Zhongze (Dylan) Tang

Ph.D., Research Scientist

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EDUCATION

Rutgers, the State University of New Jersey **GPA 4.00**
Doctor of Philosophy in *Electrical and Computer Engineering* Sep 2019 – Oct 2024

University of Electronic Science and Technology of China (UESTC) **GPA 3.74**
Bachelor of Engineering in *Measurement & Control Technology and Instrumentation* Aug 2014 – Jul 2018

TECHNICAL EXPERIENCE

Meta Platforms, Inc. Jul 2024 - Now
Research Scientist Menlo Park, CA

- Design and improve the deployment on Edge Cloud capabilities.

LLM-assisted Assessment System for Special Education Dec 2023 – Jul 2024
Full-stack Developer Education Dept., Rutgers University

- Use LLM to help generate the special education-specific contents to help students in the assessments.
- Design and implement a Vue-based UI, a Go-based backend, with RabbitMQ, Postgres and Redis.

Star Studio of UESTC Sep 2015 – May 2017
PHP DevOps Chengdu, China

- Participated in development and maintenance of several UESTC websites, including UESTC BBS (using Discuz!) and the website for the Office of State-owned Assets of UESTC (using CodeIgniter).
- Found and fixed website vulnerabilities like XSS and CSRF.

RESEARCH EXPERIENCE

Multi-displays System for a Sustainable Environment **Advisor:** Dr. Sheng Wei

- Reuse old displays to build a large screen for video streaming, and design algorithms to solve the challenges in this procedure, including content synchronization and QoE optimization.

Privacy-Preserving Multimedia Mobile Cloud Computing System **Advisor:** Dr. Sheng Wei

- Designed a framework which employs confidential computing in the cloud to deploy the perturbation generator, which addresses the resource challenge while maintaining privacy. A neural compressor is specifically trained to effectively compress perturbed images to address the bandwidth challenge.

Visual Privacy Protection in Mobile Image Recognition Using Protective Perturbation **Advisor:** Dr. Sheng Wei

- Designed and trained a Protective Perturbation Generator, which creates protective perturbations in real-time that blur an image completely. The protected image can no longer be recognized by human vision anymore but can still be classified by neural networks as before, without accuracy loss.
- Working on extending the project from image classification models to other models like optical flow estimation (e.g., FlowNet2) and 3D Point Cloud classification (e.g., PointNet++).

Power-efficient Edge-assisted VR Live Streaming System **Advisor:** Dr. Sheng Wei

- Helped develop an edge-assisted VR live streaming system, where the VR rendering is offloaded from the client to the edge for power savings, with viewport prediction and cropping to reduce MtoP latency.

Security-preserving Volumetric Video Live Streaming System **Advisor:** Dr. Sheng Wei

- Developed a DASH-based end-to-end volumetric video streaming system, supporting VOD and live.
- Designed a content-aware perturbation generation algorithm (for VOD) and a real-time generative model (for live) to add perturbations to volumetric videos, to defense against face ID spoofing attempts.

SKILLS

Research: multimedia system security & privacy; end-to-end video streaming; trusted cloud architecture
Programming: proficient in Python, JAVA, Go, Verilog; moderately proficient in C/C++, UNIX Shell, Kotlin
Web Development: Gin, SQL, Redis, Flask, PHP **Mobile & IoT**: FPGA, Android, Raspberry Pi
Machine Learning: PyTorch, Tensorflow **DevOps:** Linux, Git, Docker, K8s, Confidential Containers

PUBLICATIONS

- **Z. Tang**, M. Ye, Y. Liu, S. Wei, "Privacy-Preserving Multimedia Mobile Cloud Computing Using Protective Perturbation", arXiv:2409.01710, 2024.
- **Z. Tang**, H. Phan, X. Feng, B. Yuan, Y. Liu, S. Wei, "Security-Preserving Live 3D Video Surveillance", ACM Multimedia Systems Conference (**MMSys**), 2023.
- M. Ye, **Z. Tang**, H. Phan, Y. Xie, B. Yuan, S. Wei, "Visual Privacy Protection in Mobile Image Recognition Using Protective Perturbation", ACM Multimedia Systems Conference (**MMSys**), 2022.
- Z. Zhu, X. Feng, **Z. Tang**, N. Jiang, T. Guo, L. Xu, S. Wei, "Power-Efficient Live Virtual Reality Streaming Using Edge Offloading", Workshop on Network and Operating System Support for Digital Audio and Video (**NOSSDAV**), 2022.
- X. Feng, Y. Xie, M. Ye, **Z. Tang**, B. Yuan, S. Wei, "Fake Gradient: A Security and Privacy Protection Framework for DNN-based Image Classification", ACM Multimedia Conference (**ACMMM**), 2021.
- **Z. Tang**, X. Feng, Y. Xie, H. Phan, T. Guo, B. Yuan, S. Wei, "VVSec: Securing Volumetric Video Streaming via Benign Use of Adversarial Perturbation", ACM Multimedia Conference (**ACMMM**), 2020.

ACTIVITIES & SERVICES

Reviewer **NOSSDAV** '23, **ACMMM** '24
Presenter, "Privacy-Preserving Multimedia Mobile Cloud Computing", *Invited Talk* at IBM Jun 2023
Judge, Rutgers ECE Capstone Expo 2023, 2024
Student Volunteer, HOST 2022, D.C. Jun 2022
Student Volunteer, ICDCS 2021, Virtual Jul 2021
Student Volunteer, 60th Anniversary Celebration of UESTC, Chengdu, China Sep 2016
Teacher as a volunteer, Love of Wings Program, Qinghai Tibet Area, China Summer 2015

TEACHING/MENTOR

Teaching Assistant, Rutgers ECE 452 Software Engineering Spring 2024
Instructor, Rutgers ECE 231 & 233 Digital Logic Design & Laboratory Summer 2023
Teaching Assistant, Rutgers ECE 231 & 233 Digital Logic Design & Laboratory Fall 2020-2022
Teaching Assistant, Rutgers ECE 437 Digital Systems Design Fall 2019, 2023
Co-Mentor, Undergraduate Special Problem Spring & Fall 2022

AWARDS

Student Travel Grant, HOST '22, D.C. Jun 2022
The People's First-Class Scholarship, UESTC, Chengdu, China 2016
The People's Second-Class Scholarship, UESTC, Chengdu, China 2015, 2017