Nolan R. Bonnie

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Education

University of Colorado Boulder **August 2022 - Present**
Ph.D. student in Computer Science
Interdisciplinary Quantitative Biology Certificate Program

University of California, Irvine **September 2017 - June 2021**
B.S. in Mathematics
Specialization in Data science

Awards

UCI UROP 2019-2020 Fellow (with monetary grant for Ozone Weekend Effect Research)
Campuswide Honors Collegium (required honors thesis)
Deans Honor List
Recipient of the Facebook-Udacity PyTorch Scholarship
Selected by UC President Janet Napolitano as **1 of 8 undergraduate students from the UC system** to attend the Lindau Nobel Laureate Meeting (selection based off achievement in research & academics)
Distinguished Anteater award — **1 of 25 undergraduates selected from UCI**

Leadership

UCI Engineering Student Council **Fall 2017 - Spring 2018**
Discussion Leader for *Introduction to Machine Learning* **Winter 2019**
Instructor at Sandia Labs for *Introduction to R and Machine Learning* **Summer 2021**

Publications and Presentations

Bonnie, N. R., Hernández-Paniagua, I. Y., Dabdub, D. (2021). A Longitudinal Quantification of the Ozone Weekend Effect in the South Coast Air Basin of California [Manuscript in Preparation]. Computational Environmental Sciences Laboratory, University of California, Irvine.

Bonnie, N. R. (2020). Adversary Emulation with Planning AI. Poster presentation at the Sandia National Laboratories 2020 Student Intern Cyber/CS Symposium. July 2020, Online.

* **Bonnie, N. R.**, Ebding, K., Harrell, C., Kothapalli, A., Sabetan, S., Watson, G. (2018). Virtualized Integrated Network Monitoring System. Poster presentation at the Sandia National Laboratories 2018 Student Intern Cyber/CS Symposium. July 2018, Livermore CA, USA.

* Order is Alphabetical

Relevant Coursework

Scientific Coursework

- Engineering: Matlab, scientific computing and visualization, data analysis, machine learning.
- Computer Science: Artificial intelligence.
- Chemistry: Engineering chemistry, atmospheric chemistry.

- Math: Honors calculus, differential equations, statistics, logic, linear algebra, abstract algebra, number theory, graph theory, algorithms, real analysis, probability and stochastics, numerical methods, Bayesian statistics, optimization.

Undergraduate Research

Undergraduate Research Study in Data Science and Computing **Winter 2018 - June 2021**

- Selected by Professor Donald Dabdub to participate in 4 quarters of individual research study.
- Studied various topics related to data science and computation, such as:
  - Scientific computing and scientific visualization.
  - Programming in R, a well established statistical software.
  - Data analysis, working with big data, machine learning, and neural networks.
- Applied graduate level statistical learning techniques to real world prediction problems, and used the basis of what I learned to conduct research in atmospheric chemistry.

Undergraduate Research Study in Mathematics **Winter 2018 - Fall 2020**

- Selected by Professor Chris Davis to join math research courses focused on computational sciences.
- Studied advanced computational algorithms focusing on optimization, which benefits my work involving large datasets.
- Developed skills in graph theory by proving theorems in a graduate textbook on discrete mathematics.
- Wrote an academic paper connecting graph theory to data analytics.
- Selected by Professor Shuhao Cao to join a UCI Kaggle team that uses advanced AI techniques to solve public challenges.
- Joined a graduate course led by Professor Knut Solna where we examined the mathematics behind machine leaning.

Relevant Work Experience

Sandia National Laboratories — R&D S&E, Cybersecurity **July 2020 - Present**

- Full-time Member of the Technical Staff with DOE Q Clearance.
- Actively developing a novel generalized planning AI with applications to cyber-emulytics.
- Expect multiple first-author tier 1 publications and patent from AI planning work.
- Engineering new big-data (~6 PB) analysis methods for detailed network traffic data.
- Developing scalable anomaly detection tools.

Learning and Academic Resource Center — Programming Tutor **September 2018 - June 2020**

- Taught three supplementary course sections, with classes of 16 students every quarter.
- Supported a Matlab programming course for engineers.
- Developed lesson plans and practice tests.
- 96.3% student satisfaction from over 150 evaluations.

Sandia National Laboratories — Cybersecurity R&D Intern **June 2018 - September 2018**

- Managed a 7 person team working on a high-priority research project.
- Project was a groundbreaking proof of concept, and changed the way government servers are protected.
- Created synthetic data for a cybersecurity project that used AI to detect cyber attacks.

Skills and Other Interests

Formal languages: R, Python, Spark, Matlab, UNIX, HTML, CSS, Java, and Fortran 77.
Classical music: 14 years of piano, 7 years of guitar.
Volunteering: NICA certified high school mountain biking coach.