Shen Zhuoran

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Work Experience

Google, *Seattle, WA, United States* *Oct. 2019 – Present*
AI Resident, Cerebra Team, Google AI

- Working on foundations of fully-attentional visual modeling.

Tencent, *Shenzhen, Guangdong, China* *Jul. 2019 – Sep. 2019*
Research Intern, Applied Research Center, Platform and Content Group

- Designed and validated the *global context* module. Details in *Selected Research Experience.*
- Designed a natural scribble synthesis algorithm for data synthesis for interactive object segmentation.

SenseTime, *Hong Kong* *Jun. 2017 – Jun. 2019*
Research Intern, Intelligent Perception and Services Team, Smart City Group

- Developed a research project template that facilitated a team of 40 to transition from Caffe to PyTorch.
- Conducted academic research projects partially listed in *Selected Research Experience*.

Education

The University of Hong Kong, *Hong Kong* *Sep. 2015 – Jun. 2019*
Bachelor of Engineering in *Computer Science*; GPA: 3.85/4.30; standing: 1/111; major GPA: 3.96/4.30.

University of California, Davis, *Davis, CA, United States* *Sep. 2017 - Dec. 2017*
Bachelor's Reciprocity Program in *Computer Science*; GPA: 4.00/4.00.

Selected Research Experience

Global Context Module, Industry Research Experience *Jul. 2019 - Sep. 2019*
Supervised by Dr. Shan Ying, Director of Applied Research Center, PCG, Tencent

- Proposed the *global context* module, which uses *efficient attention* to achieve linear complexities in spatial size and constant complexities in temporal duration for deep video memory.
- Built the first real-time video object segmenter that has top accuracy (86.6, J&F @ 25 FPS, DAVIS 2016).

Efficient Attention, Industry Research Experience *Sep. 2018 - Jun. 2019*
Supervised by Dr. Yi Shuai, Research Director, SenseTime; In collaboration with Dr. Li Hongsheng, CUHK

- Proposed *efficient attention*, which reduced the memory and computational complexities of attention from quadratic to linear.
- Set new states-of-the-art on object detection (41.8→43.1, AP, COCO 2017) and stereo depth estimation (1.09→0.477, EPE, Scene Flow) and significant improvement on instance segmentation (36.6→37.9, AP, COCO 2017) and image classification (93.0%→93.7%, top-5 accuracy, ImageNet).

Projects

BeautyNet, Personal Project *May 2018 – Oct. 2019*

- Developed a PyTorch project template. Applied deduplication, modularization, and a consistent code style to improve maintainability, testability, and analyzability.
- Became the 2nd most popular PyTorch template on GitHub, got 180+ stars, and trended for 3 days.

Awards

- **First Runner-up**, *ACM-HK Programming Contest 2017*

Preprint

- **Shen Z.**, Zhang M., Zhao H., Yi S., Li H. (2019). *Efficient Attention: Attention with Linear Complexities*. arXiv: 1812.01243.

Skills

- **Programming**: Python, C, C++, Java, Shell script, Markdown, LaTeX
- **Technologies**: PyTorch, TensorFlow, Keras, Caffe, Git, Slurm, Vim, CUDA, NumPy, OpenCV, Piper, Blaze
- **Languages**: Mandarin Chinese (native), English (116 in TOEFL)