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, 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

- Conducted academic research projects partially listed in *Selected Research Experience*.
- Worked on the inception of an autonomous driving project, including task identification, data scheme design, coordination of collection and labeling, and algorithmic design and validation.

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)