Nolan R. Bonnie

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Education

B.S. in Mathematics, with a Specialization in Data Science **September 2017 - June 2021**
University of California, Irvine
GPA: 3.50

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 under review]. 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.
- Logic and Philosophy of Science: Gender biases in scientific writing, honors naturalized epistemology.

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.
- Developed skills in neural network libraries Tensor-flow 2.1 and Keras.
- 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.
- Hold a Department of Energy L 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.

Prophet Predictive Modeling — Chief Quantitative Analyst **June 2019 - June 2020**

- Cofounded a financial predictions company, using AI to forecast the US Stock Market.
- Managed the acquisition and processing of data.
- Implemented AI trading models on live stock data.
- Sold my stake in the company to focus on my academic pursuits.

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 Academic Interests

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