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Education

Ph.D. in Electrical Engineering, FAMU-FSU College of Engineering, Tallahassee, FL **2024**
M.S. in Computer Information Sciences, Florida Agricultural and Mechanical University, Tallahassee, FL **2021**
B.S. in Computer Science, University of Central Florida, Orlando, FL **2019**

Appointments

Assistant Professor, University of West Florida **August 2024 – Present**

- Teach undergraduate/graduate courses in the Cybersecurity Department curriculum.
  - CIS2530 Introduction to Cybersecurity
- Perform scholarly research activities including writing published articles, conference papers and research grants in Cybersecurity in Generative AI and AI for Cybersecurity Solutions
- Active involvement in service including faculty mentor with UWF's Office of Undergraduate Research, representative of the Hal Marcus College of Science and Engineering on the Faculty Sponsored Merit Scholarship Committee, Search Committee member, ABET accreditation assessment and evaluation, and outreach.

Research Assistant SPADAL Lab, FAMU-FSU College of Engineering. **August 2021 – August 2024**

- Member of the Speech Processing and Data Analysis Laboratory (SPADAL) lab, Research focused on data analysis, speech and image signal processing, and artificial intelligence to identify Deepfake media.
- Focused on designing a Targeted Data Extraction and Deepfake Detection system using Decentralized Applications of Federated Learning
- Analyzed ML models (XceptionNet, EfficientNet, DenseNet, VGG19) and enhanced EfficientNet model with attention mechanism.
- Analyzed NLP models (Word2Vec, Glove, Electra, BERT) and Fine-tuned Google's BERT-base model using Transfer Learning
- Optimized metadata extraction and data retrieval efficiency using IPFS & EXIF

Adjunct Faculty School of Architecture & Engineering Technology, FAMU **August 2023 – December 2023**

- Faculty member of the Electronic Engineering Technology department
- Instructed:
  - CET 2365 C Programming for Engineering and Technology
  - CET 3195 Digital Electronics
  - CET 3195L Digital Electronics LAB
- Reviewed and improved the syllabus to meet students' needs. Held office hours, created course curriculum and materials, designed in-class activities, assignments and quizzes.

AI/ML Researcher Intern, Apple **May 2023 – September 2023**

- Member of the UI Understanding team at Human Centered Machine Intelligence (HCMI) group in AI/ML organization
- Designed a patented LLM-based multi-agent planner for automated accessibility testing.
- Optimized UI testing by integrating diverse modules (Pixel-based icon recognition & OCR), reducing required LLM interaction by 40%, which decreased operational costs and improved response times.
- Collaborated with testers to design an innovative output product that streamlined bug reporting, and test planning for testers, enhancing understanding of accessibility features and increasing testing efficiency.

Research Assistant, Florida Agricultural and Mechanical University **January 2020 – July 2021**

- Member of Machine learning and Deep Learning group. Studies all aspects of machine learning. Interests span theoretical foundations, optimization algorithms, Fairness, and a variety of applications (NLP, vision, quantum chemistry, and biology).
- Developed a deep learning algorithm to identify and mitigate racial bias in pre-trained language model (BERT) toward minority-related data.
- Studied and Proposed a Random Forest classification model to calculate lidar height metrics from the high-density UAV lidar-derived point clouds for the classification of vegetation in forestry with the cooperation of the Spatial ecology & conservation (SPEC) lab.

Teaching Assistant, Florida Agricultural and Mechanical University **August 2020 – July 2021**

- Datamining CAP 5765

- Computer Security CIS 5370
- Digital Forensics CIS 4385
- Attended lectures, prepared hands-on lab materials, Grading HomeWorks/Exams and held weekly office hours to provide tutoring or assistance to students in need.

Peer Mentor **August 2020 – August 2024**

- Undergraduate Research Study (CS 4999), A DOE Pipeline Engagement Program (Funded by NSF)
- ASTERIX (FAMU-FSU College of Engineering)
- Guided undergraduate students to explore research ideas of their interest, hold weekly workshops and research meetings and Prepare research plans and learning materials. Taught scientific writing, developed learning modules, and assisted in poster/paper submissions for the FURC conference:
    - Source code vulnerability detection using CodeBERT and ChatGPT (Spring 2023)
    - Developing social media app on the blockchain using Dapps (Fall 2022)
    - Comparison of federating learning frameworks (Pysyft and Tensorflow) (Fall 2022)
    - Evaluation of cryptography usage in iOS Vault applications (Spring 2021)
    - Source code vulnerability detection through NLP (Spring 2021)
    - A Novel Machine Learning Approach for Covid-19 Recognition from X-Ray Images (Fall 2020)

Mobile Application Developer, XI Media LABS **August 2019 – December 2019**

- Full stack developer in the Design and development of advanced AI-based, Augmented Reality, and Virtual Reality Cross Platform Mobile applications
- Focused on Retrieval of user generated Data from Firebase, Accessing User's Geolocation, and generating random geolocations near user's current location using GeoFire

Research Assistant, University of Central Florida **July 2018 – July 2019**

- Member of CRCV group. Promote basic research in computer vision and its applications in all related areas including National Defense & Intelligence, Homeland Security, Environment Monitoring, Life Sciences and Biotechnology and Robotics
- Implemented a Convolutional Neural Network to train a 3D model for segmentation of enhancing brain tumor core using DeepMedics and Tensorflow to be used in accurate tumor volume measurement.

Peer-Reviewed Journal & Conference papers & Talks

1. Taeb, Maryam, et al. "AXNav: Replaying Accessibility Tests from Natural Language." CHI conference on Human Factors in Computing Systems 11-16 May 2024
2. Taeb, Maryam, Chi, Hongmei, Bernadin, Shonda. "Assessing the Effectiveness and Security Implications of AI Code Generators." The Colloquium for Information Systems Security Education (CISSE 2023), Nov 1-3, 2023
3. Taeb, Maryam, Chi, Hongmei, Bernadin, Shonda. "Targeted Data Extraction and Deepfake Detection with Blockchain Technology." International Conference on Universal Village (IEEE UV2022), Oct 22-25, 2022
4. Taeb, Maryam, Torres, Yonathan, Chi, Hongmei, Bernadin, Shonda. "Investigating Gender and Racial Bias in ELECTRA." International conference on Computational Science & Computational Intelligence (CSCI'22), Dec 14-16, 2022
5. Elliston, J., Chi, H., Bernadin, S., & Taeb, M, "Integrating Blockchain Technology into Cybersecurity Education." Future Technologies Conference (FTC) 2022, Nov 2-3, 2022
6. Taeb, M., & Bernadin, S, "Broadening Participation in URE Using PS-MMM-based Mentoring for URM Engineering Students." The Chronicle of Mentoring & Coaching conference 2022, Oct 23-27, 2022
7. Taeb, Maryam, Chi, Hongmei, Bernadin, Shonda (2022). "Digital Evidence Acquisition and Deepfake Detection with Decentralized Applications." Practice and Experience in Advanced Research Computing (PEARC). July 10-14, 2022
8. Taeb, Maryam, & Chi, Hongmei (2022). "Comparison of Deepfake Detection Techniques through Deep Learning." Journal of Cybersecurity and Privacy, 2(1), 89-106.
9. Taeb, Maryam, Chi, Hongmei, Yan, Jie, "Applying Machine Learning to Analyze Anti-vaccination on Tweets." IEEE International Conference on Big Data (BDA COVID-2021), Dec 15-18, 2021
10. Taeb, Maryam and Hongmei Chi, "A Personalized Learning Framework for Software Vulnerability Detection and Education." 2021 International Workshop on Cyber Security (CSW) Aug 13-15, 2021
11. Taeb, Maryam, Chi, Hongmei, Jones, Edward. L. et al. "Inherent Discriminability of BERT towards racial Minority Associated Data", The 21st International Conference on Computational Science and Applications (ICCSA 2021), Sept 13-16, 2021
12. A Ali, K Adjei, S Fatimah, K Ezendu, M Taeb, H Chi, C King, V Diaby, "Using Twitter to Examine Public Perceptions about COVID-19 in the United States: A Sentiment Analysis", ISPOR, May 17-20, 2021
13. Maryam Moghadam, "Vegetation Classification Using Lidar Data", ACM Richard Tapia and Grace Hopper Celebration 2020 poster presenter.
14. Maryam Moghadam, "Introduction to deep learning, from theory to practice" attended by the FAMU Vice President for federal Research 2020

Reviewed Journal Papers

1. "Educating students on the behavioral and psychological aspects of romance scam victimization via a social engineering competition" Journal of Cybersecurity Education, Research and Practice. September 2024
2. "Multi-domain awareness for compressed deepfake videos detection over social networks guided by common mechanisms between artifacts" Elsevier Journal of Computer Vision and Image Understanding. July 2024
3. "I.T. Can't Fix That: Cybersecurity As an Interdisciplinary Approach to Criminal Justice Curriculum " Journal of Cybersecurity Education, Research and Practice. December 2023
4. "Anonymity and Gender Effects on Online Trolling and Cybervictimization" Journal of Cybersecurity Education, Research and Practice. December 2022
5. "PrSLoc: Sybil Attack Detection for Localization with Private Observers using Differential Privacy" Elsevier Journal of Computer and Security. November 2022

Professional Activities

- Institute of Electrical and Electronic Engineers (IEEE) Member since 2018
- Association for Computing Machinery Member since 2017
  - Human Computer Interaction Special Interest Group 2023
- Association for Computing Machinery's Council on Women in Computing (ACM-W) Member since 2017
- American Society for Engineering Education (ASEE) Member since 2021
  - Minorities in Engineering Division
  - Electrical and Computer Engineering Division
  - Educational Research Methods Division
- Technical Reviewer, Journal of Cybersecurity Education, Research and Practice 2023
- Technical Reviewer, Elsevier Journal of Computer and Security 2022
- Technical Reviewer, Elsevier Journal of Computer Vision and Image Understanding 2024

Service Activities

- Intel Semiconductor & Manufacturing Summer Bootcamp Coordinator (2024)
- Intel Generative AI Workshop Facilitator & Speaker (2023)
- Intel Blockchain Workshop Facilitator & Advisor (2022)
- Morgan State University Blockchain Initiative CO-PI (2021)

Research Interests

- **Deepfake Detection:** "First Order Model", "DeepFakeOmeter", ResNET, MesoNET, CNN, Deep Learning BiLSTM, EfficientNet and ExceptionNet
- **Blockchain-based federated learning for evidence acquisition:** Implementing a decentralized federated learning mechanism that utilizes blockchain technology and committee consensus. Designing an evidence acquisition system that can authenticate uploaded media and prevent the use of Deepfakes.
- **Demonstrating Racial Bias in Pre-trained Language models like ELECTRA and BERT** Performing different testing approaches such as WEAT, Cosine similarity and PCA on BERT's vocabulary and a set of racially classified names with a set of attributes
- **Static source code vulnerability and AI code generating model analysis:** Dynamic and static software analysis, common source code vulnerabilities, vulnerability detection techniques, and approaches to mitigate them using machine learning and natural language processing.
- **Cyber-physical Systems Security Education:** Simulating insider threat scenarios and usage of can-utils toolkits and Savvy CAN to send, modify, and capture the network packet to exploit the system vulnerability threats such as replay and fuzzing attacks on the vehicle system.

Special Honors & Awards

- Thurgood Marshal College Fund Scholar **Fall 2023 & Spring 2024**
- PEARC 22 Student Scholar **July 2022**
- INTEL Scholarship Recipient **August 2021 – Present**
- ASTERIX Scholarship Recipient **January 2021 – July 2021**
- Best Student Paper Award from IAEEEE in CSW 2021 **August 2021**
- DOE Pipeline Engagement Program scholar **August 2020 – July 2021**
- FAMU Convergent Data Science Research Center Scholar **January 2020 – July 2021**
- Grace Hopper Scholarship Recipient **September 2018 and 2020**
- ACM Richard Tapia Scholarship Recipient **September 2018 and 2020**