CHENGZHE SUN

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Education

Doctors of Philosophy: Computer Science and Engineering, University at Buffalo **08/2022 to present**

- Work in UB Media Forensics Lab (MDFL) focusing on media forensics and Audio deepfake.

Master of Science: **Engineering Science Focus on Data Science (UBDS)**, **University at Buffalo** **09/2018 to 02/2020**

- Core foundation in big data and analysis by obtaining knowledge, expertise, and training in data collection and management, data analytics, scalable data-driven discovery, and fundamental concepts.

Bachelor of Science& Arts: Computer Science and Mathematics (Double Degree) University at Buffalo **08/2014 to 08/2018**

- Cum laude graduate, Leadership Award (2014-2017), Dean list (2014-2017)

Experience

Laboratory Manager and Research Assistant **08/2022 to present**
University at Buffalo **Buffalo, NY**

- Schedule lab or equipment use time for staff.
- Responsible for purchasing lab supplies and preparing ordering lists.
- Manage research projects.

Data Analyst **05/2020 to 01/2022**
China Telecom Americas **Washington, District of Columbia**

- Managing and analyzing user data.
- Maintaining database systems.

Data Scientist Intern **05/2019 to 02/2020**
Imaginus Training **Buffalo, NY**

- Create ETL methods to acquire data from primary or secondary sources and maintain database systems.
- Identify, analyze, and interpret potential trends or patterns and work with management to prioritize business and information needs. Used forecasted data to help locate and define new process opportunities. Produced test scripts for automated testing of new software.

Student Researcher/Employee **02/2016 to 09/2019**
University at Buffalo **Buffalo, NY**

- Researcher with Professor Gary Berger in International Business creating/presenting information on "Social and Business Differences between China and America" and selecting business/society topics. Utilized econometric models and Microsoft Excel to evaluate factors causing interference.
- Student Employee in University Dining & Shops: Train and manage other students, resulting in increased revenue and reduced costs.

Projects

A Benchmark Dataset for Neural Vocoder Identification, University at Buffalo and NSF CITeR **08/2022 to 08/2023**

- Work on setting up neural vocoder models, generating data using voice conversion models, and developing baseline vocoder identification models.

Twitter user data analysis, University at Buffalo and Clemson University **08/2022 to 08/2023**

- Work on managing and supporting the research team with Twitter data processing and analysis.

DeepFake-o-meter, University at Buffalo **08/2022 to 08/2023**

- Maintenance DeepFake-o-meter, which is an open platform integrating state-of-the-art Deepfake detection methods.
- Work on managing and supporting the research team on DeepFake-o-meter refinement.

Audio Deepfake Detection, University at Buffalo and Johns Hopkins Applied Physics Laboratory (APL) **08/2021 to 08/2022**

- Work on creating LibriVoc as a new open-source, large-scale dataset for studying neural vocoder artifact detection data.
- Develop a model for vocoder identification based on the RawNet2 model.

Analytics for real estate Services, Imaginus Training Buffalo, NY **05/2019 to 02/2020**

- Predictive modeling and Business Analytics at Imaginus Training & HUNT. Acquire data from primary or secondary data sources and maintain databases/data systems.

Statistical Data Mining – Spotifly, University at Buffalo **01/2019 to 05/2019**

- Create a better music app using Collaborative Filtering and Natural Language Processing models (NLP) to analyze user behavior and create their own uniquely powerful discovery engine.

Tiny Piazza, University at Buffalo **01/2019 to 05/2019**

- Design and implement the database schema for TinyPiazza focusing on User management, Course management, Post management, User-Course relationship management, and User-Post relationship management.

Image Classification with Decision Trees and SVM, University at Buffalo **01/2018 to 05/2018**

- Analyzing datasets, using machine learning to classify the flower samples into different species. Explore supervised and unsupervised classification. Using Image classification and SVM in cultivation, geology, and water quality.

Simulation of a Drone Collision Avoidance System (DCAS), University at Buffalo **08/2017 to 01/2018**

- Design, implement, and test "Drone Collision Avoidance System (DCAS)," Using GPS/position-based algorithm to determine collision detection.

Skills and Honors

- Proficiency in **Python, R, SQL**, Jupiter Notebook, Sequence diagrams, Database, Data mining, Database management, Reports generation and analysis, MS Office, and TensorFlow. Machine Learning, Data mining, DATABASE, and Pattern Recognition (Coursera Certificate)
- Familiar with Java, JavaScript, HTML/CSS/jQuery, MATLAB, SQL Server Integration Services, PowerBI, Compatibility testing, Data-Oriented Computing, ETL, and Business Intelligence.
- Good verbal/communication skills in English and Chinese (Mandarin)
- **TESTDOME SQL, RANKING IN THE TOP 10% (2018, 2019)**
- Special Contributions Award for The Erie County Legislature (2021-2023)
- Outstanding Service Award for Chinese Club of WNY (2021-2023)
- The Chair's Fellowship, University at Buffalo (2022)
- Guest Speaker in CAE IN CYBERSECURITY SYMPOSIUM (2022)

Publications

- Google Scholar: https://scholar.google.com/citations?user=HFVroDAAAAAJ&hl=en

Conference/Workshop Papers

- [CVPRW23b] Chengzhe Sun, Shan Jia, Shuwei Hou, and Siwei Lyu. AI-Synthesized Voice Detection Using Neural Vocoder Artifacts. In CVPR Workshop on Media Forensics, Vancouver, Canada, 2023.

Book chapters

- Chengzhe Sun, Ehab AlBadawy, Timothy F Davison, Sarah R Robinson, Ming-Ching Chang, Siwei Lyu (2024). Using Vocoder Artifacts For Audio Deepfakes Detection. In: Nowroozi, E., Kallas, K., Jolfaei, A. (eds) Adversarial Multimedia Forensics. Advances in Information Security, vol 104. Springer, Cham. https://doi.org/10.1007/978-3-031-49803-9_11