

Dane Williamson

PhD. Candidate, University of Virginia

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PhD candidate specializing in robust, interpretable machine learning, with a focus on representation learning for high-dimensional data. Leveraging Deep Generative Models to uncover meaningful latent structures, with applications in various complex domains, while developing scalable, interpretable frameworks that enhance model robustness and bridge theoretical advances with real-world impact.

Education

- AUG. 2020 – **Ph.D. (UVA) University of Virginia, Charlottesville, VA**, Major: Computer Science
CURRENT GPA: 3.93/4.0
Advisors: Matthew Dwyer & Yangfeng Ji.
- May 2020 **B.Sc. (VSU) Virginia State University, Petersburg, VA**, Major: Computer Science
GPA: 4.0/4.0
Capstone Project: Cross Platform Mobile Application
Advisor: Prof. Ahmed Mohammed.

Experience

- May – Aug. **Ph.D. Research Intern, Oracle Machine Learning Research Group, Burlington, MA.**
2022
 - Developed Named Entity Extraction System for Oracle Intelligent Document Recognition.
 - Implemented 2 Dimensional Positional Embeddings to leverage document layout information.
 - Introduced Special tokens to BERT tokenizer to prevent fragmentation of numerical tokens.
 - Improved F-1 Score on identifying 29/36 Entities over Conditional Random Fields (CRFs).
- May – Aug. **Ph.D. Research Intern, Oracle Machine Learning Research Group, Burlington, MA.**
2021
 - Pretrained BERT transformers using internal toolkit.
 - Designed and implemented Probes for knowledge and language understanding in BERT transformers.
 - Evaluated model performance on GLUE benchmarks using the Jiant toolkit.
 - Utilized shared SLURM cluster for transformer pretraining, finetuning, and evaluation.
- May – Aug. **Software Engineering Intern, Apple, Cupertino, CA.**
2019
 - Developed Python Desktop Application to simulate Host Stack of third party BLE Devices.
 - Developed Web-Scraper to populate MongoDB database with SIG Bluetooth Specifications.
 - Utilized internal Python-based framework to communicate with BLE controller via HCI commands.
 - Simulated BLE GATT Server using database containing specifications and HCI Commands.
 - Presented to Vice-President of Wireless Organization.
- May – Aug. **Software Engineering Intern, IBM, Raleigh, NC.**
2018
 - Wrote automated end-to-end user-interface tests in Protractor Framework for Watson Content Hub.
 - Utilized JavaScript/TypeScript to conduct automated API testing in Staging and Production environments.
 - Configured Continuous Integration (CI) testing jobs with Jenkins pipeline builds for Docker and NPM registries.

Profile Summary

Selected Awards:

- Best Paper Award for the Human-Computer Interaction Thematic Area, in the context of HCI International 2019, 16-31 July 2019, Orlando, FL, USA
- Highest Ranking Junior in Department of Engineering and Computer Science, VSU
- Highest Ranking Sophomore in Department of Engineering and Computer Science, VSU
- Presidential STEM Scholar, VSU

Grants, Scholarships & Fellowships:

- EST-Univ STEM Scholarship (amount: \$26,160.00).
- CIAA Scholarship (amount: \$5,000).
- Apple Engineering Scholarship (amount: \$25,000).

Research Interests:

Machine Learning, Explainability, Interpretability, Deep Generative Models, Out-of-Distribution Detection

Publications

Summary

- 1 Journal Entry

- 2019 G. Cowart, D. Williamson, N. Farhat and J.S. Lee, 'Do Humans STILL Have a Monopoly on Creativity or Is Creativity Overrated ?', Human-Computer Interaction. Perspectives on Design - Thematic Area, HCI 2019, Held as Part of the 21st HCI International Conference, HCII 2019, Orlando, FL, USA, July 26-31, 2019, Proceedings, Part I.

Mentorship and Teaching

January 2022 – Present **Graduate Teaching Assistant, School of Engineering and Applied Science, University of Virginia.**

- CS 6316: Machine Learning, **Spring 2022**
- CS 4774: Machine Learning, **Spring 2023**
- CS 6501-013: Natural Language Processing, **Fall 2023**
- CS 4710-001: AI, **Spring 2024**

Aug. 2019 – May 2020 **Undergraduate Teaching Assistant, Engineering and Computer Science Department, Virginia State University.**

- CSCI 120: Introduction to Programming, **Spring 2019**
- CSCI 150: Programming I, **Spring 2019**
- CSCI 151: Programming I Lab, **Spring 2019**
- CSCI 250: Programming II, **Spring 2019**
- CSCI 251: Programming II Lab, **Spring 2019**
- CSCI 287: Data Structures, **Spring 2019**
- CSCI 296: Web Programming, **Spring 2019**

Membership and Professional Service

Reviewer.

- ACL, **Rolling**

Member.

- Association of Computing Machinery (ACM)
- National Society of Black Engineers (NSBE)

References

Ahmed F. Mohammed.

Associate Professor of Computer Science and Director of the Software Engineering and Applied Learning Techniques Laboratory (SEAL-T Lab) at Virginia State University

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