Online PSL | UCSC LINQS — Fall 2020–Present
OnlinePSL is a scalable development of PSL for performing collective inference over an evolving graphical model. I implemented a client-server architecture for issuing and executing model updates and extended an out of core inference algorithm to perform scalable online inference. I am currently developing an online structured time-series forecasting framework.

- Charles Dickens*, Connor Pryor*, Eriq Augustine, Alex Miller, and Lise Getoor. Context-aware online collective inference for templated graphical models. In *International Conference on Machine Learning (ICML)*, 2021b

HyperFair | UCSC LINQS — Fall 2019–Present
HyperFair is a framework for enforcing soft fairness constraints on the HyPER recommender system. I am currently working with fellow NSF IFDS researchers to develop efficient and robust optimization algorithms to enable fair structured prediction.

- Charles Dickens, Rishika Singh, and Lise Getoor. Hyperfair: A soft approach to integrating fairness criteria. In *RecSys Workshop on Responsible Recommendation (FAccTRec)*, 2020

Open Power Quality | UHM CSDL — Summer 2018–Spring 2019
Open Power Quality is an open source solution for distributed power quality data collection, analysis, and visualization. I developed plugins to classify disturbances and transients using signal processing and machine learning.

- Charles Dickens, Anthony J. Christe, and Phillip M. Johnson. A transient classification system implementation on an open source distributed power quality network. In *International Conference on Smart Grids, Green Communications and IT Energy-aware Technologies (IARIA)*, 2019

The Polarization of Information | UHM Big Data Lab — Winter 2017–Spring 2019
I developed a semi-supervised clustering algorithm and applied it to measure the polarity between schools of thought on Google news and Twitter. Our project earned funding from the NSF Center for Science of Information (CSoI).

TEACHING & LEADERSHIP EXPERIENCE

Introduction to AI Teaching Assistant | University of California Santa Cruz Winter 2021
I led discussion sections, hosted office hours, created assignments and exams, and graded for a course of 100+ students.

Introduction to Algorithms Teaching Assistant | University of California Santa Cruz Fall 2019
I led discussion sections, hosted office hours, and graded for a course of 50+ students.

Research Team Leader | Purdue and NSF CSOI Data Science Workshop Summer 2018
I was invited to lead a group of student researchers to make progress on and write a proposal for the Polarization of Information project.

Student Research Mentor | University of Hawaii College of Engineering June 2017–August 2017
I led a group of high school students participating in the UH college of engineering summer research program to build a Python graph algorithms library.

Math and Science Tutor | Online Learning Academy, Honolulu Hawaii Winter 2016–Summer 2018
I tutored students across the state of Hawaii in STEM courses at a grade school to sophomore college level.

WORK EXPERIENCE

Data Science Intern | Clari, Sunnyvale California Summer 2019
I implemented and demonstrated applications of a sales opportunity similarity metric to department executives. Furthermore, I created a UI framework for future intern demos with REACT, SemanticUI, and D3.js.

Data Science Intern | University Health Partners, Honolulu Hawaii Spring 2019
I utilized H2O, MapR, and SQL to develop a pipeline for triaging health documents for review with a human interpretable explanation. Moreover, I improved model accuracy by implementing procedures for hyperparameter optimization, model selection, and feature space dimensionality reduction.

SKILLS

Languages: Java, Python, MATLAB, C, C++, Bash, SQL, LaTeX.
Tools: Git, GitHub, JetBrains IDEs, Vi/Vim, SSH
Operating Systems: Unix/Linux, Mac OSX

COURSES

AI and Machine Learning:
UCSC CSE: Resp. Data Science (A), Computing for Society(A+), Machine Learning (A+), Information Theory (A)
UHM EE: Machine Learning (A), Signals & Systems (A+)
Mathematics:
UCSC AM: Convex Optimization (A), Numerical Optimization (A)
UCSC STAT: Applied Bayesian (A+)
UHM MATH: Linear Algebra I, II (A), Real Analysis(A+), Statistical Inference (A), Calculus I-IV (A)
Computer Science:
UCSC CSE: Algorithms and Analysis (A), Programming Languages (A)
UHM EE: Operating Systems (A), Computer and Network Security (A+)
UHM ICS: Software Engineering I, II (A)

AWARDS

UCSC Regents Fellowship, NSF CSoI Channels Scholar REU Award, UHM Dean's List 10 Semesters