

ADAKU UCHENDU

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EMPLOYMENT

MIT Lincoln Laboratory
Technical staff (AI Researcher)

Lexington, MA
October 2023 - Present

EDUCATION

Pennsylvania State University
Ph.D. in Information Sciences and Technology
Thesis: *Reverse Turing Test in the Age of Deepfake Texts*
Advisor: Dr. Dongwon Lee

University Park, Pennsylvania
August 2018 - August 2023

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, LLMs, Cybersecurity, Adversarial Robustness, Machine Learning, Topological Data Analysis

ACADEMIC ACHIEVEMENTS AND AWARDS

Alfred P. Sloan Minority Ph.D. Scholarship (\$40,000)	<i>January 2021 - August 2023</i>
NSF SFS Scholarship (\$34,000 annually)	<i>August 2020 - May 2023</i>
Bunton-Waller Graduate Fellowship	<i>August 2018 - May 2023</i>
Diversity & Inclusion ICML 2022 & BlackinAI conference scholarship	<i>July 2022</i>
Diversity & Inclusion ACL 2022 conference Student Scholarship	<i>May 2022</i>
WiCyS Student Scholarship	<i>September 2021, March 2022</i>
CRA-WP Grad Cohort for Women	<i>April 2021, 2022</i>
ACM Richard Tapia Conference Student Scholarship	<i>September 2020, 2021, 2022</i>
CRA-WP URMD/IDEALS Student Scholarship	<i>March 2020, 2022</i>
TTO Student Travel Scholarship (£1250)	<i>October 2019</i>
Best Poster Presentation at ATRC internship	<i>August 2019</i>
Best Documentation at ATRC internship	<i>August 2019</i>
Outstanding Tutor Award	<i>May 2018</i>
Pi Mu Epsilon Mathematics Honors Society	<i>May 2017 - May 2018</i>
Undergraduate Research Award Scholar (\$1500)	<i>March 2017 - May 2018</i>
McNair Scholar	<i>January 2016 - May 2018</i>

PREPRINTS

- [arXiv'24] Dominik Macko, Robert Moro, **Adaku Uchendu**, Ivan Srba, Jason Lucas, Michiharu Yamashita, Nafis Irtiza Tripto, Dongwon Lee, Jakub Simko, Maria Bielikova “[Authorship Obfuscation in Multilingual Machine-Generated Text Detection](#),” *arXiv preprint*, January 2024
- [arXiv'23] Nafis Irtiza Tripto, Saranya Venkatraman, Dominik Macko, Robert Moro, Ivan Srba, **Adaku Uchendu**, Thai Le, Dongwon Lee, “[A Ship of Theseus: Curious Cases of Paraphrasing in LLM-Generated Texts](#),” *arXiv preprint*, November 2023 (*Under Review*)
- [arXiv'23] Saranya Venkatraman, **Adaku Uchendu**, Dongwon Lee, “[GPT-who: An Information Density-based Machine-Generated Text Detector](#),” *arXiv preprint*, October 2023 (*Under Review*)

1. [arXiv'23] **Adaku Uchendu**, Thai Le, Dongwon Lee, “[TopRoBERTa: Topology-Aware Authorship Attribution of Deepfake Text](#),” *arXiv preprint*, September 2023 (*Under Review*)

PUBLICATIONS

* means equal contribution

11. [EMNLP'23] Dominik Macko, Robert Moro, **Adaku Uchendu**, Jason Lucas, Michiharu Yamashita, Matúš Pikuliak, Ivan Srba, Thai Le, Dongwon Lee, Jakub Simko, Maria Bielikova, “[MULTITuDE: Large-Scale Multilingual Machine-Generated Text Detection Benchmark](#),” *EMNLP 2023*, Singapore, December 2023
10. [EMNLP'23] Nafis Irtiza Tripto, **Adaku Uchendu**, Thai Le, Mattia Setzu, Fosca Giannotti, Dongwon Lee, “[HANSEN: Human and AI Spoken Text Benchmark for Authorship Analysis](#),” *EMNLP-Findings 2023*, Singapore, December 2023
9. [EMNLP'23] Jason Lucas, **Adaku Uchendu**, Michiharu Yamashita, Jooyoung Lee, Shaurya Rohatgi, Dongwon Lee, “[Fighting Fire with Fire: The Dual Role of LLMs in Crafting and Detecting Elusive Disinformation](#),” *EMNLP 2023*, Singapore, December 2023
8. [HCOMP'23] **Adaku Uchendu***, Jooyoung Lee*, Hua Shen*, Thai Le, Kenneth Huang, Dongwon Lee, “[Does Human Collaboration Enhance the Accuracy of Identifying LLM-generated Deepfake Texts?](#),” *11th AAAI Conference on Human Computation and Crowdsourcing (HCOMP)*, Delft, Netherlands, November 2023
7. [KDD Exp'23] **Adaku Uchendu**, Thai Le, Dongwon Lee, “[Attribution and Obfuscation of Neural Text Authorship: A Data Mining Perspective](#),” *ACM SIGKDD Explorations Newsletter*, Vol. 25(1), June 2023
6. [Web Conf'23] Fionda, V., et al., “[Tutorials at The Web Conference 2023](#),” In Companion Proceedings of the *ACM Web Conference 2023* (pp. 648-658), Austin, Texas, April 2023
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, December 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 *Conference 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 International ACM Web Science Conference (WebSci)*, Boston, MA, July 2019

TUTORIALS

4. [NAACL'24] **Adaku Uchendu**, Saranya Venkatraman, Thai Le, Dongwon Lee, “[Catch Me If You GPT: Tutorial on Deepfake Texts](#),” *2024 Annual Conference of the North American Chapter of the Association for Computational Linguistics*, Mexico City, Mexico, June 2024

3. [NSF Summit'23] Adaku Uchendu, Thai Le, Dongwon Lee, “[Catch Me If You GPT: Tutorial on Deepfake Texts](#),” *2023 NSF Cybersecurity Summit for Large Facilities and Cyberinfrastructure* at Lawrence Berkeley National Laboratory, Berkley, California, October 2023 (*Training/Workshop*)
2. [Web Conf'23] Adaku Uchendu, Thai Le, Dongwon Lee, “[Catch Me If You GAN: Generation, Detection, and Obfuscation of Deepfake Texts](#),” *ACM Web Conference (WWW)*, Austin, Texas, April 2023
1. [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

THESES

2. Adaku Uchendu. (2023). [Reverse Turing Test in the Age of Deepfake Texts](#). Ph.D. Dissertation, College of Information Sciences and Technology, Pennsylvania State University, PA, USA. 2023.
1. Adaku Uchendu. (2017). [Numerical Simulation of Vibrations of Mechanical Structures](#). Senior Thesis, Department of Mathematics and Statistics, University of Maryland Baltimore County (UMBC), MD, USA. 2018. [[slides](#)]

INVITED TALKS

- *Detection and Obfuscation of Deepfake Texts*, at MIT Lincoln Laboratory’s fourth Recent Advances in Artificial Intelligence for National Security (RAAINS) workshop, **Student Lightning talk**, Boston, MA, November 16, 2022.
- *Attribution and Obfuscation of Neural Text Authorship*, at Dublin City University, Ireland, **NLP Seminar**, Virtual, October 10, 2022
- *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.
- *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.

PRESENTATIONS

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

RESEARCH EXPERIENCE

PIKE Research Lab @ Penn State — *Research Assistant*

University Park, Pennsylvania

- **Research project:** Reverse Turing Tests *August 2018 - August 2023*
- **Description:** Built automatic and human-based approaches to accurately distinguish deepfake (LLM-generated) texts from human-written ones. Deepfake text generators include GPT-3, PPLM, LLaMA, Flan-T5, etc..
- Advisor: Dr. Dongwon Lee

Pacific Northwest National Lab — *NSIP Ph.D. Intern*

Richland, Washington (Virtual)

- **Research project:** Analysis of Cybersecurity contract documents *May 2022 - August 2022*
- **Description:** Used NLP techniques to assess the coverage of cybersecurity contract-like vocabulary in the documents.
- Mentor: Dr. David McKinnon

IBM Research — *Ph.D. Research Intern*

San Jose, California (Virtual)

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

May 2021 - August 2021

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

Dayton, Ohio (Virtual)

- **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

May 2020 - October 2020

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

TEACHING EXPERIENCES

Pennsylvania State University
Teaching Assistant

State College, Pennsylvania
January 2019 - May 2019

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

REU Lab Tutor

May & June 2021

- Designed and instructed the lab on LaTeX, Overleaf, and AI text-generation

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)

- Penn State Pan-African Professional Alliance (IT Officer)
- Planning Committee of the 2023 6th Annual Pan-APA conference @ Penn State
- **Journal Reviewer**
Social Network Analysis and Mining (SNAM), Language Resources and Evaluation (LREV), Journal of Artificial Intelligence (AIJ)
- **Conference Reviewer**
NAACL ACL Rolling Review
- **Program committee**
The First Workshop on Efficient Benchmarking in NLP (NLP Power) at ACL 2022
- **Session Chair** for *Crowd Modeling and Optimization* Session at HCOMP 2023

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*)
- Jason Lucas (Ph.D. student @ PIKE lab) on *Multilingual Fake News detection*

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.

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

REFERENCE LIST

Dongwon Lee (Pennsylvania State University)
 David McKinnon (Pacific Northwest National Lab)
 Rui Zhang (Pennsylvania State University)
 Thai Le (University of Mississippi)