

Zhuo Su

Researcher in Computer Vision and Machine Learning, University of Oulu, Finland

@ zuike2013@outlook.com G Google scholar : Zhuo Su 🌐 zhuogege1943.com/homepage in linkedin.com/in/zhuo-su-73a318147
github.com/hellozhuo

I am a computer vision researcher at Center for Machine Vision and Signal Analysis (CMVS) in University of Oulu, Finland. I have defended my thesis in October, 2023. My thesis topic is Efficient Representation Learning for Computer Vision, towards building real-time and compact computer vision models with deep learning. Before that, I visited the AMLab, University of Amsterdam for six months in 2021 and 2022. By April, 2023, I accomplished my 7-month internship at Intel Lab, Germany. I have a great interest in computer vision and machine learning and hope to pursue them in my future career.

Interests : Deep Learning, Computer vision, Machine Learning

PROGRAMMING

Python ●●●●●
Matlab ●●●●●
C/C++ ●●●●○

+ TOOLS/FRAWORKS

Pytorch ●●●●●
Linux ●●●●●
Git ●●●●●
OpenCV ●●●●○

LANGUAGES

> English (fluent)
> Chinese (native)
> Finnish (survival)

EXPERIENCE

COMPUTER VISION INTERN (INTEL LAB, GERMANY. 7 MONTHS) SEPTEMBER 2022 - MARCH 2023

I worked with Matthias Müller at Intel Lab, Germany, on building efficient computer vision networks. The involved tasks are real-time salient object detection and depth estimation.

Computer Vision Efficient Neural Networks Real-time Saliient Object Detection Deepfake Detection

VISITING RESEARCHER (UNIVERSITY OF AMSTERDAM. 6 MONTHS) OCTOBER 2021 - MARCH 2022

ELLIS PhD & Postdoc Program AMLab

I visited AMLab under the ELLIS PhD & Postdoc Program. There, I worked with Prof. Max Welling, on the topic of “Binary SO(3) Equivariant Graph Neural Networks”. A paper was published at the International conference on 3D vision 2022.

Graph Neural Networks Rotation Equivariant Network Binarization

SOFTWARE ENGINEER (SAMSUNG R&D INSTITUTE CHINA-BEIJING. 3 MONTHS) MAY 2018 - JULY 2018

I worked in the Machine learning group, on Optical Character Recognition.

Computer Vision Optical Character Recognition

SOFTWARE INTERN (AIHUJING.COM, CHINA. 4 MONTHS) JANUARY 2018 - APRIL 2018

I worked as a computer vision intern, on Optical Character Recognition.

Computer Vision Optical Character Recognition

EDUCATION

October 2023 | **Ph.D, COMPUTER SCIENCE AND ENGINEERING, University of Oulu, Finland**

October 2018 | Thesis : LBP Inspired Efficient Deep Convolutional Neural Networks for Visual Representation Learning

Supervisor : Dr. Li Liu ; Opponent : Prof. Karen Eguzarian ; Custos : Prof. Matti Pietikäinen

Computer Vision Network compression Binary neural networks Efficient Graph neural networks

March 2018 | **M.Sc, AUTOMATION SCIENCE AND ELECTRICAL ENGINEERING, Beihang University, China**

September 2015 | Thesis : Saliient Object Detection for Single Images

Supervisors : Prof. Hong Zheng, Prof. Baochang Zhang

GPA : 3.24/4.0

Image processing Saliient object detection Machine learning

June 2015 | **B.Sc, AUTOMATION SCIENCE AND ELECTRICAL ENGINEERING, Beihang University, China**

September 2011 | Topic : Pattern Recognition

GPA : 3.68/4.0

Pattern recognition Machine learning

PAPERS (FIRST AUTHOR)

- Zhuo Su, Jiehua Zhang, Longguang Wang, Hua Zhang, Zhen Liu, Matti Pietikäinen, Li Liu, “Lightweight Pixel Difference Networks for Efficient Visual Representation Learning”, IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), 2023**

2. **Zhuo Su**, Wenzhe Liu, Zitong Yu, Dewen Hu, Qing Liao, Qi Tian, Matti Pietikäinen, Li Liu, “Pixel Difference Networks for Efficient Edge Detection”, **IEEE/CVF International Conference on Computer Vision (ICCV)**, 2021 (oral presentation)
[pdf](#) github.com/zhuoinoulu/pidinet
3. **Zhuo Su**, Linpu Fang, Wenxiong Kang, Dewen Hu, Matti Pietikäinen, Li Liu, “Dynamic Group Convolution for Accelerating Convolutional Neural Networks”, **European Conference on Computer Vision (ECCV)**, 2020 (spotlight presentation)
[pdf](#) github.com/zhuoage1943/dgc
4. **Zhuo Su**, Matti Pietikäinen, Li Liu, “BIRD : Learning Binary and Illumination Robust Descriptor for Face Recognition”, **British Machine Vision Conference (BMVC)**, 2019
[pdf](#) github.com/zhuoage1943/bird-descriptor
5. **Zhuo Su**, Max Welling, Matti Pietikäinen, Li Liu, “SVNet : Where SO(3) Equivariance Meets Binarization on Point Cloud Representation”, **IEEE International Conference on 3D Vision (3DV)**, 2022
[pdf](#) github.com/zhuoinoulu/svnet
6. **Zhuo Su**, Matti Pietikäinen, Li Liu, “From Local Binary Patterns to Pixel Difference Networks for Efficient Visual Representation Learning”, **Scandinavian Conference on Image Analysis (SCIA)**, 2023
[pdf](#)
7. **Zhuo Su**, Matthias Müller, Diana Wofk, Matti Pietikäinen, Li Liu, “Spatial and Temporal Difference Network for Real-time Salient Object Detection” (in submission to *TPAMI*, 2023)
8. **Zhuo Su**, Jiehua Zhang, Tianpeng Liu, Zhen Liu, Shuanghui Zhang, Matti Pietikäinen, Li Liu, “Boosting Convolutional Neural Networks with Middle Spectrum Grouped Convolution”, under review in *TNNLS* (minor revision in October, 2023)

PAPERS (CO-AUTHOR)

1. Zitong Yu, Chenxu Zhao, Zezheng Wang, Yunxiao Qin, **Zhuo Su**, Xiaobai Li, Feng Zhou, Guoying Zhao, “Searching central difference convolutional networks for face anti-spoofing”, **IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)**, 2020
2. Wanxia Deng, **Zhuo Su**, Qiang Qiu, Lingjun Zhao, Gangyao Kuang, Matti Pietikäinen, Huaxin Xiao, Li Liu, “Deep ladder reconstruction classification network for unsupervised domain adaptation”, **Pattern Recognition Letters (PRL)**, 2021
3. Jiehua Zhang, **Zhuo Su**, Li Liu, “Median Pixel Difference Convolutional Network for Robust Face Recognition”, **British Machine Vision Conference (BMVC)**, 2021
4. Jiehua Zhang, **Zhuo Su**, Yanghe Feng, Xin Lu, Matti Pietikäinen, Li Liu, “Dynamic Binary Neural Network by learning channel-wise thresholds”, **The International Conference on Acoustics, Speech, & Signal Processing (ICASSP)**, 2021

SCIENTIFIC CONTRIBUTIONS

TEACHING ASSISTANT, UNIVERSITY OF OULU (Prof. LI LIU)

2018 - 2022

I have been working as the teaching assistant of the course “Deep Learning” in University of Oulu in the past years.

[Deep Learning](#) [Network Compression](#) [Pytorch](#)

INVITED REVIEWER

2019 - 2023

Journals

IEEE Transactions on Pattern Analysis and Machine Intelligence

IEEE Transactions on Image Processing

IEEE Transactions on Multimedia

IEEE Transactions on Circuits and Systems for Video Technology

Neurocomputing, Pattern Recognition Letters

Conferences

IEEE/CVF Conference on Computer Vision and Pattern Recognition

2021-2023

IEEE/CVF International Conference on Computer Vision

2021-2023

IEEE International Conference on Multimedia and Expo

2021-2023

IEEE International Conference on Acoustics, Speech, and Signal Processing

2023

ACM International Conference on Multimedia

2023

European Conference on Computer Vision

2022

AAAI Conference on Artificial Intelligence

2022

Asian Conference on Computer Vision

2020