

EMMA DROBINA

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EDUCATION

PhD Student in Human-Centered Computing

May 2023 (expected)

University of Florida, GPA: 3.83/4.00

Gainesville, FL

Master of Science in Computer Science

December 2021

University of Florida

Gainesville, FL

Bachelor of Science in Computer Science, Minor in Spanish

May 2018

University of South Carolina Honors College

Columbia, SC

Graduated summa cum laude

SKILLS

- **Programming Languages:** Python, C++, SQL, Java, C#
- **Programs:** GitHub, Jupyter Notebook, Atom, Visual Studio
- **Operating Systems:** Ubuntu, Windows 7-10, MacOS, iOS
- **Other:** machine learning libraries (scikit-learn, Tensorflow, Keras, PyTorch), machine learning techniques (logistic regression, linear regression, decision trees/random forests, neural networks, adversarial deep learning, KNN, k-means clustering, PCA), technical & non-technical writing, public speaking, Qualtrics, survey design, focus groups

RESEARCH EXPERIENCE

Human Experience Lab (HXR Lab)

Gainesville, FL

Graduate Research Assistant

August 2018 - present

Advisor: Dr. Juan Gilbert

- Collaborated with two other graduate students on a project incorporating logistic regression, random forests, and TensorFlow deep learning along with machine learning explainability tools such as LIME
- Transitioned open-source voting software code from Java to Python and provided quality improvements
- Completed literature review analyzing predictive policing and fairness in machine learning
- Collaborated on a proposed book chapter addressing the issues of machine learning and racial bias
- Developed research project analyzing computer science students' knowledge of ethics & fairness in ML
- Coded qualitative results from a survey about student perceptions of two online learning platforms for first-year computer science students

University of South Carolina ART Lab

Columbia, SC

Undergraduate Research Assistant

February 2015 – April 2018

Advisor: Dr. Jenay Beer

- Performed heuristic analysis of telepresence systems (e.g. Skype, Kubi, BEAM)
- Awarded Magellan research grant to study the use of robots in education
- Designed a study with Dr. Jenay Beer to evaluate human perceptions of a robot tutor's behavior, then independently collected, analyzed, and presented results at a school-wide research showcase

WORK EXPERIENCE

Los Alamos National Lab

Los Alamos, NM (remote)

Student Intern

May – August 2021, May – August 2022

Supervisor: Lissa Moore

- Used PyTorch CNNs and vision transformers to classify multispectral satellite imagery and studied the results of explainability toolkits such as Captum.AI and pytorch-grad-cam on the output
- Collaborated on research into using unsupervised machine learning to detect communities on social media

- Utilized BERT, PyTorch, and Pandas to generate text embeddings and aggregate them for analysis
- Contributed to a project on adversarial learning & explainable ML using CleverHans and LIME

Lawrence Livermore National Lab

Livermore, CA (remote)

Student Intern

May – August 2020

Supervisor: Peer-Timo Bremer

- Migrated NDDAV, a visualization tool for high-dimensional scientific models, to Jupyter Notebook
- Added ability for NDDAV to handle additional data formats
- Presented project results virtually to fellow employees

Boeing

Charleston, SC

IT Intern (Airplane Systems Computing)

May – August 2015, May – August 2016

Supervisors: Jeremy Ledger & Yvette Whitfield

- Migrated databases from Access to SQL and rewrote websites to accommodate new connections
- Collaborated with fellow interns to write content for a game to start conversations about diversity
- Designed, developed, and built application using a combination of C# and SQL so that users could select people to be given access to a Boeing application
- Increased speed of a C# application used to import Excel documents to SQL Server by 30%
- Attended CompTIA Security+ training

CERTIFICATIONS

- University of Florida Machine Learning (ECE) Graduate Certificate (completed December 2021)
- Deep Learning Specialization by deeplearning.ai on Coursera (completed May 2020)

PUBLICATIONS & PRESENTATIONS

- Richardson, B., Alikhademi, K., Drobina, E., Gilbert, J.E. (2022). Keeping humans in the loop towards responsible ML. Presentation given at 2022 ACM Richard Tapia Celebration of Diversity in Computing, Washington, D.C.
- DeLucia, A., Drobina, E., Fairchild, G., Daughton, A., Moore, L. (2021). “Automated detection and characterization of pathological online behavior.” Presentation given at INDE-2021: Beyond misinformation: Towards a research agenda for information ecosystems, network dynamism, and emergent epistemologies.
- Alikhademi, K., Drobina, E., Prioleau, D., Richardson, B., Purves, D., & Gilbert, J. E. (2021). A review of predictive policing from the perspective of fairness. *Artificial Intelligence and Law*, 29(2).
- Prioleau, D., Richardson, B., Drobina, E., Martin, J., Williams, R. & Gilbert, J. E. (2021). How Students in Computing-Related Majors Distinguish Social Implications of Technology. *SIGCSE '21: Proceedings of the 52nd ACM Technical Symposium on Computer Science Education*.
- Roberts A.L., Richardson B., Alikhademi K., Drobina E., & Gilbert J.E. (2021) General Perspectives Toward the Impact of AI on Race and Society. *In: Pearson Jr. W., Reddy V. (eds) Social Justice and Education in the 21st Century. Diversity and Inclusion Research*. Springer, Cham.
https://doi.org/10.1007/978-3-030-65417-7_18
- Alikhademi, K., Drobina, E., Richardson, B., Prioleau, D., & Gilbert, J. E. (2020, December.) *Can counterfactuals be an effective method for achieving equitable AI?* Workshop facilitated at NEURIPS 2020 Algorithmic Fairness through the Lens of Causality and Interpretability Workshop.
- Williams, R., Alikhademi, K., Drobina, E., Gilbert, J., & Sutor, T. (2019). Augmented Reality for Rehabilitative Therapy: Patient experiences and practitioner perspectives. *Proceedings of the HFES 2019 International Annual Meeting*.
- Drobina, E. (2019). Confronting bias in machine learning. Presentation given at the Human-Centered Computing International Summit Universidad el Bosque 2019, Digital.

- Williams, R., Waisome, J., McMullen, K., & Drobina, E. (2019). “The fallacy of objectivity: Leveraging situated knowledges to advance computing for social justice.” Workshop facilitated at 2019 ACM Richard Tapia Celebration of Diversity in Computing, San Diego, CA.
- Wu, X., Thomas, R., Drobina, E., Mitzner, T., & Beer, J. (2017). Telepresence heuristic evaluation for adults aging with mobility impairment. *Proceedings of the HFES 2017 International Annual Meeting*.
- Wu, X., Thomas, R., Drobina, E., Mitzner, T., & Beer, J. (2017). An evaluation of a telepresence robot: User testing among older adults with mobility impairment. In B. Mutlu, M. Tscheligi, A. Weiss, & J. E. Young (Eds.), *Proceedings of the Companion of the 2017 ACM/IEEE International Conference on Human-Robot Interaction* (pp. 325-326). New York, USA: Association of Computing Machinery.

HONORS & AWARDS

- Google Human-Experience Research Lab Fellowship
- Sue Bogner Healthcare Technical Group Best Student Paper Award, HFES 2019
- Graduate School Preeminence Award
- Carolina Scholar – 1 of 20 in the Class of 2018
- Phi Beta Kappa

ACTIVITIES

- Secretary of Emerging Leaders in Science Policy & Advocacy (ELISPA)
- Member of Women in Science and Engineering (WiSE)
- Attended CRA-W Workshop 2021
- Reviewer for Grace Hopper Celebration 2020 and 2021
- Reviewer for Fall 2020 & Fall 2021 issue of University of Florida Journal of Undergraduate Research (UFJUR)
- Reviewer for Human Factors and Ergonomics Society International Annual Meeting 2021 & 2022