

# ZHENLI ZHANG

Room 1007, 1# Gaokeyuan ◇ Fudan University ◇ Shanghai, P.R. China, 201203

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## EDUCATION

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**Fudan University**, Shanghai, China

2014.9 - Present

Bachelor of Science(*Anticipated*), Honor Class, School of Computer Science

Cumulative GPA: **3.51/4.00**, Major GPA: **3.75/4.00**

Ranking: **21/73** in Department of Computer Science and Technology

**University of California, Irvine**, CA, USA

2016.9 - 2017.1

Exchange student in UCEAP Program in Donald Bren School of Information and Computer Sciences  
(50 students selected from Fudan University, 2 from School of Computer Science)

Cumulative GPA: **4.00/4.00**, Major GPA: **4.00/4.00**

Top 3 in courses including Digital Image Processing and Computer Graphics, which are closely related to my research interests

**Johns Hopkins University**, Baltimore, MD, USA

2018.7 - 2018.10

Undergraduate visiting research assistant in Department of Computers Science

## RESEARCH EXPERIENCE

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**Johns Hopkins University**, Baltimore, MD, USA

2018.7 - 2018.10

*CCVL Research Group*

*Advisor: Prof. Alan Yuille*

- Proposed the research topic **Learning a Loss Function for Semantic Segmentation** myself.
- Identified the limited competence and irrational prior of current per-pixel cross-entropy loss function in semantic segmentation, and hence suggested a new perspective to enhance the performance of semantic segmentation.
- Proposed to model a more expressive learnable loss function using neural network and then iteratively refine the segmentation map with this loss function during inference stage.
- A new submission is in preparation.

**Megvii Inc. (Face++)**, Beijing, China

2017.7 - 2018.3

*Team Research Model*

*Advisor: Dr. Xiangyu Zhang*

- Discovered the nonparallel fact of different backbone network's performance on classification and later transferred task such as detection or segmentation, which is a brand new topic in computer vision community.
- Identified the ineffective feature fusion problem in currently prevalent "U-shaped" network structure and suggested a new perspective to boost the performance of different computer vision tasks which employ the "U-shaped" neural network structure.
- Proposed several methods on backbone network to alleviate the feature fusion problem on latter decoder stages for detection and contributed to the backbone network of "MegDet", which won the first place of MS COCO detection challenge 2017.
- Proposed several techniques (LR, SS, SEB, ECRE, DAP, refer to the ECCV 2018 paper for more details) to bridge the gap between high level and low level features from different stages in "U-shaped" network structure to tackle the ineffective feature fusion problem for semantic segmentation.
- Achieved the state-of-the-art 87.9% mIoU on PASCAL VOC 2012 benchmark, and a paper is accepted by ECCV 2018.
- Applied techniques above to human portrait segmentation project and boosted performance by a large margin.

**TuSimple Inc.**, Beijing, China  
*Team of Visual Computing Algorithms*

*2017.2 - 2017.5*  
*Advisor: Dr. Naiyan Wang*

· **Project: Camera Abnormal Condition Detection**

- Trained a 2-classes classification network using small patches of pictures drawn from videos of a contaminated camera, trying to predict a heatmap of the contaminated area.
- Formulated this task as a segmentation problem eventually, using Fully Convolutional Networks to add more context info to the inherent local feature of contaminated area by a large receptive field.
- Combined with traditional blur detection method to further enhance performance.

**University of California, Irvine, CA, USA**  
*Computational Vision Group of UC Irvine*

*2016.10 - 2017.1*  
*Advisor: Prof. Charless Fowlkes*

· **Project: Instance Segmentation and Tracking of Worms in Biological Experiments**

- Modified the scanner and wrote a script to automate scanning.
- Created a baseline using multi-stage cascading networks combining traditional clustering methods.

**Fudan University**, Shanghai, China  
*Shanghai Key Laboratory of Intelligent Information Processing*

*2016.7 - 2016.8*  
*Advisor: Prof. Xiangyang Xue*

· **Project: Detection of Cars and Persons in Low-Resolution Video and Small-Size Pictures**

- Fine-tuned Faster R-CNN to adjust it to our project.
- Combined Vibe for localization and VGG16 pretrained on Cifar-10 for classification on video input.
- Wrote a domestic labelling system using Python.
- Exploited the temporal characteristics of video to further enhance model's performance and got a mAP of 85%.

## PUBLICATION

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**Zhenli Zhang**, Xiangyu Zhang, Chao Peng, Xiangyang Xue, and Jian Sun,  
“ExFuse: Enhancing Feature Fusion for Semantic Segmentation”,  
in Proc. of European Conference on Computer Vision (ECCV), 2018 [[arxiv](#)], [[CVF](#)], [[leaderboard](#)]

## AWARDS

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**2016** Top Ten Students of School of Computer Science (10/200+)  
**2016** Excellent League Member of Fudan University (Top 5%)  
**2015** Excellent Student of Fudan University (Top 5%)  
**2015** Tung OOCL First-class Scholarship (Top 5%)  
**2014** Fudan University Second-class Freshman Scholarship

## SKILLS AND OTHERS

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<b>Computer</b>	Python, C/C++, L <sup>A</sup> T <sub>E</sub> X
<b>Language</b>	Chinese (native), English (fluent)
	TOEFL 107/120, Reading 28, Listening 29, Speaking 22, Writing 28
	GRE Verbal 154/170, Quantitative 168/170, Analytical Writing 3.5/6.0