

Tony (Tongyun) Yang

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EDUCATION

PhD MSCA Doctoral Networks - 6th Sense

July 2025 – Present

IMDEA Networks

Madrid, Spain

Joint communication and sensing in 6G networks: This project develops energy-efficient, privacy-preserving RF sensing systems that convert wireless signals (e.g., Wi-Fi, 5G/6G) into actionable insights for human and obstacle detection without requiring cameras or wearables. It focuses on:

- **Neuromorphic computing** combining spiking neural networks and neuromorphic RF receivers for low-power, event-driven signal processing, enabling simultaneous channel estimation, target detection, and micro-motion analysis with drastically reduced energy consumption.
- **Cross-modal, context-aware fusion** combining RF with vision, LiDAR, and inertial sensors to enhance robustness and semantic richness, using RF as a low-power sentinel that selectively activates complementary sensors to balance sensing capability with privacy.
- **Human-centered applications** in smart environments, healthcare, and accessibility, emphasizing real-world deployment and social acceptance.

MSc Computer & Embedded Systems Engineering

September 2022 – October 2024

TU Delft

Delft, The Netherlands

BSc (cum laude) Electrical Engineering & Mechatronics

September 2017 – July 2021

Shanghai Maritime University & Abroad in NL

China & The Netherlands

EXPERIENCE

AI Research Engineer

January 2025 – June 2025

TU Delft Imaging Physics Department

Delft, The Netherlands

Investigated weight redundancy in nnU-Net using unstructured pruning, followed by structured pruning to enhance efficiency. Demonstrated that nnU-Net can be structurally pruned to 99% sparsity with minimal performance degradation, leading to a 6× improvement in training efficiency and gains in inference speed.

Research Assistant

June 2023 – October 2024

TU Delft Embedded Systems Department

Delft, The Netherlands

Constructed the first large-scale public dataset for emotion recognition based solely on eye-tracking in immersive environments, covering seven discrete emotions. Developed an efficient and scalable recognition method, with results accepted for publication in IMWUT/UbiComp'25.

Additionally, explored the use of self-supervised learning for human activity recognition using eye-tracking data, achieving 85% classification accuracy across six distinct activity classes.

Support Engineer

December 2020 – July 2021

NXP Semiconductors N.V.

Nijmegen, The Netherlands

Developed an automated test bench system for UJA116X CAN chip family, integrating comprehensive diagnostic protocols to enable efficient defect analysis and ensure robust performance verification.

PUBLICATIONS

Yang, T.*, Regmi, B.*, Du, L., Bulling, A., Zhang, X., & Lan, G. (2025). Through the Eyes of Emotion: A Multi-faceted Eye Tracking Dataset for Emotion Recognition in Virtual Reality. In *Proceedings of the*

ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies, 9(3). ACM, New York, NY, USA.
Accepted, to appear.

Yang, T., Zhao, Y., & Tao, Q. (2025). Pruning nnU-Net with Minimal Performance Loss. In *Medical Imaging with Deep Learning-Short Papers*.

TEACHING

Teaching Assistant & Mentor
TU Delft

September 2023 – April 2024
Delft, The Netherlands

- CESE 4030 Embedded Systems Lab (2023/24 Q3) / TA
- CESE 4000 Software Fundamentals (2023/24 Q1) / TA
- CESE 4010 Advanced Computing Systems (2023/24 Q1) / TA
- CESE MSc Programme Student Mentor (2023/24)

PROJECTS

Medical Image Generation with Stable Diffusion

October 2024

Engineered a specialized Stable Diffusion model incorporating anatomy-compliant synthesis, leveraging the M&Ms-2 Dataset to generate high-fidelity medical images

AWS Big Data Application

December 2023

Developed a global evacuation plan making application on AWS Platform utilizing Apache Kafka, Spark, Hadoop and OpenStreetMap, for flooded areas based on real-time sea-level.

Acoustic Localization

May 2023

Developed an Android application with AI model deployed for precise indoor location detection using acoustic signals. Achieving 98% accuracy across 16 distinct locations with only approximately 100 training samples each. Introduced a novel technique for reducing the amount of training data.

Quadcopter Drone

March 2023

Developed the control and communication unit for a drone in Rust.

SKILLS & INTERESTS

Languages

Mandarin (Native), English (Working proficiency), Spanish (Intermediate)

Technical

Python, PyTorch, MATLAB, LaTeX, Git, Docker, Signal processing, ML, neural network pruning, wireless sensing, eye tracking.

Interests

Research interests include human-centered innovation at the intersection of AI, embedded systems, and wearable technology, with a focus on real-world impact and social good.

Personal interests include running with a half marathon personal best of 1:43:53 at NN CPC Loop Den Haag, bodybuilding through regular strength training, as well as cooking, hiking, and tennis.