Tieqiao **Wang**

COMPUTER VISION · MACHINE LEARNING

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"All men by nature desire to know."

EDUCATION

Oregon State University(OSU)

Corvallis, OR, U.S.

PH.D. IN COMPUTER SCIENCE — *Sep. 2020-Expected Jun. 2025*

- **Advisor**: Prof. Sinisa Todorovic
- **GPA**: **3.96**/4.00
- **Selected courses**: Machine Learning (A), Deep Learning (A), Convex Optimization (A-)

University of Jinan(UJN)

Jinan, China

B.S. IN COMPUTER SCIENCE AND TECHNOLOGY, EXPERIMENTAL AND INNOVATIVE CLASS — *Sep.2016 - Jun. 2020*

- **Advisor**: Prof. Sijie Niu
- **GPA**: **3.85**/4.00 (**90.80**/100) **Rank**: **1**/18
- **Selected awards**: Provincial Outstanding Graduate(2020), Provincial Government Scholarship(Top **1**%)

PUBLICATIONS

- **Tieqiao Wang**, Sijie Niu, Jiwen Dong, and Yuehui Chen. Weakly supervised retinal detachment segmentation using deep feature propagation learning in sd-oct images. In *International Workshop on Ophthalmic Medical Image Analysis*, pages 146–154. Springer, 2020. [OMIA'2020]
- Haochen Yang, **Tieqiao Wang**, Xuesong Zhou, Jiwen Dong, Xizhan Gao, and Sijie Niu. Quantitative estimation of rainfall rate intensity based on deep convolutional neural network and radar reflectivity factor. In *Proceedings of the 2nd International Conference on Big Data Technologies*, pages 244–247, 2019. [ICBDT'2019]

ACADEMIC EXPERIENCES

[1] Semi-supervised Action Segmentation

Remote & Corvallis, OR, U.S.

ADVISED BY PROF. SINISA TODOROVIC — *Jan. 2021-Jan. 2022*

- The goal is to predict the action class of each frame accurately in a relatively long video with only a small fraction (10% or 20%) of fully annotated labels provided by videos or action intervals.
- Proposed a semi-supervised method to leverage the support set feature (with labels) and triplet loss, constraining the similarity of frame features at different positions for unlabeled videos, which triggers a 5 % accuracy improvement than the original baseline.

[2] 3D Baby Pose Estimation and Tracking from Multiple Views

Corvallis, OR, U.S.

ADVISED BY PROF. SINISA TODOROVIC — *Jan. 2022-Jan. 2022*

- The goal is to estimate the 3D pose and intent of 18-month-old infants using multiple cameras from different views, so as to generate data that is useful for behavioral psychologists or AI systems reasoning and planning study.
- Working on ways to improve infant keypoint detection and designing robust 3D reconstruction methods. Existing methods introduce a lot of noise.

[3] Weakly Supervised Medical Image Segmentation Algorithm Research Based on Deep Learning

Jinan, China

ADVISED BY PROF. SIJIE NIU — *Jul. 2019-Jul. 2020*

- Proposed a weakly supervised deep feature propagation learning framework for retinal detachment segmentation in SD-OCT images using subjects with only image-level annotations.
- The propagation learning method achieves a segmentation effect(DSC(92.4%),TPVF(91.9%),PPV(93.0%)) very close to that of pixel-level supervision, which is of far-reaching significance by reducing annotation costs and improving learning efficiency.

[4] Quantitative Estimation of Rainfall Rate Intensity Based on Deep Convolutional Neural Network and Radar Reflectivity Factor

Jinan, China

ADVISED BY PROF. SIJIE NIU — *Jun. 2018-Jul. 2019*

- Proposed a novel method based on the DCNN and radar reflectivity factors to quantitatively estimate the rainfall rate intensity.
- The model achieves state-of-the-art performance over traditional methods (Z-R relationship) in the dataset of Shandong Provincial Meteorological Bureau.

Professional Experiences

Volkswagen-Mobility Asia *Beijing, China*

Algorithm Engineer Intern, AR Navi - Corner Case Detection, Advised by Dr. Chao Zhang *Mar. 2021-Sep. 2021*

- The goal (active learning) is to detect uncommon frames (corner cases) from a huge set of unlabeled videos, and label these detected frames to train a model with a better generalization ability.
- Conducted data augmentation by using YouTube videos and CycleGAN and realized the weather-style transfer for the video frames from sunny to some less frequent weathers, including rainy, foggy, snowy, and sandstorms, which greatly enhance the original dataset.
- Designed a corner case detection algorithm, including exampler generation by affinity propagation and corner cases detection by siamese network, boosted the performance by about 1-2% compared to the randomly selection baseline.

Volkswagen-Mobility Asia *Beijing, China*

Algorithm Engineer Intern, AR Navi - Inference Accelerate on IoT Devices, Advised by Dr. Chao Zhang *Sep. 2020-Mar. 2021*

- Deploy real-time image segmentation algorithms on mobile and IoT devices, such as android and arm64 boards.
- Responsible for the implementation of image segmentation with TensorFlow Lite on the mobile terminal, including 1) model selection, evaluating of the performance of mainstream light-weighted image segmentation models; 2) model conversion, modifying network structure suitable for the mobile terminal and adapting to the multi-platform deployment; (3) model deployment, conducting cross-compile and write the corresponding inference code(C++); (4) performance optimization, carrying out experiments of different hardware acceleration methods (GPU, DSP, etc.) to pick the optimal solution.
- Successfully used TF-lite and OpenGL acceleration on devices without Nvidia GPU and OpenCL, which reduced the model inference time from nearly 700 milliseconds to less than 50 milliseconds, and achieved the real-time model inference on the vehicle.

Teaching Experiences

Teaching Assistant, Oregon State University

Machine Learning, Prof. Xiaoli Z. Fern *Fall 2021*

My responsibilities included holding in-person lectures and office hours, organizing in-class Kaggle competitions, grading assignments.

Data Structure, Prof. Rob Hess *Fall 2021*

My responsibilities included conducting recitation sections, holding office hours, grading quizzes and the final exam.

Teaching Assistant, University of Jinan

Course Design of Database Principle and Application	*Spring 2019*
Database Principle and Application(II)	*Fall 2018*
Database Principle and Application(I)	*Spring 2018*
Probability Theory and Mathematical Statistics A	*Fall 2017*
Higher Mathematics (II)AA	*Spring 2017*
Linear Algebra and Spatial Analytic Geometry	*Fall 2016*

Competition Experiences

2018	Bronze Medal	The 43nd ACM-ICPC Asia Regional Contest	*Qingdao, China*
2017	Bronze Medal	The 42nd ACM-ICPC Asia Regional Contest	*Qingdao, China*
2018	Third Place	China Collegiate Computing Contest, Group Programming Ladder Tournament	*Qingdao, China*
2017	Third Place	Mathematics competition of Chinese College Students	*Jinan, China*

Skills

Programming	C/C++, Python(pandas, seaborn), Matlab(cvx), SQL, Java, Android, Verilog, Hugo, Html, Markdown.
Packages	Pytorch, Tensorflow(lite, delegate), OpenCV, OpenGL, Beautiful Soup.
Others	Linux, Git, Cmake, Bazel, LaTeX, Shellcode, Reverse Engineering.

References

Prof. Sinisa Todorovic
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Prof. Xiaoli Z. Fern
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Dr. Chao Zhang
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