

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 (**\$1500**)

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 (**£1250**)

October 2019

CRA-WP URMD/IDEALS Student Scholarship

March 2020, 2022

NSF SFS Scholarship (**\$34,000 annually**)

August 2020 - May 2023

ACM Richard Tapia Conference Student Scholarship

September 2020, 2021

Alfred P. Sloan Minority Ph.D. Scholarship (**\$40,000**)

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, \LaTeX , Maple

Tools: PyTorch, Tensorflow, Keras, Transformers

Applications: Git, Tableau, R Shiny

Operating Systems: Linux, Windows, MacOS

PUBLICATIONS

6. [INLG'22] **Adaku Uchendu**, Vladislav Mikhailov, Jooyoung Lee, Saranya Venkatraman, Tatiana Shavrina, Ekaterina Artemova, "Tutorial on Artificial Text Detection," *The 15th International Conference on Natural Language Generation (INLG): Tutorial*, Maine, July 2022
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.

PRESENTATIONS

- *TuringBench*, at Pan-APA 5th Annual Conference at The Pennsylvania State University, April 9, 2022.

RESEARCH EXPERIENCE

PIKE Research Lab @ Penn State — <i>Research Assistant</i>	State College, Pennsylvania
<ul style="list-style-type: none"> • Research project: Reverse Turing Tests • 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 	<i>August 2018 - Present</i>
Pacific Northwest National Lab — <i>NSIP Ph.D. Intern</i>	Richland, Washington (Virtual)
<ul style="list-style-type: none"> • Research project: Cybersecurity • Description: Cybersecurity • Mentors: Dr. David McKinnon 	<i>May 2022 - July 2022</i>
IBM Research — <i>Ph.D. Research Intern</i>	San Jose, California (Virtual)
<ul style="list-style-type: none"> • Research project: AutoML for NLP • Description: Worked on an Automated AI model for text classification. • Mentors: Dr. Sairam Gurajada & Dr. Alexandre Evfimievski 	<i>May 2021 - August 2021</i>
ATRC, Air Force Research Laboratory — <i>Research Assistant Intern</i>	Dayton, Ohio (Virtual)
<ul style="list-style-type: none"> • Research project: Adversarial Robustness of Bayesian Neural Networks • Description: Implemented an adversarially robust Deep learning model by incorporating Bayesian Inference. • Mentors: Christopher Menart & Alexandra Hildenbrandt 	<i>May 2020 - October 2020</i>

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

Dayton, Ohio

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

May 2019 - August 2019

Federal Reserve Board — *IT intern*

Washington, D.C.

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

May 2017 - August 2018

University of Maryland Baltimore County — *Research Assistant*

Baltimore, Maryland

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

February 2016 - May 2018

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 & ACADEMIC SERVICES

- Graduate Student Association in IST, Penn State (Treasurer)
- **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.