

# ADAKU UCHENDU

azu5030@psu.edu ◊ <https://adauchendu.github.io/>

## EDUCATION

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### 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

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NLP, NLG, Cybersecurity, Adversarial Robustness, Machine Learning, Topological Data Analysis

## ACADEMIC ACHIEVEMENTS AND AWARDS

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

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

Bunton-Waller Graduate Fellowship

*January 2021 - May 2023*

*August 2020 - May 2023*

*August 2018 - May 2023*

Diversity & Inclusion ICML 2022 & BlackinAI conference scholarship

*July 2022*

Diversity & Inclusion ACL 2022 conference Student Scholarship

*May 2022*

WiCyS Student Scholarship

*September 2021, March 2022*

CRA-WP Grad Cohort for Women

*April 2021, 2022*

ACM Richard Tapia Conference Student Scholarship

*September 2020, 2021, 2022*

CRA-WP URMD/IDEALS Student Scholarship

*March 2020, 2022*

TTO Student Travel Scholarship (£**1250**)

*October 2019*

Best Poster Presentation at ATRC internship

*August 2019*

Best Documentation at ATRC internship

*August 2019*

Outstanding Tutor Award

*May 2018*

Pi Mu Epsilon Mathematics Honors Society

*May 2017 - May 2018*

Undergraduate Research Award Scholar (**\$1500**)

*March 2017 - May 2018*

McNair Scholar

*January 2016 - May 2018*

## PUBLICATIONS

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\* means equal contribution

- [arXiv'23] Adaku Uchendu\*, Jooyoung Lee\*, Hua Shen, Thai Le, Kenneth Huang, Dongwon Lee, "Understanding Individual and Team-based Human Factors in Detecting Deepfake Texts," arXiv, April 2023
- [KDD Exp'23] Adaku Uchendu, Thai Le, Dongwon Lee, "Attribution and Obfuscation of Neural Text Authorship: A Data Mining Perspective," *SIGKDD Explorations*, Vol. 25, June 2023
- [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

## TUTORIALS

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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 (*Tutorial*)
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 (*Tutorial*)

## INVITED TALKS

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- *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

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

## RESEARCH EXPERIENCE

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**PIKE Research Lab @ Penn State** — *Research Assistant*

**State College, Pennsylvania**

- **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

*August 2018 - Present*

**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 *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

## 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

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- 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)
- **Program committee**  
The First Workshop on Efficient Benchmarking in NLP (NLP Power) at ACL 2022

## MENTORING EXPERIENCE

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- UMBC Reach Initiative (September 2017 - May 2018)
  - Provided STEM exposure and professional development for Baltimore high school girls
- Jiayue Liu (former intern @ PIKE lab) on *Neural Music detection*
- UMBC Summer 2021 McNair students (through *2021 McNair Alumni Mentor*)
- Nafis Irtiza Tripto (junior Ph.D. student @ PIKE lab) on *Authorship Attribution & Verification*
- Bruce Taylor (M.S. student @ Tuskegee University) on *Human Authorship Attribution*
- Jason Lucas (junior Ph.D. student @ PIKE lab) on *general research*

## PRESS COVERAGE

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[“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

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**Programming:** Python, R, Matlab, Java, L<sup>A</sup>T<sub>E</sub>X, Maple  
**Tools:** PyTorch, Tensorflow, Keras, Transformers  
**Applications:** Git, Tableau, R Shiny  
**Operating Systems:** Linux, Windows, MacOS

## REFERENCE LIST

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