Tianyi Zhang

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Centrum Wiskunde & Informatica (CWI)
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Education

2018-2022 **Ph.D. Candidate, Computer Science, TU Delft**
Thesis: Investigating the trade-off between fine-grained emotion recognition accuracy and annotation amount for video watching using physiological signals

2015-2018 **M.S., Control Engineering, NUAA**
Thesis: Obstacle avoidance for mobile robot based on stereo vision

2011-2015 **B.S., Electrical Engineering and Automation, NUAA**
Thesis: Research on autonomous takeoff and landing based on computer vision for a multi-rotor aircraft

2013-2014 **Exchange Student**, Lassonde School of Engineering, York University, Toronto, Canada

Internships

2018.6-2018.7 **Research Assistant**, Xinhuanet, Beijing, China. **Project**: Quantifying audience experience using physiological signals (industrial project with Xinhuanet)

2017.7-2017.9 **Research Assistant**, AE2 Department, KOSTAL Asia R&D Center, Shanghai, China. **Project:** Driver Monitor Camera System (DMCS) for fatigue driving identification

Skills

- **Programming language**: Python, C/C++, Matlab, Embedded C, vb.net
- Experience in conducting **physiological measurements** (e.g., EDA, ECG, PPG, eye tracking)
- **Statistical skills:** SPSS, R, Python, Matlab
- **Machine Learning knowledge**: TensorFlow/Keras, Pytorch, Scikit-learn, supervised learning, weakly supervised learning, one/few-shot learning
- **Other skills**: embedded systems (Arduino-based), mobile app development (Android studio), desktop app development (QT)

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First-author publications

1. **Zhang T**, El Ali A, Wang C, Hanjalic A, Cesar P. Few-shot Learning for Fine-grained Emotion Recognition using Physiological Signals, IEEE Transaction on Multimedia, 2022 Apr 7.
2. **Zhang T**, El Ali A, Wang C, Hanjalic A, Cesar P., Deep Multi-instance Learning based Fine-gained Emotion Recognition for Video Watching using Physiological Signals, ***IEEE Transaction on Affective Computing***, 2022 Mar 10.
3. **Zhang T**, El Ali A, Wang C, Hanjalic A, Cesar P. Cornet: Fine-grained emotion recognition for video watching using wearable physiological sensors. Sensors. **2021** Jan;21(1):52.
4. **Zhang T**, El Ali A, Wang C, Hanjalic A, Cesar P. RCEA: Real-time, Continuous Emotion

Annotation for Collecting Precise Mobile Video Ground Truth Labels. In Proceedings of the ***2020 CHI Conference on Human Factors in Computing Systems 2020*** Apr 21 (pp. 1-15).

5. **Zhang T**, El Ali A, Wang C, Zhu X, Cesar P. CorrFeat: correlation-based feature extraction algorithm using skin conductance and pupil diameter for emotion recognition. In 2019 International Conference on Multimodal Interaction (ICMI) **2019** Oct 14 (pp. 404-408).
6. **Zhang T**. Multi-modal Fusion Methods for Robust Emotion Recognition using Body-worn Physiological Sensors in Mobile Environments. In 2019 International Conference on Multimodal Interaction (ICMI) **2019** Oct 14 (pp. 463-467).
7. **Zhang T**, Le Meur B.O. How old do you look? Inferring your age from your gaze. In 2018 25th IEEE International Conference on Image Processing (ICIP) **2018** Oct 7 (pp. 2660-2664). IEEE.

Co-authored publications

1. Xue T, El Ali A, **Zhang T**, Ding G, Cesar P. RCEA-360VR: Real-time, Continuous Emotion Annotation in 360 VR Videos for Collecting Precise Viewport-dependent Ground Truth Labels. InProceedings of the ***2021 CHI Conference on Human Factors in Computing Systems*** 2021 May 6 (pp. 1-15).
2. Furdui A, **Zhang T**, Worring M, Cesar P, El Ali A. AC-WGAN-GP: Augmenting ECG and GSR Signals using Conditional Generative Models for Arousal Classification. In Adjunct Proceedings of the ***UbiComp*** 2021 Sep 21 (pp. 21-22).
3. Xue T, El Ali A, **Zhang T**, Ding G, Cesar P. CEAP-360VR: A Continuous Physiological and Behavioral Emotion Annotation Dataset for 360 VR Videos. IEEE Transactions on Multimedia. 2021 Nov 13.
4. Chen, H., Jiang, B., **Zhang, T**., & Lu, N. Data-driven and deep learning-based detection and diagnosis of incipient faults with application to electrical traction systems. Neurocomputing, 396, 429-437, 2022.

Citations: 137, h-index: 6, i10-index: 3
Full publication list at: *https://scholar.google.com/citations?&user=k-ogUq0AAAAJ*

Patents

[1] China Patent for invention (**Second inventor**): A method for emotion recognition during film-watching based on skin conductance and pupil diameter, CN201910926880.8
[2] China Patent for invention (**Second inventor**): Real-time, Continuous Emotion Annotation for Collecting Precise Mobile Video Ground Truth Labels, CN202010055463.3
[3] China Patent for invention (**First inventor**): Obstacle avoidance method and system for Unmanned Aerial Vehicle based on stereo vision and optical flow, CN201611069481.7
[4] China Patent for invention (**First inventor**): A vision-based obstacle detection algorithm for automatic driving, CN201710043586.3.

Awards

1. China National Scholarship **(Top 1%)**
2. National (China) Graduate Student Mathematical Contest in Modeling (**2nd Prize)**
3. National (USA) Model United Nations Conference (**Outstanding Delegation)**