Shu Liu

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EDUCATION

- **The Chinese University of Hong Kong** — Hong Kong
  Ph.D. — *Aug. 2014 – Jul. 2018*
  - Major: Computer Science and Engineering
  - GPA: **3.91/4.0**
  - Supervisor: *Prof. Jiaya Jia*

- **Huazhong University of Science and Technology** — Wuhan, P.R.China
  B.Eng. — *Sept. 2010 – Jul. 2014*
  - Major: Software Engineering
  - Outstanding Student Award (top 1%, the highest honor for undergraduate students in HUST)
  - Overall GPA: **90.85/100**, Major GPA: **93.28/100**
  - Ranking: **1st** out of **189** students

RESEARCH INTERESTS

- **Computer Vision and Machine Learning**
  - Object Recognition on Images
    * *Instance Segmentation, Object Detection, Semantic Segmentation, Panoptic Segmentation, Pose Estimation, Image Classification*
  - Object Recognition on Point Clouds
    * *Instance Segmentation, Object Detection, Semantic Segmentation, Panoptic Segmentation*

COMPETITIONS

- 1st place in WAD 2019 3D Object Detection Challenge [¶] — 2019
- 1st place in 2018 Scene Understanding Challenge for Autonomous Navigation in Unstructured Environments Instance Segmentation Track[†] — 2018
- 1st place in COCO 2017 Detection Challenge in Instance Segmentation track[‡] | slides — 2017
- 2nd place in COCO 2017 Detection Challenge in Object Detection track[‡] — 2017
- 1st place in Large-scale Scene Understanding 2017 Challenge in Instance Segmentation track[‡] — 2017
- 3rd place in COCO 2015 Detection Challenge in Instance Segmentation track[§] — 2015

[¶] Team X-Team: Zetong Yang, Yanan Sun, **Shu Liu**, Xiaoyong Shen, Yu-Wing Tai, Jiaya Jia

[†] Team TUTU: Lu Qi, **Shu Liu**, Xiaoyong Shen, Jiaya Jia

[‡] Team UCenter: **Shu Liu**, Lu Qi, Haifang Qin, Jianping Shi, Jiaya Jia. We defeat Facebook and MSRA.

[§] Team 1026: **Shu Liu** and Xiaojuan Qi.

PUBLICATIONS

- Zetong Yang, Yanan Sun, **Shu Liu**, Xiaoyong Shen, Jiaya Jia. "STD: Sparse-to-Dense 3D Object Detector for Point Cloud", *ICCV, 2019.* (**Ranked No. 1 of WAD 2019 3D Object Detection Challenge**)

- Yilun Chen, **Shu Liu**, Xiaoyong Shen, Jiaya Jia. "Fast Point R-CNN", *ICCV, 2019.*

- Li Jiang, Hengshuang Zhao, **Shu Liu**, Xiaoyong Shen, Chi-Wing Fu, Jiaya Jia. "Hierarchical Point-Edge Interaction Network for Point Cloud Semantic Segmentation", *ICCV, 2019.*

- Jiequan Cui, Pengguang Chen, Ruiyu Li, **Shu Liu**, Xiaoyong Shen, Jiaya Jia. "Fast and Practical Neural Architecture Search", *ICCV, 2019.*

- Lu Qi, Li Jiang, **Shu Liu**, Xiaoyong Shen, Jiaya Jia. "Associatively Segmenting Instances and Semantics in Point Clouds", *CVPR, 2019.*

- Xinlong Wang, **Shu Liu**, Xiaoyong Shen, Chunhua Shen, Jiaya Jia. "Amodal Instance Segmentation through KINS Dataset", *CVPR, 2019.*

- Lu Qi, **Shu Liu**, Jianping Shi, Jiaya Jia. "Sequential Context Encoding for Duplicate Removal", *NIPS, 2018.*

- Hengshuang Zhao, Yi Zhang, **Shu Liu**, Jianping Shi, Chen Change Loy, Dahua Lin, Jiaya Jia. "PSANet: Point-wise Spatial Attention Network for Scene Parsing", *ECCV, 2018.* (1st **place in WAD Drivable Area Segmentation Challenge 2018**)

- **Shu Liu**, Lu Qi, Haifang Qin, Jianping Shi, Jiaya Jia. "Path Aggregation Network for Instance Segmentation", *CVPR, 2018.* (**Spotlight Presentation, with acceptance rate as 6.7%,** 1st **place in COCO 2017 Detection Challenge in Instance Segmentation track,** 2nd **place in Object Detection track**)

- **Shu Liu**, Jiaya Jia, Sanja Fidler, Raquel Urtasun. "SGN: Sequential Grouping Networks for Instance Segmentation", *ICCV, 2017.*

- **Shu Liu**, Xiaojuan Qi, Jianping Shi, Hong Zhang, Jiaya Jia. "Multi-scale Patch Aggregation (MPA) for Simultaneous Detection and Segmentation", *CVPR, 2016.* (**Oral Presentation, with acceptance rate as 3.9%**)

- **Shu Liu**, Cewu Lu, Jiaya Jia. "Box Aggregation for Proposal Decimation: Last Mile of Object Detection", *ICCV, 2015.*

- Cewu Lu, **Shu Liu**, Jiaya Jia, Chi-Kueng Tang. "Contour Box: Rejecting Object Proposals Without Explicit Closed Contours", *ICCV, 2015.*

- Xiaojuan Qi, Jianping Shi, **Shu Liu**, Renjie Liao, Jiaya Jia. "Semantic Segmentation with Object Clique Potential", *ICCV, 2015.*

- Xu Min, Yu Zhou, **Shu Liu**, Xiang Bai. "Real-Time Object Tracking via Optimal Feature Subspace", *ICIP, 2014.*

PREPRINTS & TECHNICAL REPORTS

- Hong Zhang, Hao Ouyang, **Shu Liu**, Xiaojuan Qi, Xiaoyong Shen, Jiaya Jia. Human Pose Estimation with Contextual Information. *Tech Report, arXiv, 2019.*

- Zetong Yang, Yanan Sun, **Shu Liu**, Xiaoyong Shen, Jiaya Jia. "IPOD: Intensive Point-based Object Detector for Point Cloud", *Tech Report, arXiv, 2018.*

- Zhengtian Xu, **Shu Liu**, Jianping Shi, Cewu Lu. Outdoor RGBD Instance Segmentation with Attention in Attention. *Tech Report, 2017.*

- **Shu Liu**, Hong Zhang, Di Lin, Jiaya Jia. Instance Segmentation Using Points. *Tech Report, 2017.*

AWARDS

- Outstanding Reviewer of ICCV 2019   2019
- Graduate Scholarship of The Chinese University of Hong Kong   2014 – 2018

- Outstanding Graduates in HUST   2014
- Second Prize of Excellent Bachelor Thesis in Hubei Province   2014
- Excellent Student Cadre in HUST   2013
- Tencent Merit Scholarship   2013
- First Prize in Hubei Province, Third Prize in China,
  'Lanqiao Cup' National Software Contest   2012
- Excellent League Member   2012 – 2013
- Outstanding Student Award (top 1%)   2011 – 2014
- Learning Merit Prize   2011 – 2014
- National Scholarship   2011
- Merit Student in HUST   2011

RESEARCH EXPERIENCE

- **Youtu Lab, Tencent**   *Aug. 2018 – present*
  Senior Researcher (T3.3)
  - Topic: Object Recognition on 2D image and 3D point cloud.
- **Youtu Lab, Tencent**   *May. 2018 – Aug. 2018*
  Research Intern (work with Prof. Jiaya Jia)
  - Topic: Object Recognition on 2D image and 3D point cloud.
- **Sensetime**   *Apr. 2017 – Nov. 2017*
  Research Intern (work with Dr. Jianping Shi)
  - Topic: Instance segmentation with RGB and RGBD data.
- **Machine Learning Group, University of Toronto**   *Aug. 2016 – Nov. 2016*
  Visiting Student (work with Prof. Raquel Urtasun and Prof. Sanja Fidler)
  - Topic: Instance segmentation.
- **Media and Communication Lab, HUST**   *Oct. 2013 – June 2014*
  Research Assistant (work with Prof. Xiang Bai and Prof. Yu Zhou)
  - Topic: Object tracking.

PROFESSIONAL ACTIVITIES

- Reviewer of NIPS, ICCV, ECCV, CVPR, TPAMI.
- Winner presentation in Workshop of Autonomous Driving.
- Invited talk "Path Aggregation Network for Instance Segmentation" in Spotlight Session of CVPR 2018.
- Winner presentation in Scene Understanding Challenge for Autonomous Navigation in Unstructured Environments workshop.
- Winner presentation in COCO and Places Challenges workshop.
- Invited talk "Instance Segmentation with Deep Learning" at Sensetime.
- Winner presentation in Large-Scale Scene Understanding (LSUN) workshop.
- Invited talk "Multi-scale Patch Aggregation (MPA) for Simultaneous Detection and Segmentation" in Oral Session of CVPR 2016.

TEACHING

- 2014 – 2015 / 2015 – 2016 / 2016 – 2017 Spring   ENGG2601A Technology, Society and Engineering Practice
- 2014 – 2015 / 2015 – 2016 Fall   CSCI1130 Introduction to Computing Using Java