

ADAKU UCHENDU

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EDUCATION

Pennsylvania State University

Ph.D. in Information Sciences and Technology

Thesis: *Reverse Turing Test in the Age of Neural Text Generation*

Advisor: Dr. Dongwon Lee

State College, Pennsylvania

August 2018 - Present

University of Maryland Baltimore County

B.S. Mathematics | Minor: Statistics, **Honors:** Cum Laude

Thesis: *Numerical Simulation of Vibrations of Mechanical Structures*

Advisor: Dr. Bedrich Sousedik

Baltimore, Maryland

August 2014 - May 2018

RESEARCH INTERESTS

NLP, NLG, Cybersecurity, Adversarial Robustness, Machine Learning, Evolutionary & Genetic algorithms

ACADEMIC ACHIEVEMENTS AND AWARDS

McNair Scholar

January 2016 - May 2018

Undergraduate Research Award Scholar

March 2017 - May 2018

Pi Mu Epsilon Mathematics Honors Society

May 2017 - May 2018

Outstanding Tutor Award

May 2018

Bunton-Waller Graduate Fellowship

August 2018 - May 2020

Best Documentation at ATRC internship

August 2019

Best Poster Presentation at ATRC internship

August 2019

TTO Student Travel Scholarship

October 2019

CRA-W URMD Student Scholarship

March 2020

NSF SFS Scholarship

August 2020 - May 2023

ACM Richard Tapia Conference Student Scholarship

September 2020, 2021

Alfred P. Sloan Minority Ph.D. Scholarship

January 2021 - May 2023

CRA-WP Grad Cohort for Women

April 2021, 2022

WiCyS Student Scholarship

September 2021, March 2022

SKILLS

Programming: Python, R, Matlab, Java, L^AT_EX, Maple

Tools: PyTorch, Tensorflow, Keras, Transformers

Applications: Git, Tableau, R Shiny

Operating Systems: Linux, Windows, MacOS

PUBLICATIONS

5. [AIKE'21] **Adaku Uchendu**, Daniel Campoy, Christopher Menart, Alexandra Hildenbrandt, "Robustness of Bayesian Neural Networks to White-Box Adversarial Attacks," *IEEE Fourth International Conference on Artificial Intelligence and Knowledge Engineering (AIKE)*. IEEE, 2021.
4. [EMNLP'21] **Adaku Uchendu**, Zeyu Ma, Thai Le, Rui Zhang, Dongwon Lee, "TURINGBENCH: A Benchmark Environment for Turing Test in the Age of Neural Text Generation," *Findings of the Association for Computational Linguistics: EMNLP 2021* (pp. 2001-2016), Punta Cana, Dominican Republic, November 2021

3. [EMNLP'20] **Adaku Uchendu**, Thai Le, Kai Shu, Dongwon Lee “Authorship Attribution for Neural Text Generation,” *In Proceedings of the 2020 Conference on Empirical Methods in Natural Language Processing (EMNLP)*, Virtual Event, November 2020
2. [TTO'19] **Adaku Uchendu**, Jeffrey Cao, Qiaozhi Wang, Bo Luo, Dongwon Lee. “Characterizing Man-made vs. Machine-made Chatbot Dialogs,” *In Conf. on Truth and Trust Online (TTO)*, London, UK, October 2019
1. [WebSci'19] Jialin Shao, **Adaku Uchendu**, Dongwon Lee. (2019). “A Reverse Turing Test for Detecting Machine-Made Texts,” *In 11th Int'l ACM Web Science Conf. (WebSci)*, Boston, MA, July 2019

INVITED TALKS

- *Reverse Turing Tests for Distinguishing AI-generated texts from Human-written texts*, at National Institute of Standards and Technology (NIST), **Applied and Computational Mathematics Division (ACMD)** Seminar Series, Virtual, May 25, 2021.
- *Reverse Turing Test in the Age of Neural Text Generation*, at National Institute of Standards and Technology (NIST), Information Technology Laboratory, **Software and Systems Division**, Virtual, February 10, 2022.

RESEARCH EXPERIENCE

PIKE Research Lab @ Penn State — *Research Assistant* **State College, Pennsylvania**

- **Research project:** Reverse Turing Tests *August 2018 - Present*
- **Description:** Building robust Machine/Deep learning models that can distinguish AI-generated texts from human-written ones. AI text-generators include GPT-2, GPT-3, GROVER, PPLM, etc..
- Advisor: Dr. Dongwon Lee

IBM Research — *Ph.D. Research Intern* **San Jose, California (Virtual)**

- **Research project:** AutoML for NLP *May 2021 - August 2021*
- **Description:** Worked on an Automated AI model for text classification.
- Mentors: Dr. Sairam Gurajada & Dr. Alexandre Evfimievski

ATRC, Air Force Research Laboratory — *Research Assistant Intern* **Dayton, Ohio (Virtual)**

- **Research project:** Adversarial Robustness of Bayesian Neural Networks *May 2020 - October 2020*
- **Description:** Implemented an adversarially robust Deep learning model by incorporating Bayesian Inference.
- Mentors: Christopher Menart & Alexandra Hildenbrandt

ATRC, Air Force Research Laboratory — *Research Assistant Intern* **Dayton, Ohio**

- **Research project:** Reproducibility of the One-Pixel Attack *May 2019 - August 2019*
- **Description:** Studied the characteristics of the one-pixel adversarial attack and its robustness.
- Mentor: Alexandra Hildenbrandt

Federal Reserve Board — *IT intern* **Washington, D.C.**

- **Research project:** Islamic vs. Non-Islamic banks *May 2017 - August 2018*
- **Description:** Investigated the Financial inclusion and growth of Islamic vs. Non-Islamic banks.
- Mentor: Dr. Nida Davis

University of Maryland Baltimore County — *Research Assistant* **Baltimore, Maryland**

- **Research project:** Numerical Simulation of Mechanical Structures *February 2016 - May 2018*
- **Description:** Researched the appropriate damping constant needed to reduce the oscillation of a simulated mechanical structure in MATLAB.
- Mentor: Dr. Bedrich Sousedik

WORK EXPERIENCES

Pennsylvania State University Graduate Assistantship

State College, Pennsylvania
January 2019 - May 2019

- Worked as a Teaching Assistant in a Security and Risk Analysis course.
- Assisted students on the use of Excel and R, graded and held office hours.

HACKATHONS UMD Bitcamp

Maryland
April 2017

- Built a chrome extension named, ProcrastinationStation with a team
- It re-routes its user to the Procrastination-Station website when Facebook is accessed.

HackUmbc

- Built an R Shiny dashboard named, Data Visualization.
- The dashboard takes in a csv file and plots a figure based on the selected column.

University of Maryland Baltimore County Math Lab Tutor

Baltimore, Maryland
September 2015 - May 2018

- Tutored the following courses: College Algebra, Pre-calculus, Calculus I, Calculus II, Calculus III, Linear Algebra, and Differential Equations.

Math Learning Assistant (LA)

August 2016 - December 2016

- Assisted students in Pre-Calculus.
- Held weekly discussion sessions and Office hours.
- Presented the students with a weekly individual quiz and graded it.

PROFESSIONAL SERVICES

Journal Reviewer

Social Network Analysis and Mining (SNAM), Language Resources and Evaluation (LREV), Journal of Artificial Intelligence (AIJ)

Program committee

The First Workshop on Efficient Benchmarking in NLP (NLP Power) at ACL 2022

MENTORING EXPERIENCE

- UMBC Reach Initiative (September 2017 - May 2018)
 - Provided STEM exposure and professional development for Baltimore high school girls
- UMBC Summer 2021 McNair students (through *2021 McNair Alumni Mentor*)

PRESS COVERAGE

“Is AI the Future of Content Generation?,” **Bloggers Insights**, August 2021.
 “Five top technology trends from 2021 that are here to stay,” **Ericsson Blog**, June 2021.
 “Finance’s Embrace Of AI-Generated Writing,” **Robot Writers AI**, March 2021.
 “Researchers test detection methods for AI-generated content,” **Penn State News**, February 2021.
 “Siblings pursue parallel doctoral degrees,” **Penn State News**, August 2020.
 “Adaku Uchendu to extend passion for mathematics through information sciences Ph.D. at Penn State,” **UMBC News**, April 2018.