

Frank (Sicong) Chen

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EDUCATION

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- **Syracuse University** Syracuse, NY
• *Ph.D. in Computer and Information Science and Engineering* Aug 2020 - May 2025 (Expected graduation)
• **Dissertation title:** Advancing AI Algorithms for Secure Protection and Health Monitoring through Wearable and Mobile Devices
Research interests: Deep learning, ubiquitous and wearable devices, human-computer interaction, health monitoring, biometrics, and security.
 - **Syracuse University** Syracuse, NY
• *M.S. in Computer Science* Aug 2018 - May 2020
 - **Tianjin University** Tianjin, China
• *B.S. in Mathematics and Applied Mathematics* Sep 2013 - July 2017

PUBLICATIONS

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- [The flagship IEEE Transaction on Biometrics with a Scopus citesscore of 10.9](#)
Frank Sicong Chen, Jingyu Xin, and Vir V. Phoha. Sspra: A robust approach to continuous authentication amidst real-world adversarial challenges. *IEEE Transactions on Biometrics, Behavior, and Identity Science*, 6(2):245–260, 2024
 - [The flagship biometric conference](#)
Frank Sicong Chen, Shruti Rao, Brijesh Tiwari, and Vir V Phoha. Dster: A dual-stream transformer-based emotion recognition model through keystrokes dynamics. In *2024 IEEE International Joint Conference on Biometrics (IJCB)*. IEEE, 2024 [Selected as best-reviewed paper and invited for an extended version submission to the flagship *IEEE Transaction on Biometrics (IEEE Transactions on Biometrics, Behavior, and Identity Science)*.]
 - Presented at IJCB 2024 and will be published in the conference proceedings, with availability on IEEE Xplore and Google Scholar expected in the coming months.
 - [A leading conference in image processing and computer vision](#)
Jiajing Chen, Huantao Ren, **Frank Sicong Chen**, Senem Velipasalar, and Vir V Phoha. Gaitpoint: A gait recognition network based on point cloud analysis. In *2022 IEEE International Conference on Image Processing (ICIP)*, pages 1916–1920. IEEE, 2022
 - Liangfu Lu, Zhenzhai Huan, Xuyun Zhang, Lianyong Qi, **Sicong Chen**, and Yao Wu. Collaborative network traffic analysis via alternating direction method of multipliers. In *2018 IEEE 22nd International Conference on Computer Supported Cooperative Work in Design ((CSCWD))*, pages 547–552. IEEE, 2018
 - Diksha Shukla, **Sicong Chen**, Yao Lu, Partha Pratim Kundu, Ravichandra Malapati, Sujit Poudel, Zhanpeng Jin, and Vir Phoha. Brain signals and the corresponding hand movement signals dataset (bs-hms-dataset), 2019
 - **Frank Sicong Chen**, Amith K Belman, and Vir V Phoha. Formalizing pqrst complex in accelerometer-based gait cycle for authentication. *arXiv preprint arXiv:2205.07108*, 2022

Papers Under Review or In Preparation

- **Frank Sicong Chen** and Vir V. Phoha. Identifying emotional states from keystroke dynamics captured by mobile devices: A dual-stream transformer-based model. *ACM Transactions on Affective Computing*
- **Frank Sicong Chen** and Vir V. Phoha. A resilient wearable-based continuous stress monitoring in everyday settings. *ACM Transactions on Computing for Healthcare*

- **Frank Sicong Chen** and Vir V. Phoha. Eigenpalm: Eigenpalm and diffusion-based synthetic palm-print generation. In *Proceedings of the IEEE/CVF International Conference on Computer Vision*. In preparation
- **Frank Sicong Chen** and Vir V. Phoha. Transformer-based parkinson’s disease diagnosis model from motion sensor-based gait. In *Proceedings of the AAAI Conference on Artificial Intelligence*

CONFERENCE PRESENTATIONS

- *DSTER: A Dual-Stream Transformer-based Emotion Recognition Model through Keystrokes Dynamics* Full paper and poster presentation at IEEE International Joint Conference on Biometrics (IJCB 2024), Buffalo, New York, USA, Sep. 15 - 18.
- *SSPRA: A Robust Approach to Continuous Authentication Amidst Real-World Adversarial Challenges* Full paper and poster presentation at IEEE International Joint Conference on Biometrics (IJCB 2024), Buffalo, New York, USA, Sep. 15 - 18.

HONORS AND AWARDS

- **University-wise Outstanding Teaching Assistant Award**, Syracuse University, April 2023. Selected as **top 4% campus-wide** for exceptional educational contributions.
- **2025 Engineering and Computer Science Research Day Award - First Place**, Syracuse University, March 2025. Awarded \$500 for research and poster presentation in the area of health and well-being. Selected from 97 poster presentations.
- **Graduate Dean’s Award for Excellence in Research and Creative Work**, Syracuse University, March 2025. Awarded \$500 for outstanding research accomplishments and the impact of the proposed presentation; one of 8 recipients selected across the university.
- **Best Reviewed Paper**, IEEE International Joint Conference on Biometrics (IJCB) 2024, for the paper titled “DSTER: A Dual-Stream Transformer-based Emotion Recognition Model through Keystroke Dynamics.”
- **IJCB 2024 Doctoral Consortium Travel Scholarship**, IEEE International Joint Conference on Biometrics (IJCB), September 2024. Awarded \$850 by the National Science Foundation for participation in the Doctoral Consortium.
- **Summer Dissertation Fellowship**, Syracuse University, April 2024. Awarded \$4,500 for research on wearable devices for authentication and health monitoring. Selected from over 100 candidates campus-wide.
- **Research Assistantship**, Syracuse University, Fall 2019. Awarded \$4,967 for research assistance, working in the field of digital security and artificial intelligence.

PROFESSIONAL EXPERIENCE

- **NSF Proposal Drafting and Collaboration** Syracuse, NY
2024
 - Collaborated with Prof. Vir Phoha and research teams from Texas A&M University and Florida International University, to draft **two NSF grant proposals**.
 - Generated ideas for technical approaches, evaluation tools, implementations, and broader impacts, ensuring innovative and feasible solutions for the proposed projects.
 - Wrote key sections, including research objectives, proposed methodology, evaluation, and broader impacts, while coordinating with team members across institutions to align on project goals.
 - Developed valuable skills in grant proposal writing, idea generation, research coordination, and multi-institutional collaboration.

TEACHING EXPERIENCE

- **CIS 735: Machine Learning for Security (graduate-level course)** Syracuse, NY
Teaching Assistant - Course instructor: Prof. Vir Phoha 2022 - 2024
 - **Semesters:** Jan 2022 - May 2022, Jan 2023 - May 2023, Jan 2024 - May 2024
 - Developed teaching modules for topics such as neural networks, outlier detection, and performance evaluation, including creating lecture slides, homework questions, and exam questions.
 - Delivered multiple lectures on the above topics to students independently.
 - Mentored master's students on research projects, leading to one being accepted as a conference paper at IJCB 2024.
 - Individually created and graded homework assignments and exams to assess student understanding.
 - Held office hours twice a week to provide individualized support to students.
- **CIS 600/700: Biometrics (graduate-level course)** Syracuse, NY
Teaching Assistant - Course instructor: Prof. Vir Phoha 2021 - 2024
 - **Semesters:** Aug 2021 - Dec 2021, Aug 2022 - Dec 2022, Aug 2023 - Dec 2023, Aug 2024 - Present
 - Developed teaching modules for topics including AI and generative AI in biometrics, taxonomy for wearable body interfaces, fingerprint recognition, face recognition, keystroke dynamics, gait recognition, and palm recognition, including lecture slides, homework, and exam questions.
 - Delivered lectures independently on all topics for which I developed teaching modules, ensuring coverage of AI and biometrics content for students.
 - Held regular small group meetings to mentor students on their course projects, providing in-depth support and guidance on their research and implementation.
 - Held weekly office hours to offer individualized support to students, clarifying course content and assisting with assignments and projects.
- **CIS 454: Software Implementation (undergraduate-level course)** Syracuse, NY
Teaching Assistant - Course instructor: Prof. Chilukuri K. Mohan 2022 - Present
 - **Semesters:** Aug 2024 - Present
 - Graded quizzes and project reports, ensuring consistency and providing constructive feedback.
 - Guided undergraduate students in their software implementation projects, offering support on software design, implementation strategies, and best practices in software engineering.
 - Held office hours three times a week to assist students with course material and projects.
- **CIS 375: Introduction to Discrete Mathematics (undergraduate-level course)** Syracuse, NY
Teaching Assistant - Course instructor: Prof. Andrew Lee 2020 - 2021
 - **Semesters:** Aug 2020 - Dec 2020, Jan 2021 - May 2021, Aug 2021 - Dec 2021
 - Developed teaching modules for recitations, including in-class exercises designed to engage students and enhance understanding of discrete mathematics concepts.
 - Delivered three weekly recitation sessions independently to reinforce course material, providing in-depth explanations and practical examples.
 - Graded homework assignments and exams, ensuring fair and consistent grading practices.
 - Held office hours twice a week to provide individualized support to students, addressing their questions and clarifying challenging topics.
- **CIS 675: Design and Analysis of Algorithms (graduate-level course)** Syracuse, NY
Grader - Course instructor: Prof. Sucheta Soundarajan 2020
 - **Semester:** Jan 2020 - May 2020
 - Graded homework assignments and exams, ensuring fair and consistent grading practices with detailed feedback to help students understand the core concepts.
 - Held office hours twice a week to assist students in understanding complex algorithmic concepts and to address grading-related questions.

RESEARCH EXPERIENCE

- **Syracuse University** Syracuse, NY
Research assistant - Supervisor: Prof. Vir Phoha (Ph.D., IEEE Fellow, AAAS Fellow, AAIA Fellow)
 - **Led and conducted the following projects::**
 - Transformer-based Parkinson’s disease diagnosis model from motion sensor-based gait (2024 - present)
 - Identifying emotional states from keystroke dynamics captured by mobile devices: A dual-stream transformer-based model (2024 - present)
 - A resilient wearable-based continuous stress monitoring in everyday settings (2024 - present)
 - Selecting Deep Learning Algorithms with Stable Performance: A Measure of Stability Across Multiple Datasets (2024 - present)
 - Human-Wearable Interaction Enhanced by Artificial Intelligence: A Survey and a Taxonomy (2024)
 - Redefining Biometric Taxonomy for the Generative AI Era: Integrating Existing and Futuristic Technologies (2024)
 - DSTER: A Dual-Stream Transformer-based Emotion Recognition Model through Keystroke Dynamics (2024)
 - SSPRA: A Robust Approach to Continuous Authentication Amidst Real-world Adversarial Challenges (2023 - 2024)
 - PQRST Complex: Capturing the Formal Structure in Gait Using Accelerometers in Mobile Devices (2021 - 2022)
 - **Collaborated with researchers from other labs and academic institutions across the U.S. on the following projects::**
 - Attacking a Palm-based Authentication System with Adversarial Noise (2023), with Prof. Nitesh Saxena from Texas A&M University and Asst. Prof. Asif Salekin from Syracuse University (now at Arizona State University).
 - Normality is Not the Norm in Mobile Devices Data – Causes and Way Forward (2022 - 2023), with Asst. Prof. Amith K. Belman from San Jose State University.
 - Replay Attack and Attack Detection Project Using Inertial Sensor Data (2022), with Asst. Prof. Asif Salekin (now at Arizona State University) and Dr. Jingyu Xin from Syracuse University.
 - GaitPoint: A Gait Recognition Network based on Point Cloud Analysis (2022), with Prof. Senem Velipasalar from Syracuse University.
 - Enhanced Touch-based Authentication Systems for Mobile Dvices (2019 - 2020), with Asst. Prof. Diksha Shukla from the University of Wyoming.
 - Brain Signals and the Corresponding Hand Movement Signals Dataset (BS-HMS-DATASET) Collection (2019 - 2020), with Assoc. Prof. Zhanpeng Jin from the University at Buffalo - SUNY and Asst. Prof. Diksha Shukla from the University of Wyoming.
- **Tianjin University** Tianjin, China
Research assistant - Supervisor: Prof. Liangfu Lv(Ph.D.) Aug 2015 - June 2017
 - **Led and conducted the following projects::**
 - Collaborative network traffic analysis via alternating direction method of multipliers (2015-2016)
 - A Double Arc Coordinate Plot (DACP) Approach for High-dimensional Data Visualization (2016-2017)

PROFESSIONAL SERVICE

Conference

- Program Committee Member, *AAAI Conference on Artificial Intelligence (AAAI 2026)*
- Program Committee Member, *IEEE International Conference on Cognitive Machine Intelligence (IEEE CogMI) 2025*

- Reviewer, *International Conference on Computer Analysis of Images and Patterns (CAIP) 2025*
- Reviewer, *InterID 2025, Workshop at IEEE International Conference on Automatic Face and Gesture Recognition*

Journal

- Program Committee Member, *IEEE Transactions on Computational Social Systems*
- Reviewer, *ACM Digital Threats: Research and Practice*