

Yizhou Wang

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EDUCATION

UNIVERSITY OF WASHINGTON | PHD IN ELECTRICAL AND COMPUTER ENGINEERING

Expected 2022 | Seattle, WA • GPA: 3.95/4.0

Advised by Professor Jenq-Neng Hwang.

Focus areas: Deep Learning, Computer Vision, Cross-Modal Learning, Signal Processing.

COLUMBIA UNIVERSITY | MS IN ELECTRICAL ENGINEERING

Feb 2018 | New York, NY • GPA: 3.83/4.0

Advised by Professor Shih-Fu Chang and Professor Liangliang Cao.

Focus areas: Computer Vision, Deep Learning.

NORTHWESTERN POLYTECHNICAL UNIVERSITY (NPU) | BENG IN AUTOMATION

Jun 2016 | Xi'an, China • GPA: 91/100 (top 5%)

Graduation Commencement Student Speaker • Honors List • Outstanding Bachelor Thesis and Outstanding Graduates • Outstanding Student and Principal Scholarship (top 0.2%)

RESEARCH EXPERIENCE

INFORMATION PROCESSING LAB | RESEARCH ASSISTANT

Jun 2018 – Present | Seattle, WA

Advised by Prof. Jenq-Neng Hwang.

- Radar object detection (RODNet): Detect and classify objects using radio frequency (RF) signals purely as the input with camera-radar cross-modal supervision for autonomous driving related applications.
- CRUW Dataset: Built a camera/radar sensor platform and collected a synchronized CRUW dataset including different driving scenarios; will organize the ROD2021 Challenge at ACM ICMR 2021 for the radar object detection task.
- Object 3D localization for road scenes: Proposed a system consists of monocular depth estimation, object depth histogram analysis, 3D point cloud clustering, adaptive ground plane estimation, and multi-object tracking.
- Multi-object tracking (MOT): Proposed TrackletNet Tracker (TNT), that aims to build a tracklet graph model and apply a tracklet clustering algorithm, to address multi-object tracking problem for different scenarios.
- Multi-object tracking and segmentation (MOTS): Proposed two MOTS methods, named IA-MOT and LIFTS, for both static cameras and moving cameras on autonomous vehicles. **(The 1st Place in BMTT Challenge at CVPR 2020)**
- Multi-target multi-camera tracking (MTMC): Proposed an accurate and robust framework, involving traffic-aware single camera tracking and trajectory-based camera link model for multi-object tracking cross the multiple camera systems. **(The 1st Place in AICity Challenge at CVPR 2019)**
- Gait recognition: Proposed a human re-identification method based human silhouette videos using LSTM temporal attention and re-ranking techniques.

DIGITAL VIDEO AND MULTIMEDIA LAB | RESEARCH ASSISTANT

Feb 2017 – Dec 2017 | New York, NY

Advised by Prof. Shih-Fu Chang.

- Temporal action localization (TAL) in videos: 1) Determining whether a video contains specific actions; 2) Identifying temporal boundaries (start & end time) of each action instance.
- Solved TAL problem using Segment-CNN and CDC Networks, and experimented on THUMOS'14 dataset.
- Demo: Developed a web-based visualization demo for Segment-CNN and CDC Networks.

ROBOT SOCCER CENTER @ NPU | PROJECT LEADER & MANAGER

Apr 2013 – Apr 2014 | Xi'an, China

Advised by Prof. Haobin Shi.

- Robot basic action control and optimization, ball prediction, and strategy design.
- Built a robot intelligence system, designed an indoor obstacle avoidance and route planning algorithm using indoor environment modeling.

PUBLICATIONS

- [1] **RODNet: A Real-Time Radar Object Detection Network Cross-Supervised by Camera-Radar Fused Object 3D Localization.**
Yizhou Wang, Z. Jiang, Y Li, J.-N. Hwang, G. Xing, H. Liu. *Submitted to IEEE J-STSP*. 2021.
- [2] **A Radar Object Annotation System via Coarse-to-Fine Camera-Radar Detection Alignment and Clustering.**
Yizhou Wang, G. Wang, H.-M. Hsu, H. Liu, J.-N. Hwang. *Submitted to ICRA* 2021.
- [3] **COSTA: Cascade Multi-Object Segmentation and Tracking with Spatio-Temporal Attention.**
J. Cai, Yizhou Wang, H. Zhang, H.-M. Hsu, J.-N. Hwang. *Submitted to IEEE T-CSVT*. 2021.
- [4] **DAOF: Deep Adaptive Outlier Factor for Large-Scale Open Long-Tailed Object Recognition.**
J. Cai, Yizhou Wang, H.-M. Hsu, J.-N. Hwang, K. Magrane, C. Rose. *Submitted to CVPR* 2021.
- [5] **Multi-Target Multi-Camera Tracking of Vehicles by Self-Supervised Camera Link Model and Graph Auto-Encoder.**
H.-M. Hsu, Yizhou Wang, J. Cai, J.-N. Hwang. *Submitted to CVPR* 2021.
- [6] **Multi-Target Multi-Camera Tracking of Vehicles using Metadata-Aided Re-ID and Trajectory-Based Camera Link Models.**
H.-M. Hsu, J. Cai, Yizhou Wang, J.-N. Hwang, K.-J. Kim. *Submitted to IEEE T-IP*. 2021.
- [7] **RODNet: Radar Object Detection using Cross-Modal Supervision.**
Yizhou Wang, Z. Jiang, X. Gao, J.N. Hwang, G. Xing, H. Liu. *Winter Conference on Applications of Computer Vision (WACV)*. 2021.
- [8] **Traffic-Aware Multi-Camera Tracking of Vehicles Based on ReID and Camera Link Model.**
H.-M. Hsu, Yizhou Wang, J.-N. Hwang. *ACM Multimedia (MM)* 2020.
- [9] **IA-MOT: Instance-Aware Multi-Object Tracking with Motion Consistency.**
J. Cai, Yizhou Wang, H. Zhang, H.-M. Hsu, C. Ma, J.-N. Hwang. *The 5th Benchmarking Multi-Target Tracking (BMTT) Workshop, CVPR* 2020.
- [10] **LIFTS: Lidar and Monocular Image Fusion for Multi-Object Tracking and Segmentation.**
H. Zhang, Yizhou Wang, J. Cai, H.-M. Hsu, H. Ji, J.-N. Hwang. *The 5th Benchmarking Multi-Target Tracking (BMTT) Workshop, CVPR* 2020.
- [11] **Monocular Visual Object 3D Localization in Road Scenes.**
Yizhou Wang, Y.-T. Huang, J.-N. Hwang. *ACM Multimedia (MM)* 2019.
- [12] **Exploit the Connectivity: Multi-Object Tracking with TrackletNet.**
G. Wang, Yizhou Wang, H. Zhang, R. Gu, J.-N. Hwang. *ACM Multimedia (MM)* 2019.
- [13] **Demo: Temporal Action Localization in Untrimmed Videos.**
Yizhou Wang, Z. Shou, S.-F. Chang. *NYC Media Lab*. Sep 2017.
- [14] **Multi-Objective Planning Method for Multi-Debris Active Removal Mission in LEO.**
Y. Liu, J. Yang, Y.H. HU, M. Zhao, Yizhou Wang, Q. Pan. *AIAA Guidance, Navigation, and Control Conference*. 2017.
- [15] **Multi-objective optimal preliminary planning of multi-debris active removal mission in LEO.**
Y. Liu, J. Yang, Yizhou Wang, Q. Pan, J. Yuan. *SCIENCE CHINA Information Sciences*. 2016.
- [16] **How to Eradicate Ebola.**
Yizhou Wang, X. Yang, Y. Zhu, L. Wang. *The Journal of Undergraduate Mathematics and Its Applications*. 2015.

WORK EXPERIENCE

HELLO VERA | SOFTWARE ENGINEER

Mar 2018 – Jun 2018 | New York, NY

Advised by Liangliang Cao and James Fan.

- Developed SMS, Hangouts, Slack channels for our customer service chat-bot “Vera”.
- Set up Jenkins for unit testing and website monitoring.

ENGINEERED STUDIO | SOFTWARE ENGINEER INTERN

Jan 2017 – Feb 2017 | New York, NY

Advised by Omar Kiyani.

- Extracted face image and scene image features using Shearlet Transform and Optical-Flow.
- Generated an Autoencoder Neural Network for face images classification and anti-spoofing.

TEACHING EXPERIENCE

- **UW PMP596** (Autumn 2020): Teaching Assistant for *Deep Learning for Big Visual Data*. Instructed by: Prof. Jenq-Neng Hwang.
- **Columbia ELEN6886** (Spring 2017): Teaching Assistant for *Deep Learning for Computer Vision, Speech, and Language*. Instructed by: Prof. Liangliang Cao, Xiaodong Cui and Kapil Thadani.

HONORS & AWARDS

- The **5th place** out of 30+ teams in HID 2020 Challenge at ACCV 2020.
- The **1st place** of Track 3 in the 5th BMTT Challenge at CVPR 2020.
- The **2nd place** of Track 2 in the 5th BMTT Challenge at CVPR 2020.
- ACM Multimedia 2019 **Student Travel Grants**, October 2019.
- CGNCC **Best Paper Finalist** Award, August 2016.
- Graduation Commencement **Student Speaker** at NPU, June 2016.
- **Honors List** and **Outstanding Graduates** at NPU, June 2016.
- **Outstanding Bachelor Thesis** at NPU, June 2016.
- MCM **Outstanding Winner** Award, April 2015.
- **National Scholarship** (top 2%), October 2014 & October 2015.
- **Outstanding Student** and **Principal Scholarship** at NPU (top 0.2%), October 2014.
- The **Champion** in 2014 FIRA World Cup Simulation 5V5 Group, November 2014.
- The **Champion** in the 5th International Robots Olympic Competition FIRA 5V5 Group, August 2014.

PROFESSIONAL SERVICES

- **Conference Reviewer:** CVPR, NeurIPS, ICML, ICLR, ICME, ICIP
- **Transaction Reviewer:** IEEE T-PAMI, IEEE J-STSP, IEEE T-ITS, IEEE Access

SKILLS & LANGUAGES

PROGRAMMING

Python • C • C++ • Matlab • Shell • \LaTeX • Java • JavaScript • HTML • CSS • SQL

DEEP LEARNING FRAMEWORKS

PyTorch • TensorFlow • Keras • Theano

TOOLS

MS Office • Adobe Photoshop • Adobe After Effects • SolidWorks

LANGUAGES

English • Chinese (Mandarin)