Tianyuan(Alex) Du

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Education

Duke University, 2024/08 to now
Ph.D. in Electrical and Computer Engineering
Research Interest: Mobile Computing, Augmented Reality, Robotics, Human-Computer Interaction

University of Michigan, Ann Arbor, 2022/01 to 2024/05
Major in Computer Science, minor in Statistics
GPA: 3.72/4.00
Courses: Autonomous Robotics, Computer Vision, Data Mining, Human-Centric ML, Computer Organization, Computer Security, Database System, Combinatorics, Theoretical Statistics, Bayesian Analysis.
Capstone: Predicting Song Popularity using Affective Programming.

Hong Kong University of Science and Technology (HKUST), 2020/09 to 2021/12
Computer Engineering and Business Management (Dual Degree Program)
Courses: Random Process, Signals and Systems, Multivariable Calculus, Matrix Algebra, Case Analysis

Skills

Programming Languages: C++, C#, C, MATLAB, Python, Java, Javascript, R, SQL
Technical Expertise: Augmented Reality, Wireless Systems, Machine Learning, Computer Vision, Signal Processing, Database Development.
Languages: Chinese(Native), English(Fluent)

Experience

Research Assistant, 2024/08 to now
I3T Lab, Duke University, US
Advised by Professor Maria Gorlatova, working on latency-aware multi-party systems for localization and mapping that enables human-robot collaboration with Augmented Reality (AR) technology.

Research Assistant, 2022/05 to 2024/04
Interactive Sensing & Computing Lab, University of Michigan, Ann Arbor, US
Advised by Professor Alanson Sample and graduate student Yang-Hsi Su, leaded research on a novel system for indoor sensing with Bluetooth Low Energy antenna array. Conceptualized and implemented a custom two-dimensional Angle of Arrival measurement algorithm that improved prior work. Proposed and implemented a depth estimation pipeline based on machine learning, creating a 3-dimensional localization pipeline. Designed experiments to evaluate its performances. First author paper accepted.

Instructional Aide, 2024/01 to 2024/04
EECS 367 (Autonomous Robotics), University of Michigan, Ann Arbor, US
Serving as teaching assistant for upper-level course. Hold office hours and grade exams and assignments.

Engineer Intern, 2021/06 to 2021/08
Applied Science & Technology Research Institute, Hong Kong S.A.R.
Worked in the Communication Division of Network Software Group, focusing on automated-driving vehicles. Developed a system for automatic parking and end-to-end automatic camera calibration.

Publications

T. Du, Y. Su, and A. Sample, "2D+Depth RF Localization via a Low-Cost Receiver," IEEE Wireless Communications and Networking Conference (WCNC), 2024, Dubai, UAE. [Paper]

T. Kang, A.-D. Dinh, B. Wang, **T. Du**, Y. Chen, K. Chau, "Optimization of a Real-Time Wavelet-Based Algorithm for Improving Speech Intelligibility," arXiv:2202.02545 [cs.SD], 2022. [Paper]

Projects

Latency-Aware Multi-Party SLAM for HRI in AR Design and implemented system for multiple human users and robots to perform tracking and mapping collaboratively in real-time.

Context-Aware Deep Emotion Recognition with Physiological Signals. Transformer-based deep learning model for emotion recognition. Achieved higher classification intricacy with accuracy comparable to prior works. Presented at the University of Michigan Undergraduate Research Symposium.

Robot Simulation. Simulated robotic arm supporting Forward Kinetics, Inverse Kinetics, and Motion Planning with RRT. Implemented detailed robot planning and control algorithms. [Demo]

Thread Library for Operating System. Thread library that supports creating/swapping/joining/interruption of threads by lock/mutex/signal. This includes scheduling algorithms and error handling for bad style/thread function misuse/resource exhaustion.

Awards and Honors

First-Year Ph.D. Student Fellowship 2024
Awarded by Duke University.

Jame B. Angels Scholar 2024
Awarded by the University of Michigan, Ann Arbor for consecutive outstanding academic records.

University Honors 2022 to 2023
Awarded by the University of Michigan, Ann Arbor for academic excellence.

Dean's List 2021
Awarded by the HKUST for academic excellence.

Scholarship Scheme for Continuing Undergraduate Student 2021
Awarded by HKUST for recognition and honor of outstanding academic performance (top 10% of all continuing undergraduates).

Miscellaneous

Triathlon. Member of Michigan Triathlon Club. Finisher of the 2023 USAT Michigan State Championships and 2023 USA Collegiate National Championships.