Zhuo Su

Ph.D Candidate in Computer Vision, University of Oulu, Finland

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Since October 2018, I have been working towards the Ph.D degree at the research unit CMVS, University of Oulu, advised by Dr. Li Liu (http://lilyliliu.com/). My research topics include learning compact and efficient feature representations and their applications to computer vision. Before that, I received my master's degree and bachelor's degree from Beihang University.

Interests : Deep Learning, Computer vision, Machine Learning, Geometric deep learning

🖥 PROGRAMMING

Python	● ● ● ● ●
Matlab	● ● ● ● ●
C/C++	● ● ● ○ ○

✚ TOOLS/FRAMEWORKS

Pytorch	● ● ● ● ●
Tensorflow	● ● ● ● ○
Caffe	● ● ● ○ ○

🌐 LANGUAGES

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

🏢 WORKING EXPERIENCE

2018 (3 months)	Computer vision engineer in Samsung R&D Institute China-Beijing, worked on Optical Character Recognition.
2017 (4 months)	Internship in Aihujing.com, Beijing, China, worked on Optical Character Recognition.

🎓 EDUCATION

Present October 2018	**Ph.D, COMPUTER SCIENCE AND ENGINEERING, University of Oulu, Finland** Topic : Efficient and Compact Vision Representation Learning Supervisor : Dr. Li Liu Computer Vision · Network compression · Binary neural networks · Efficient · Graph neural networks
March 2018 September 2015	**M.Sc, AUTOMATION SCIENCE AND ELECTRICAL ENGINEERING, Beihang University, China** Topic : Salient Object Detection for Single Images Supervisors : Prof. Hong Zheng, Prof. Baochang Zhang GPA : 3.24/4.0 Image processing · Salient object detection · Machine learning
June 2015 September 2011	**B.Sc, AUTOMATION SCIENCE AND ELECTRICAL ENGINEERING, Beihang University, China** Topic : Pattern Recognition GPA : 3.68/4.0 Pattern recognition · Machine learning

📘 PAPERS (FIRST AUTHOR)

1. **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

2. **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/zhuogege1943/dgc

3. **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/zhuogege1943/bird-descriptor

4. **Zhuo Su**, Jiehua Zhang, Liang Bai, Matti Pietikäinen, Li Liu, "Looking at Your Neighbors : Enhancing Binary Neural Networks with Local Binary Convolution", **IEEE Transactions on Image Processing (TIP)**, (under review, submitted in January 04, 2022)

5. **Zhuo Su**, Jiehua Zhang, Yulan Guo, Dewen Hu, Matti Pietikäinen, Li Liu, "Revealing Powerful and Interpretable Middle Spectrum Grouped Convolution" (submitted to **European Conference on Computer Vision (ECCV)**, 2022)

6. **Zhuo Su**, Max Welling, Matti Pietikäinen, Li Liu, "SVNet : Where SO(3) Equivariance Meets Binarization on Point Cloud Representation" (submitted to **European Conference on Computer Vision (ECCV)**, 2022)

7. **Zhuo Su** et.al., "Pixel Difference Networks for Vision Representation", **IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)** (in progress)

📖 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 channelwise thresholds", **The International Conference on Acoustics, Speech, & Signal Processing (ICASSP)**, 2021

📘 RESEARCH ACTIVITIES

VISITING AMLAB, UNIVERSITY OF AMSTERDAM (Prof. MAX WELLING) — 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 submitted to the European Conference on Computer Vision, 2022.
Efficient Graph Neural Networks   Rotation Equivariant

TEACHING ASSISTANT, UNIVERSITY OF OULU (Dr. 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. During this time, I was responsible for designing and evaluating assignments and projects, giving several lectures on network compression and tutorials on Pytorch.
Deep Learning   Network Compression   Pytorch

INVITED REVIEWER — 2019 - 2022

Journals
IEEE Transactions on Pattern Analysis and Machine Intelligence
IEEE Transactions on Circuits and Systems for Video Technology
Neurocomputing
Pattern Recognition Letters

Conferences

European Conference on Computer Vision	2022
IEEE/CVF Conference on Computer Vision and Pattern Recognition	2021-2022
AAAI Conference on Artificial Intelligence	2022
IEEE International Conference on Multimedia and Expo	2021-2022
IEEE/CVF International Conference on Computer Vision	2021
Asian Conference on Computer Vision	2020

▤ HONORS

Third Prize award of 13th Chinese Post-Graduate Mathematical Modeling Contest	2016
First Scholarship for post-graduation students, Beihang University	2015
Third prize in the national college students physics competition, Beihang University	2013
Third Prize in the 24th "Feng Ru Cup" Competition of Academic and Technological Works, Beihang University	2014
Second Prize in the 23rd "Feng Ru Cup" Competition of Innovation, Beihang University	2013
Third prize scholarship of Discipline Competition, Beihang University	2013