# Tianyuan(Alex) Du | Résumé

– **website: alextydu.github.io** –

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## Education

**Bachelor of Science, Computer Science and Statistics (Double Majors)**

*University of Michigan, Ann Arbor*  2022/01 – 2024/05(expected)

GPA: 3.72/4.00

**Courses**: Autonomous Robotics, Computer Vision, Data Mining, Human-Centric ML, Computer Organization, Computer Security, Database System, Combinatorics, Theoretical Statistics. **Capstone**: Predicting Song Popularity using Affective Programming.

**Computer Engineering and Business Management (Dual Degree Program)**

*Hong Kong University of Science and Technology (HKUST)*  2020/09 – 2021/12

**Courses**: Random Process, Signals and Systems, Multivariable Calculus, Matrix Algebra, Case Analysis

## Experiences

**Interactive Sensing & Computing Lab, University of Michigan, Ann Arbor, US**

*Research Assistant*  2022/05 – present

Under the guidance of Professor Alanson Sample and graduate student Yang-Hsi Su, worked 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. **Accepted at IEEE WCNC 2024 as first author.** [Paper]

**EECS367 (Autonomous Robotics), University of Michigan, Ann Arbor, US**

*Instructional Aid*  2024/01 – present

Serve as teaching assistant for upper-level course. Hold office hours, grade exams and assignments, and answer student questions.

**Hong Kong University of Science and Technology, Hong Kong S.A.R.**

*Undergraduate Research Opportunity (UROP)*  2021/09 – 2022/02

Under the guidance of Professor Kevin Chau from HKUST, worked on a paper for real-time improvement of speech intelligibility. Constructed experiment and evaluation pipeline for the novel algorithm on a comprehensive dataset. Co-authored papers can be found here. [Paper]

**Applied Science & Technology Research Institute, Hong Kong S.A.R.**

*Engineer Intern*  2021/06 – 2021/08

Worked in Communication Division of Network Software Group, focusing on automated-driving vehicles. Developed a system that could assist vehicles to park automatically. Developed an end-to-end automatic camera calibration pipeline with a senior engineer. Highly recognized by the group management team, and the work was presented to the Hong Kong Government.

## Projects

**Context-Aware Deep Emotion Recognition with Physiological Signals**: Transformer-based model for emotion recognition. Demonstrated capability of higher classification intricacy with accuracy comparable to prior works. In submission for PerCom 2024.

**Reconstruct 3D Human Pose with NeRF**: Tuned NeRF model for 3D pose reconstruction. [Report]

**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. Includes scheduling algorithm and error handling for bad style/thread functions misuse/resource exhaustion.

## Awards

**2022-2023**: University Honors (two times). Awarded by the University of Michigan, Ann Arbor for academic excellence.

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

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

## Skillset

**Programming Languages**: C++, C, MATLAB, Python, Java, Javascript, R, SQL

**Technical Expertise**: Wireless Systems, Machine Learning, Computer Vision, Signal Processing, Database Development.

**Languages**: Chinese(Native), English(Fluent)

## Extracurriculars

**Triathlon**: Member of Michigan Triathlon Club. Finisher of 2023 USAT Michigan State Championships, 2023 USA Collegiate National Championships.