

Zheng (Thomas) Tang

SENIOR DEEP LEARNING ENGINEER AT NVIDIA · UW PH.D. · AI CITY CHALLENGE ORGANIZING COMMITTEE LEAD · IEEE T-CSVT SENIOR AREA EDITOR

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Summary

Senior Deep Learning Engineer at NVIDIA · Former Applied Scientist at Amazon ('19-'21) · UW Ph.D. in Electrical & Computer Engineering · Holder of 16 U.S. patents & author of 23 publications · Developed a multimodal fusion search agent for NVIDIA VSS Blueprint with live demo at GTC'26 · Prepared VANTAGE-Bench & TAR benchmarks, highlighted in the Cosmos 3 release at Computex'26 keynote · Led organization for AI City Challenges at CVPR, ICCV & ECCV engaging 2K+ teams · Senior Area Editor for IEEE T-CSVT · Finalist for two Best Paper Awards at ICPR'16

Education

University of Washington (UW)

Seattle, WA, USA

PH.D. & M.S. IN ELECTRICAL & COMPUTER ENGINEERING

Sep. 2014 - Jun. 2019

- Advised by Prof. Jenq-Neng Hwang (IEEE Fellow), dissertation titled "Robust Video Object Tracking via Camera Self-Calibration"

Beijing University of Posts and Telecommunications & Queen Mary University of London

Beijing, China

B.S. IN TELECOMMUNICATIONS ENGINEERING WITH MANAGEMENT (JOINT PROGRAMME)

Sep. 2010 - Jun. 2014

- First Class Honours

Work Experience

NVIDIA

Redmond, WA

SENIOR DEEP LEARNING ENGINEER

May 2021 - PRESENT

- Developed a **multimodal fusion search agent** for **NVIDIA VSS Blueprint** & fine-tuned CLIP-based embedding models, with live demo at GTC'26
- Initiated the **DEFT active-learning pipeline** for object attribute search, improving zero-shot mAP/Rank-1 by 31.4/27.4 pts with only 24% of data
- Proposed a **reinforcement-learning framework** for object attribute search to optimize hard-query retrieval & ranking upon SFT/DEFT baselines
- Prepared **VANTAGE-Bench** & **TAR** benchmarks for physical AI VLM/LLM evaluation, highlighted in the **Cosmos 3** release at Computex'26 keynote
- Created a multi-sensor 3D perception system based on **Sparse4D** for the **Mega Omniverse Blueprint**, with demos at CES'25 & GTC'25 keynotes
- Integrated end-to-end training, inference, evaluation & TensorRT export pipelines for 7+ perception & embedding models in **NVIDIA TAO Toolkit**
- Generated synthetic data from **NVIDIA Omniverse**, style transfer & video gen models, with VLM/LLM auto-labeling to scale our datasets by ~10x
- Led organization of **AI City Challenges** at CVPR, ICCV & ECCV with 2K+ teams (40+ countries), releasing **PAISS** benchmark with 700K+ downloads

Amazon

Seattle, WA

APPLIED SCIENTIST

Jul. 2019 - May 2021

- Built and launched **Amazon One**, a palm-based biometric identity service for contactless payment, entry, age verification, and enterprise access
- Invented multi-modal sensing and adaptive enrollment/update methods for automated identity systems, resulting in **two U.S. patents** filed

NVIDIA

Santa Clara, CA

INTELLIGENT VIDEO ANALYTICS INTERN

Jun. 2018 - Mar. 2019

- Created **CityFlow**, a city-scale benchmark for multi-target multi-camera (MTMC) vehicle tracking and ReID, accepted to **CVPR'19 (Oral)**
- Proposed **PAMTRI**, a pose-aware multi-task network for vehicle ReID using highly randomized synthetic data, accepted to **ICCV'19**

University of Washington

Seattle, WA

RESEARCH ASSISTANT

Jun. 2015 - Jun. 2018

- Built clustering-based vehicle tracking and camera self-calibration, winning **Track 1** of the **2nd AI City Challenge Workshop** at **CVPR'18**
- Developed multi-camera tracking using visual and semantic features, winning **Track 3** of the **2nd AI City Challenge Workshop** at **CVPR'18**
- Developed a 3D human pose estimator enabling AR overlay in medical simulation under 6-DoF camera motion (funded by ArchieMD Inc.)
- Proposed evolutionary camera self-calibration, a finalist for **Best Scientific & Student Paper Awards** at **ICPR'16** (funded by Prism Skylabs)
- Invented adaptive segmentation & tracking achieving top accuracy (**74.82%**) on **NLPR_MCT** benchmark (funded by Madrona Venture Group)

Professional Services

IEEE Transactions on Circuits and Systems for Video Technology (T-CSVT)

Remote

SENIOR AREA EDITOR

Jan. 2025 - PRESENT

AI City Challenge Workshops (CVPR, ICCV, ECCV)

Remote

ORGANIZING COMMITTEE LEAD

Jun. 2020 - PRESENT

Selected Publications

JOURNAL ARTICLES

The staged knowledge distillation in video classification: Harmonizing student progress by a complementary weakly supervised framework
Chao Wang, Zheng Tang
T-CSVT 34.8 (2024) pp. 6646–6660. 2024

WSSGCN: Wide sub-stage graph convolutional networks
Chao Wang, Zheng Tang, Hailu Xu
Neurocomputing 602 (2024) p. 128273. 2024

CONFERENCE PAPERS

The 10th AI City Challenge
Zheng Tang, Shuo Wang, David C. Anastasiu, Ming-Ching Chang, Anuj Sharma, Quan Kong, Munkhjargal Gochoo, Jun-Wei Hsieh, Tomasz Kornuta, Zhedong Zheng, Renran Tian, Judah Goldfeder, Fulgencio Navarro, Yuxing Wang, Yizhou Wang, Sameer Satish Pusegaonkar, Anqi Li, Nalin Dadhich, Ridham Kachhadiya, Dhanishtha Patil, Haoquan Liang, Jiajun Li, Han Zhang, Yilin Zhao, Zaid Pervaiz Bhat, Shuyu Yang, Ashutosh Kumar, Rong Wang, Rafael Martin Nieto, Peter Christiansen, Ahmed Abduljawad, Mohanrasu Shanmugam, Nadeem Shaik, Sujit Biswas, Xunlei Wu, Vidya Murali, Rama Chellappa
Proc. ECCV Workshops, 2026, Malmö, Sweden

PSI-VQA: Evaluating multimodal LLM social reasoning under ambiguous pedestrian intent in automated driving
Shaozhi Wang, Yin-Chun Lu, Zheng Tang, Han Zhang, David C. Anastasiu, Renran Tian
Proc. ECCV Workshops, 2026, Malmö, Sweden

Physical AI Smart Spaces: A large-scale benchmark for multi-camera 3D perception in smart spaces
Yuxing Wang, Yizhou Wang, Anqi Li, Shuo Wang, Sameer Satish Pusegaonkar, Haoquan Liang, Jiajun Li, Shenxin Jiang, Jianhe Yuan, Shangru Li, Tongwei Dai, Zihao Chen, David C. Anastasiu, Sujit Biswas, Xunlei Wu, Zheng Tang
Proc. NeurIPS (under review), 2026, Sydney, Australia

From detection to understanding – a multi-task dataset for traffic anomaly reasoning
Han Zhang, Yilin Zhao, Zaid Pervaiz Bhat, Zheng Tang, Varun Praveen, Vidya Nariyambut Murali, David C. Anastasiu, Tomasz Kornuta
Proc. NeurIPS (under review), 2026, Sydney, Australia

Radiance field learners as UAV first-person viewers
Liqi Yan, Qifan Wang, Junhan Zhao, Qiang Guan, Zheng Tang, Jianhui Zhang, Dongfang Liu
Proc. ECCV, pp. 88–107, 2024, Milan, Italy

PAMTRI: Pose-aware multi-task learning for vehicle re-identification using highly randomized synthetic data
Zheng Tang, Milind Naphade, Stan Birchfield, Jonathan Tremblay, William Hodge, Ratnesh Kumar, Shuo Wang, Xiaodong Yang
Proc. ICCV, pp. 211–220, 2019, Seoul, Korea

CityFlow: A city-scale benchmark for multi-target multi-camera vehicle tracking and re-identification
Zheng Tang, Milind Naphade, Ming-Yu Liu, Xiaodong Yang, Stan Birchfield, Shuo Wang, Ratnesh Kumar, David C. Anastasiu, Jenq-Neng Hwang
Proc. CVPR, pp. 8797–8806, 2019, Long Beach, CA, USA

Selected Patents

Neural network system for object identification
Zheng Tang, Stan Birchfield, William Hodge, Ratnesh Kumar, Milind Naphade, Jonathan Tremblay, Shuo Wang, Xiaodong Yang
U.S. Patent No. 12,711,368 B1, 2026

Multi-sensor subject tracking for monitored environments for real-time and near-real-time systems and applications
Zheng Tang, Sujit Biswas, Ganapathy Seshadri Cadungude Aiyyer, Shuo Wang, Akshay Agrawal, Sameer Satish Pusegaonkar
U.S. Patent Application Publication No. 2025/0292414 A1, 2025

Updating identification data in automated user-identification systems
Zheng Tang, Lior Zamir, Prithviraj Banerjee, Manoj Aggarwal, Gerard Medioni, Dilip Kumar
U.S. Patent No. 11,816,932 B1, 2023

Honors & Awards

2025	Invited Keynote Speaker , UrbanAI Workshop at NeurIPS’25	San Diego, CA, USA
2024	Best Presentation Award & Best Poster Award , NTECH’24 (NVIDIA’s annual internal technical conference)	Santa Clara, CA, USA
2022	T-CSVT Best Associate Editor Award , IEEE Circuits and Systems Society (CASS)	Remote
2019	People’s Choice Award , Code for the Kingdom (C4TK) Hackathon	Seattle, WA, USA
2016	Finalist for Best Scientific Paper Award & Best Student Paper Award , ICPR’16	Cancún, México

Skills

Programming	Python (expert), C/C++ (proficient), Java (proficient), JavaScript (proficient), MATLAB (expert), $\LaTeX$ (expert)
Frameworks & Tools	Cursor/Claude Code/OpenAI Codex (expert), PyTorch (expert), TensorRT (expert), Omniverse/Isaac Sim (expert)
Languages	English (proficient), Mandarin (native), Cantonese (native), Spanish (elementary)