Dan Zhang

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Professional Summary — Applied scientist and software engineer with 5+ years of experience building intelligent, user-centric systems at the intersection of HCI and machine learning. Proven track record in designing predictive models, developing mobile input systems, and delivering data-driven features. Strong applied research experience across human-AI interaction and accessibility.

Education

Doctor of Philosophy (Ph.D.), Computer Science — **Sep. 2019 - present**
Stony Brook University, NY, USA (Expected graduation Dec. 2025) — *GPA: 3.8/4.0*

Master of Science (M.S.), Computer Science — **Sep. 2014 - May 2017**
Stony Brook University (SUNY Korea Campus), Incheon, South Korea — *GPA: 3.8/4.0*

Bachelor of Engineering (B.Eng.), Computer Science and Technology — **Sep. 2010 - May 2014**
University of Electronic Science and Technology of China (UESTC), Sichuan, China — *GPA: 3.5/4.0*

Skills

Domains Machine Learning, Data Science, Human-Computer Interaction, Statistical Modeling, Experiment Design, Mobile UX, Accessibility

Frameworks PyTorch, Keras, Hugging Face, Angular
Languages Python, Java, Kotlin, Javascript, C++, PHP, SQL
Tools Pandas, NumPy, scikit-learn, Jupyter, R Studio, Git, VS Code, Android Studio

Selected Projects

Decoder for Braille Keyboard on Touchscreens — **Mar. 2023 – Aug. 2024**
- Built a decoding algorithm using optimal transport for robust input from blind users.
- Reduced word error rate from 42.5% to 17.3% in user study.
- Built a web prototype for the Braille keyboard, and currently porting it to mobile applications.
- Accepted at UIST 2025 (Acceptance Rate: 22%).

LLM-powered Input Methods on Mobile Phones — **Sep. 2023 – Aug. 2024**
- Fine-tuned FLAN-T5 model for converting input signals (e.g. taps and gestures) into text.
- It achieves 93.1% top-1 accuracy on user-drawn gestures, outperforming the widely adopted Shark2 decoder.
- Published at CHI 2025 (Acceptance Rate: 25.1%).

Gesture Typing for Low Vision People — **Mar. 2021 – Mar. 2023**
- Led user study and behavioral analysis to support the design of accessible gesture typing.
- Built two keyboard prototypes tailored to low-vision users.
- Developed kinematics-based decoding algorithm.
- Published at UIST 2024 (Acceptance Rate: 22%).

Real Time Air Quality Monitoring and Prediction — **Sep. 2018 – Feb. 2019**
- Built predictive models (SVR, Random Forest, GBDT) on spatiotemporal pollution datasets.
- Integrated static and mobile IoT sensor networks for large-scale data collection and analysis.
- Delivered insights via geospatial visualizations.
- Published at IEEE Access 2020.

Games for Clearflow Keyboard — **Sep. 2024 – Feb. 2025**
- Developed a mobile app in Unity for iOS and Android to gamify learning of the ClearFlow keyboard layout, optimized for accurate and fast glide typing.
- Prepared the app for public release, focusing on intuitive UX and responsive game mechanics.

Publications

1. **Dan Zhang**, Yan Ma, Glenn Dausch, William H Seiple, Xianfeng Gu, IV Ramakrishnan, and Xiaojun Bi. *Enabling Auto-Correction on Soft Braille Keyboard,* To appear in Proceedings of the 38th Annual ACM Symposium on User Interface Software and Technology (UIST 2025).

2. Yan Ma, **Dan Zhang**, IV Ramakrishnan, and Xiaojun Bi. *LLM Powered Flexible Typing on Smartphones,* In Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems (CHI 2025).

3. **Dan Zhang**, Zhi Li, Vikas Ashok, William H Seiple, IV Ramakrishnan, and Xiaojun Bi. *Accessible gesture typing on smartphones for people with low vision,* Proceedings of the 37th Annual ACM Symposium on User Interface Software and Technolog (UIST 2024).
4. **Dan Zhang**, and Simon S. Woo. *Real Time Localized Air Quality Monitoring and Prediction Through Mobile and Fixed IoT Sensing Network,* IEEE Access (2020): 89584-89594.
5. **Dan Zhang** and Simon S. Woo, *Poster: Predicting Air Quality using Moving Sensors,* In The 17th ACM international Conference on Mobile Systems, Applications and Services (MobiSys 2019).
6. **Dan Zhang**, Darius Coelho and Klaus Mueller, *Google Glass for Personalized Augmentations of Data Visualizations,* IEEE Visualization Conference (Poster), 2016.
7. Shenghui Cheng, Yue Wang, **Dan Zhang**, Zhifang Jiang and Klaus Mueller, *StreamVisND: Visualizing Relationships in Streaming Multivariate Data,* IEEE Visualization Conference(VAST 2015 Honorable Mention Poster).
8. Kui Fu, **Dan Zhang**, Peng Tang, Zhongliang Tang, Wei He, *Adaptive Extended Kalman Filter for a Red Shift Navigation System,* The 34th Chinese Control Conference (CCC), 2015.
9. **Dan Zhang**, Kui Fu, Shuzhi Sam Ge, Zhong-Liang Tang, Wei He, *Analysis of Filtering Methods for the SINS/CNS Integrated Navigation System of Missile Motion,* Proceeding of the 11th World Congress on Intelligent Control and Automation (WCICA), 2014.

Honors and Awards

- Grace Hopper Celebration (GHC) Student Scholarship (Sep. 2020)
- Annual Research Fellowship (ICTCCP) for three years, SUNY Korea (2014-2017)
- Third-class of People fellowship (Top 30%), University of Electronic Science and Technology of China (Sep. 2011)
- Freshmen Scholarship (Top 3%), University of Electronic Science and Technology of China (Sep. 2010)