

# Yahui Liu

University of Trento & FBK, Italy

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I am a PhD student in Computer Science at the Multimedia and Human Understanding Group (MHUG) of the University of Trento, Italy. I majored in Pattern Recognition and Intelligent System in Wuhan University, China, and received my M.E. degree in June 2018. Recently, my research focuses on Deep Learning and its applications in Computer Vision.

## Education

- **University of Trento** **Italy**  
*Department of Information Engineering and Computer Science, Ph.D.* 2018–2021  
Supervisors: Prof. Nicu Sebe and Dr. Bruno Lepri
- **Wuhan University** **China**  
*Pattern Recognition and Intelligent System, Master of Engineering, GPA: 3.5/4.0* 2015–2018  
Supervisor: Prof. Jian Yao
- **Wuhan University** **China**  
*Remote Sensing Science and Technology, Bachelor of Engineering, GPA: 3.6/4.0* 2011–2015

## Research Experience

- **Amazon**, Berlin, Germany. May. 2020-Sep. 2020  
Mentor: Dr. Weiwei Cheng.  
Machine/Deep Learning
- **FBK & Multimedia and Human Understanding Group (MHUG)**, Trento, Italy. Dec. 2018-present  
Mentors: Prof. Nicu Sebe and Dr. Bruno Lepri.  
Deep learning, GANs, Cross-modal Representations, Image Domain Translation
- **Tencent AI Lab**, Shenzhen, China. Nov. 2017–Sep. 2018  
Mentors: Dr. Wei Bi and Dr. Xiaojiang Liu.  
Deep Learning, Neural Dialogue Generation, Natural Language Processing
- **Computer Vision & Remote Sensing (CVRS) Lab**, Wuhan, China. Mar. 2015–Oct. 2017  
Mentor: Prof. Jian Yao.  
Computer Vision, Remote Sensing, Deep Learning

## Research Projects

### Computer Vision

- **Image Domain Translation** *Mar. 2019–present*  
*Python, Pytorch*  
(1) Unsupervised multi-modal and multi-domain image-to-image translation, (2) Text-conditioned unsupervised image domain translation, (3) Generic method for improving translation quality.
- **Gesture-to-Gesture translation** *Dec. 2018–Mar. 2019*  
*Python, Pytorch*  
proposed a novel method to achieve pretty hand gesture-to-gesture translation by using only a simple category independent conditional map.
- **Bridge Inspection** *Jan. 2015–Sep. 2015*  
*C++, Matlab*  
(1) Designed the project plan and built a robot system for concrete bridge inspection; (2) Calibrated multi-sensors, such as industrial camera, structured light camera, SICK LMS LRF, Universal Robots; (3) Image stitching and crack detection (Excellent Bachelor Thesis of Hubei Province, China).

### Remote Sensing

- **Road Network Extraction** *Jul. 2017–Nov. 2017*  
*Python, TensorFlow*  
Designed a multi-task CNN for simultaneously extracting road surface, road edges and road centerlines from high resolution remotely sensed images (spatial resolution 0.21m).
- **Optimal Seamline Detection** *Jan. 2017–Jun. 2017*  
*C++, Python, Caffe*  
Proposed a method that combining the deep CNNs with Graph Cuts to get optimal seamline for stitching satellites' images.

## Natural Language Processing

### Neural Dialogue Generation

Python, TensorFlow, Pytorch

Nov. 2017–Sep. 2018

A research project of Tencent AI Lab, NLP Group in Shenzhen, China. I'm solving several issues of current state-of-the-art neural dialogue generation methods, such as generic/dull responses, short responses, and diversity of responses, etc.

## Selected Publications

### Published

- 1 **Yahui Liu**, Marco De Nadai, Gloria Zen, Nicu Sebe, and Bruno Lepri. *Gesture-to-Gesture Translation in the Wild via Category-Independent Conditional Maps*, ACM Multimedia (26.5%, Oral), Oct. 2019.
- 2 Jing Han, Jian Yao, Jiao Zhao, Jingmin Tu, and **Yahui Liu**. *Multi-oriented and Scale Invariant License Plate Detection Based on Convolutional Neural Networks*, Sensors (IF: 3.03), Mar. 2019.
- 3 **Yahui Liu**, Jian Yao, Rengping Xie, and Li Li. *DeepCrack: A Deep Hierarchical Feature Learning Architecture for Crack Segmentation*, Neurocomputing (IF: 4.07), Jan. 2019.
- 4 **Yahui Liu**, Jian Yao, Xiaohu Lu, Menghan Xia, Xingbo Wang, and Yuan Liu. *RoadNet: Learning to Comprehensively Analyze Road Networks in Complex Urban Scenes from High Resolution Remotely Sensed Images*. IEEE Transactions on Geoscience and Remote Sensing (TGRS, IF: 5.63), Sep. 2018.
- 5 **Yahui Liu**, Victoria Bi, Jun Gao, Xiaojiang Liu, Jian Yao, and Shuming Shi. *Towards Less Generic Responses in Neural Conversation Models: A Statistical Re-weighting Method*. EMNLP (23.2%, Oral), Aug. 2018.
- 6 Rengping Xie, Jian Yao, Kang Liu, Xiaohu Lu, **Yahui Liu**, et al. *Automatic Multi-Image Stitching for Concrete Bridge Inspection by Combining Point and Line Features*, Automation in Construction (IF:4.31), Mar. 2018.
- 7 Li Li, Jian Yao, **Yahui Liu**, et al. *Optimal Seamline Detection for Orthoimage Mosaicking by Combining Deep Convolutional Neural Network and Graph Cuts*, Remote Sensing (IF: 4.12), Jul. 2017.
- 8 Xiaohu Lu, Jian Yao, Haoang Li, **Yahui Liu**, and Xiaofeng Zhang. *2-Line Exhaustive Searching for Real-Time Vanishing Point Estimation in Manhattan World*, IEEE Winter Conference on Applications of Computer Vision (WACV), Mar. 2017.
- 9 Xiaohu Lu, Jian Yao, Li Li, **Yahui Liu**, and Wei Zhang. *Edge Chain Detection by Applying Helmholtz Principle on Gradient Magnitude Map*, International Conference on Pattern Recognition (ICPR), Dec. 2016.
- 10 Kai Li, Jian Yao, Li Li, and **Yahui Liu**. *3D Line Segment Reconstruction in Structured Scenes via Coplanar Line Segment Clustering*, Asian Conference on Computer Vision (ACCV), Oct. 2016.
- 11 **Yahui Liu**, Jian Yao, Kang Liu, Xiaohu Lu, and Menghan Xia. *Optimal Image Stitching for Concrete Bridge Bottom Surfaces Aided by 3D Structure Line*, ISPRS Congress, Jul. 2016.

## Professional Activities

### Reviewer:

- o IEEE Transactions on Industrial Informatics (2017, 2019, 2020)
- o IEEE Geoscience and Remote Sensing Letters (2019, 2020)
- o IEEE Access (2019)
- o IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing (2020)
- o Complexity (2020)
- o ACM Multimedia (2020)

**Member:** Association for Computational Linguistics (ACL) (2018, 2019)

## Scholarships and Awards

- o 2018-2021, The Scholarship of University of Trento, Italy
- o 2017-2018, The Second Prize Scholarship, Wuhan University, China
- o 2016-2017, The First Prize Scholarship, Excellent Student, Wuhan University, China
- o 2015-2016, Excellent Bachelor Thesis of Hubei Province, China (top 4%)
- o 2014-2015, The Second Prize Scholarship, Excellent Student, Excellent Student Cadre, Wuhan University, China
- o 2013-2014, The Second Prize Scholarship, Excellent Student, Excellent Student Cadre, Wuhan University, China
- o 2012-2013, The Third Prize Scholarship, Excellent Student, Excellent Student Cadre, Wuhan University, China

## Language Skills

- o English,  $\geq$  B2
- o Mandarin, native speaker
- o Python (expert), C++ (fluent), Matlab (prior experience)