

TIANCHENG HU

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EDUCATION

ETH Zurich, Zurich, Switzerland

M.Sc.: Electrical Engineering and Information Technology June 2022 GPA: 5.53/6.00
(Expected)

SELECTED COURSEWORK: Advanced Techniques of Machine Translation, Advanced Topics in Artificial Intelligence, Natural Language Processing, Computational Semantics for Natural Language Processing, Deep Learning, Image Analysis and Computer Vision, Introduction to Machine Learning, Deep Learning for Autonomous Driving

The University of Texas at Dallas, Richardson, TX, USA

Hobson Wildenthal Honors College

B.S: Electrical Engineering May 2020 GPA: 3.99/4.00
Advisor: Prof. Carlos Busso **Summa Cum Laude**

PUBLICATIONS

- [1] M. Zhong* & **T. Hu*** & Y. Jiao*, S. Dhuliawala, B. Singh. "Drug Re-positioning via Text Augmented Knowledge Graph Embeddings", Conference on Neural Information Processing Systems (NeurIPS) Workshop AI4Science. 2021. To appear. (*: **co-first authorship**)
- [2] **T. Hu**, N. Stoeher. "Team "NoConflict" at CASE 2021 Task 1: Pretraining for Sentence-Level Protest Event Detection," *Proceedings of the 4th Workshop on Challenges and Applications of Automated Extraction of Socio-political Events from Text (CASE 2021)*, online. Association for Computational Linguistics (ACL). 2021.
- [3] S. Giorgi, V. Zavarella, H. Tanev, N. Stefanovitch, S. Hwang, H. Hettiarachchi, T. Ranasinghe, V. Kalyan, P. Tan, S. Tan, M. Andrews, **T. Hu**, N. Stoeher, F. Re, D. Vegh, D. Atzenhofer, B. Curtis, A. Hurriyetoglu. "Discovering Black Lives Matter Events in the United States: Shared Task 3, CASE 2021," *Proceedings of the 4th Workshop on Challenges and Applications of Automated Extraction of Sociopolitical Events from Text (CASE 2021)*, online. Association for Computational Linguistics (ACL). 2021.
- [4] S. Jha, M. Marzban, **T. Hu**, M. Mohamed, N. Al-Dhahir, C. Busso, "The Multimodal Driver Monitoring Database: A Naturalistic Corpus to Study Driver Attention," *IEEE Transactions on Intelligent Transportation Systems*, vol. to appear, 2021.
- [5] **T. Hu**, S. Jha, C. Busso, "Temporal Head Pose Estimation Model from Point Cloud," *IEEE Transactions on Intelligent Transportation Systems*, vol. to appear, 2021.
- [6] **T. Hu**, S. Jha, C. Busso, "Robust Driver Head Pose Estimation in Naturalistic Conditions from Point-Cloud Data," *IEEE Intelligent Vehicles Symposium*, October 19 - November 13, 2020 (Virtual) Las Vegas, NV, United States

WORK/RESEARCH EXPERIENCE

Autonomous Systems Lab, ETH Zurich, Switzerland – Semester Thesis

Object Instance Re-localization from Partial Observations

September 2020 – February 2021

- Designed a deep learning pipeline for partial-scan-to-partial-scan object instance re-localization which significantly outperforms non-learning approaches. This pipeline consists of with two networks: the identification network using triplet-loss contrastive learning and the pose estimation network using regression.
- Conducted literature review on object instance re-localization, object pose estimation, 3D CAD model retrieval, point cloud perception, object detection, partial point cloud completion and semantic segmentation for 3D data.

Multimodal Signal Processing Laboratory, UT Dallas – Undergraduate Research Assistant (Fully Funded)

Robust Driver Head Pose Estimation with Depth Camera

June 2018 – August 2020

- Developed an effective and novel end-to-end deep learning-based algorithm to predict head pose from point clouds with an

average error of fewer than 6 degrees on all three rotation axes on the test set.

- Contributed to the development of the data collection protocol for a deep learning friendly driver distraction dataset. Designed experimental steps that specifically induces a large range of gazes and head poses.
- Collected and analyzed the Multimodal Driver Monitoring Dataset, with naturalistic driving data of 58 drivers (over 10 million frames) from multiple sensors (4 RGB cameras, 1 time-of-flight camera, vehicle information, microphone array) to model driver distraction. This dataset can be used for a large variety of tasks, including driver head pose and gaze estimation.

Focus Technology, Nanjing, China – Artificial Intelligence Intern

3D Human Pose Estimation with Significant Occlusion

June - August 2019

- Researched state-of-the-art 3D human pose estimation algorithms, evaluated their performances on challenging data with significant occlusion and moved the research project forward by establishing that existing RGB based algorithms fail on frames with large occlusion.
- Built a recording software for Kinect that supports real-time capturing (30 fps) of all data sources (RGB, depth and skeleton position) using multithreading in C++, which enabled data collection for an internal research project.
- Proposed to use depth data for 3D human pose estimation with significant occlusion and experimented with various depth data processing algorithms.

Honors & Awards

Texas Analog Center of Excellence Research Scholarship (\$5000)	Jan 2019
UTD Undergraduate Research Scholarship (\$500)	Jan 2019, Feb 2020
UTD Dean's List	Fall 2016, Fall 2017, Spring 2018, Fall 2018, Fall 2019
UTD Academic Excellence Scholarship – Full tuition and fees covered for four years and \$6000/year	Aug 2016
UTD Collegium V Honors Program	Aug 2016

Teaching Experience

EE2310 Introduction to Digital Systems, <i>Peer Tutor</i>	Spring 2018, Spring 2019
Instructor: Dr. Nathan Dodge (UTD)	

Professional Membership and Service

Student Member:

Institute of Electrical and Electronics Engineers (IEEE)

Association for Computational Linguistics (ACL)

Program Committee Member:

Challenges and Applications of Automated Extraction of Socio-political Events from Text (CASE) @ ACL-IJCNLP 2021