Chen Wei | Curriculum Vitae

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EDUCATION

School of Electronics Engineering and Computer Science, Peking University **Beijing, China**
Bachelor of Science *Sep. 2015-Jul. 2019 (expected)*

- Major: Computer Science
- GPA: 3.59/4.0
- Course Highlights
  - Math Related: Advanced Mathematics (99.5) | Linear Algebra (95)
  - Computer System Related: Computer Organization (94) | Operating Systems (93) | Lab. on Operating Systems (95) | Introduction to Computer Networks (93)
  - Computer Vision Related: Fundamentals of Digital Media Technology (94) | Directed Group Study (94)
- Technical Skills
  - Programming Language: Python, C/C++, Matlab, Java
  - Deep Learning Framework: Tensorflow, CAFFE, PyTorch
- Awards
  - Founder Scholarship, Founder Group, 2018 (top ~10%)
  - Merit Student, Peking University, 2016, 2018 (top ~10%)
  - National Scholarship, Ministry of Education of China, 2016 (top ~4%)

PUBLICATIONS

* indicates equal contributions

- **Chen Wei***, Wenjing Wang*, Wenhan Yang and Jiaying Liu. "Deep Retinex Decomposition for Low-Light Enhancement", *Proc. of British Machine Vision Conference (BMVC)*, Newcastle, U.K., Sep. 2018. (**Oral**, Acceptance Rate $\approx$ 4%)
- Wenjing Wang*, **Chen Wei***, Wenhan Yang, Jiaying Liu. "GLADNet: Low-Light Enhancement Network with Global Awareness", *Proc. of IEEE International Conference on Automatic Face & Gesture Recognition (FG)*, Xi'an, China, May 2018.
- **Chen Wei**, Lingxi Xie, Xutong Ren, Yingda Xia, Chi Su, Jiaying Liu, Qi Tian, Alan Yuille. "Iterative Reorganization with Weak Spatial Constraints: Solving Arbitrary Jigsaw Puzzles for Unsupervised Representation Learning", submitted to *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2019. (under review)
- Xutong Ren, Lingxi Xie, **Chen Wei**, Qihang Yu, Chi Su, Jiaying Liu, Alan Yuille. "Progressive Recurrent Learning for Visual Recognition", submitted to *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2019. (under review)

PATENTS

- Jiaying Liu, Wenjing Wang, **Chen Wei**, Wenhan Yang, Zongming Guo. "Method, Device, Equipment and Computer Storage Media of Image Processing", Chinese Patent Application, 2018107353587 (pending)
- Jiaying Liu, **Chen Wei**, Wenjing Wang, Wenhan Yang, Zongming Guo. "A Deep Learning Low-Light Image Enhancement Method Based on Retinex Theory", Chinese Patent Application, 2018108766835 (pending)

INTERNSHIP EXPERIENCE

Institute of Computer Science and Technology, Peking University **Beijing, China**
Research intern, supervised by Prof. Jiaying Liu *Apr. 2017-Sep. 2018*
Deep learning methods for the inverse problem of image restoration

- Proposed a deep network for **low-light enhancement**. Without any ground-truth, our Retinex-Net can learn to decompose a natural image with only key constraints including the consistent reflectance shared by paired

low/normal-light images, and the smoothness of illumination. The decomposition results are better than previous hand-crafted models, which lead to better low-light enhancement results. We built a low-light image dataset, which consists of paired low-light and normal-light images captured in real scenes for network training. In September 2018, I provided an oral presentation on *BMVC 2018* for our paper *"Deep Retinex Decomposition for Low-Light Enhancement"*. Paper and code can be found here.

- Proposed a global illumination-aware and detail-preserving network for **low-light enhancement**, which first down-samples the input to a fixed size to make the receptive field cover the whole image and obtain a global illumination prediction, and then reconstruct the details with several convolutional layers. Our paper *"GLADNet: Low-Light Enhancement Network with Global Awareness"* was presented on *FG 2018*. Paper and code can be found here.

Center for Image Science, Johns Hopkins University **Baltimore, U.S.**
Research intern, supervised by Prof. Alan Yuille *Jul. 2018-Sep. 2018*
Self-supervised visual representation learning

- Focused on visual representation learning in a **self-supervised** manner. We achieve this goal by enforcing neural networks to learn from spatial contexts. Without the heavy burden of human annotation, each training image is turned into a jigsaw puzzle, in which the image is cut into pieces, and the pieces are disordered spatially. The network must resume these pieces into the correct configuration. After training such a model solving jigsaw puzzles, we can transfer the learned features into other general visual recognition tasks, such as classification, detection, and segmentation, by initialization. We also provide a performance boost for medical image analysis by such a self-supervised method. A paper about this project is currently under review.
- Proposed **a progressive learning method**, following an organized learning order by gradually reducing ground truth information given to the network. We demonstrate that our method can be applied to different visual tasks and bring gains of 1-5% in object localization, detection, and segmentation. The paper is under review.

Beijing Office, Google **Beijing, China**
Full-time engineering practicum intern *Jul. 2017-Sep. 2017*
A comparison tool for Google online product, Pagespeed Insights

- Pagespeed Insights (PSI) is a Google online tool that analyzes websites and rates their performance. I implemented **a development tool in C++** for PSI, which gathers the scores for a large sample URL set rated by two versions of PSI, to evaluate the optimized rating system for its rationality, validity, stability. I designed the tool in a parallel, distributed manner as a Map/Reduce job, to exploit the massive computing groups of Google, which can reduce the runtime from dozens of days in a sequential manner to around four hours in a parallel way. I also designed a web page which can provide a more friendly user interface, automatically save evaluation results, and query evaluation history.

TEACHING EXPERIENCE

Peking University *Spring 2018*
Role: Teaching Assistant
Course: C++ Programming Practice, for undergraduates
Instructor: Prof. Jiaying Liu

EXTRACURRICULAR ACTIVITIES

Mountaineering Association of Peking University (MAPKU) *Sep. 2015-Jun. 2018*
Member of presidium

- MAPKU is the first and still the largest student organization for mountaineering and hiking in China. Proud to be familiar with outdoor skills and have been to most hiking routes near Beijing. In summer 2016, I carried out a **high altitude scientific expedition** in Yushu, Qinghai Province, the source of the Yellow River with other 15 teammates. We took a hiking for 60 km on Tibetan Plateau at an altitude of around 4,000m in 4 days.

PKU Youth Newspaper *Sep. 2015-Jun. 2016*
Chief editor of character report

- As an editor of character column, I had to gather materials about my character, conduct an interview, organize what I heard and wrote a live report. I have reported more than five characters in different areas, including respected professors, successful people in business and students with innovative ideas.