Brandon Dominique

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My primary research interests are at the intersection of Fairness, Transparency and Human-Centered Design, with a focus on Skin Cancer Detection. I examine how fair data practices and the creation of new fairness metrics can impact outcomes for everyday people.

EDUCATION

Northeastern University, Boston, MA — Sept 2020 -
Ph.D. Computer Engineering
Advisor: Jennifer Dy

New Jersey Institute of Technology, Newark, NJ — Sept 2016-May 2020
B.S. Computer Engineering, *Magna Cum Laude* — GPA 3.63/4.00

PAPERS

Dominique B., Piorkowski D., El-Maghraoui K., Herger M. (2023). **FactSheets for Hardware-Aware AI Models: A Case Study of Analog In Memory Computing AI Models**. *In IEEE International Conference on Software Services Engineering.*

Dominique B., Piorkowski D., Nagireddy M., Baldini I. (2024). **Prompt Templates: A Methodology for Improving Manual Red Teaming Performance**. *In 1st HEAL Workshop at CHI Conference on Human Factors in Computing Systems.*

SELECTED EXPERIENCE

IBM, *Research Intern* — May 2021-Aug 2023
Advisors: Lorraine Herger, Kaoutar El Maghraoui, David Piorkowski

Since 2021, My research at IBM has focused on ways to improve the robustness, explainability and transparency of AI models. The projects I've worked on have involved skills such as running User Studies to understand the needs of participants, designing a User Interface for Human-AI collaboration, and Data Visualization to model how the robustness of Analog AI Hardware changes over time.

University of Arizona, *Undergraduate Research Intern* — June 2019-Aug 2019
Advisors: Noel Hagos Teku, Rahul Bhadani, Tamal Bose

- Created a Python Package designed to simulate the decision process of a Cognitive Radio for the U of A's Cognitive and Autonomous Test (CAT) Vehicle
- Conducted research with U of A Graduate Students on current methods of signal transmission in Autonomous Vehicles
- Used the Reinforcement Learning Algorithms Upper Confidence Bound and Epsilon Greedy to create a Cognitive Radio agent capable of sending/receiving a modulated signal
- Acquired a deep knowledge of Python and its applications in Reinforcement Learning

University of Southern California, *Undergraduate Research Intern*   June 2018-Aug 2018
Advisor: David Traum
- Compiled an interactive model of a local musician using existing USC software and pre-recorded interview clips
- Improved the accuracy of the model through increasing the number and types of questions asked
- Edited the audio and video of the pre-recorded clips to make the model more realistic

FELLOWSHIPS, AWARDS, AND HONORS

GEM Fellowship   August 2021
LSAMP STARS Fellowship   August 2020
NSF ACM Tapia Scholar   February 2019
Black in AI Travel Grant, AAAI '20   August 2021

SKILLS AND COURSES TAKEN

Programming Languages: Strong with Python, C++, SQL. Familiar with Tensorflow/Google CoLabs, Javascript, CSS, HTML, MATLAB, R, and Assembly
Completed Courses: Basic and Advanced Machine Learning, Numerical Optimization, Algorithms and Data Structures, Linear Algebra and Linear Systems Analysis, Basic and Advanced Probability & Statistics

LEADERSHIP, MENTORSHIP AND SERVICE

Graduate Student Ambassador, *GEM and Computer Engineering*   Sept 2021-
Responsible for providing incoming GEM and Computer Engineering students with advice on classes, research, and other information related to the two programs at Northeastern. Also assisted with events such as panel discussions, campus tours, website maintenance, and creating an introductory handbook for First-Year PhD Students.

Mechanism Design for Social Good, *Member*   October 2020-April 2021

An interdisciplinary research initiative that includes workshops, colloquiums, and partnerships with NGO's and think tanks on the topics of inequality, development, online markets and social good.

Bob Case Academy: Bridge to Calculus Data Camp, *Volunteer*   April 2021
Workshop leader. Organized Data Science activities related to Climate Change which introduced fundamental data analysis and visualization techniques.

National Society of Black Engineers (NSBE), *Chapter President*   Sept 2019-May 2020
Managed and Aided the Executive Board of the NJIT Chapter of NSBE in planning events for the year, as well as creating programs aimed at High Schoolers and new Undergraduates.

LSAMP Cross Campus Peer Mentoring Program, *Mentor*   Sept 2019-May 2020
Held weekly phone calls with a group of 5 mentees and advised them as they prepared to move from a local community college to a 4-year university.

NJIT EOP Undergraduate Mentoring Program, *Mentor*   Sept 2019-May 2020
Held bi-weekly meetings with a group of 5 mentees and aided them during their freshman year at NJIT.