

# Jianbo Jiao

POSTDOCTORAL RESEARCHER

VGG & BioMedIA, University of Oxford

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## Experience

### BioMedIA and VGG, University of Oxford

Dec. 2018 - Present

COMPUTER VISION

Advised by Prof. **Alison Noble** & Prof. **Andrew Zisserman**

- Work on the EPSRC SeebiByte Project

### Research Intern, Tencent AI Lab

Fall 2018

UNSUPERVISED/SELF-SUPERVISED REPRESENTATION LEARNING

Advised by Dr. **Linchao Bao**

- Leverage both semantic-level and pixel-level context for unsupervised visual representation learning.
- Design novel tasks for video representation learning.

### Visiting Scholar, University of Illinois Urbana-Champaign (UIUC)

2017 - 2018

SEMANTIC SEGMENTATION, REPRESENTATION LEARNING

Advised by Prof. **Thomas S. Huang**

- Improve semantic segmentation by utilizing guidance from other modalities (e.g., depth).
- Investigate unsupervised representation learning from image priors, based on generative models.

### City University of Hong Kong

2015 - 2018

3D VISION, IMAGE RESTORATION

Advised by Prof. **Qingxiang Yang** & Prof. **Rynson Lau**

- Depth estimation from stereo and single image, under even noisy conditions.
- Deep learning based image restoration, including denoising, super-resolution, etc.

### Digital Media R&D Center, PKU

2012 - 2015

STEREO MATCHING, IMAGE-BASED 3D RECONSTRUCTION

Advised by Prof. **Ronggang Wang**

- Stereo matching algorithm with filtering-based cost aggregation and secondary disparity refinement.
- Multiview image based 3D reconstruction by structure from motion.

### Undergraduate Research, SWJTU

Fall 2010 - Summer 2012

CONTENT-BASED IMAGE RETRIEVAL (CBIR)

Advised by Prof. **Xiao Wu**

- Develop CBIR system for online shopping. Responsible for research/development of texture- and shape-based retrieval algorithms.
- Outstanding research project of SWJTU

## Education

### City University of Hong Kong (CityU)

Fall 2015 - Fall 2018

PH.D. IN COMPUTER SCIENCE

- Research interests include computer vision, computer graphics, and machine learning.

### Peking University (PKU)

Fall 2012 - Summer 2015

M.S. IN COMPUTER APPLIED TECHNOLOGY

- Research on 3D vision.
- Be recommended for admission eligibility.

### Southwest Jiaotong University (SWJTU)

Fall 2008 - Summer 2012

B.ENG. IN COMPUTER SCIENCE AND TECHNOLOGY

- Mao Yi-sheng Honors Class.

## Publications

### FormNet: Formatted Learning for Image Restoration

Jianbo Jiao, Wei-Chih Tu, Ding Liu, Shengfeng He, Rynson Lau, Thomas S. Huang

*IEEE Transactions on Image Processing (TIP)*, 2020

### Inferring Attention Shift Ranks of Objects for Image Saliency

Avishek Siris, Jianbo Jiao, Gary K.L. Tam, Xianghua Xie, Rynson W.H. Lau

*IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR)*, 2020

### Self-supervised Representation Learning for Ultrasound Video

Jianbo Jiao, Richard Droste, Lior Drukker, Aris Papageorgiou, Alison Noble

*IEEE International Symposium on Biomedical Imaging (ISBI)*, 2020

#### **When AWGN-based Denoiser Meets Real Noises**

Yuqian Zhou, **Jianbo Jiao**, Haibin Huang, Yang Wang, Jue Wang, Honghui Shi, Thomas Huang  
*AAAI Conference on Artificial Intelligence (AAAI)*, 2020

#### **Connecting Image Denoising and High-Level Vision Tasks via Deep Learning**

Ding Liu, Bihan Wen, **Jianbo Jiao**, Xianming Liu, Zhangyang Wang, Thomas S. Huang  
*IEEE Transactions on Image Processing (TIP)*, 2020

#### **Anatomy-Aware Self-supervised Fetal MRI Synthesis from Unpaired Ultrasound Images**

**Jianbo Jiao**, Ana Namburete, Aris Papageorgiou, Alison Noble  
*International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI) Workshop (MLMI)*, Oral, 2019

#### **Geometry-Aware Distillation for Indoor Semantic Segmentation**

**Jianbo Jiao**, Yunchao Wei, Zequn Jie, Honghui Shi, Rynson Lau, Thomas S. Huang  
*IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR)*, 2019

#### **Self-supervised Spatio-temporal Representation Learning for Videos by Predicting Motion and Appearance Statistics**

Jiangliu Wang, **Jianbo Jiao**, Linchao Bao, Shengfeng He, Yunhui Liu, Wei Liu  
*IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR)*, 2019

#### **Ground-Aware Point Cloud Semantic Segmentation for Autonomous Driving**

Jian Wu, **Jianbo Jiao**, Qingxiong Yang, Zheng-Jun Zha, Xuejin Chen  
*ACM International Conference on Multimedia (ACMMM)*, Oral, 2019

#### **Few-shot Breast Cancer Metastases Classification via Unsupervised Cell Ranking**

Jiaojiao Chen, **Jianbo Jiao**, Shengfeng He, Guoqiang Han, Jing Qin  
*IEEE/ACM Transactions on Computational Biology and Bioinformatics*, 2019

#### **Stereoscopic Image Generation from Light Field with Disparity Scaling and Super-Resolution**

Tao Yan, **Jianbo Jiao**, Wenxi Liu, Rynson Lau  
*IEEE Transactions on Image Processing (TIP)*, 2019

#### **Referring Image Segmentation by Generative Adversarial Learning**

Shuang Qiu, Yao Zhao, **Jianbo Jiao**, Yunchao Wei, Shikui Wei  
*IEEE Transactions on Multimedia (TMM)*, 2019

#### **Look Deeper into Depth: Monocular Depth Estimation with Semantic Booster and Attention-Driven Loss**

**Jianbo Jiao**, Ying Cao, Yibing Song, Rynson Lau  
*European Conference on Computer Vision (ECCV)*, 2018

#### **Task-driven Webpage Saliency**

Quanlong Zheng, **Jianbo Jiao**, Ying Cao, Rynson Lau  
*European Conference on Computer Vision (ECCV)*, 2018

#### **Joint Image Denoising and Disparity Estimation via Stereo Structure PCA and Noise-Tolerant Cost**

**Jianbo Jiao**, Qingxiong Yang, Shengfeng He, Shuhang Gu, Lei Zhang, Rynson W. H. Lau  
*International Journal of Computer Vision (IJCV)*, 2017

#### **FormResNet: Formatted Residual Learning for Image Restoration**

**Jianbo Jiao**, Wei-chi Tu, Shengfeng He, Rynson W. H. Lau  
*IEEE Conference on Computer Vision and Pattern Recognition (CVPR) Workshop (NTIRE)*, Oral, 2017

#### **Delving into Salient Object Subitizing and Detection**

Shengfeng He, **Jianbo Jiao**, Xiaodan Zhang, Guoqiang Han, Rynson W.H. Lau  
*International Conference on Computer Vision (ICCV)*, 2017

#### **A Hand Pose Tracking Benchmark From Stereo Matching**

Jiawei Zhang, **Jianbo Jiao**, Mingliang Chen, Liangqiong Qu, Xiaobin Xu, Qingxiong Yang  
*IEEE International Conference on Image Processing (ICIP)*, Oral, 2017

#### **Color Image Guided Boundary-Inconsistent Region Refinement for Stereo Matching**

**Jianbo Jiao**, Ronggang Wang, Wenmin Wang, Dagang Li, Wen Gao  
*IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)*, 2015

#### **Local Stereo Matching with Improved Matching Cost and Disparity Refinement**

**Jianbo Jiao**, Ronggang Wang, Wenmin Wang, Shengfu Dong, Zhenyu Wang, Wen Gao  
*IEEE Multimedia*, 2014

#### **Cost-Volume Filtering-Based Stereo Matching with Improved Matching Cost and Secondary Refinement**

**Jianbo Jiao**, Ronggang Wang, Wenmin Wang, Shengfu Dong, Zhenyu Wang, Wen Gao  
*IEEE International Conference on Multimedia and Expo (ICME)*, Oral, **Best Student Paper** candidate, 2014

### Depth/Disparity Map Post-processing Method and Device

Jianbo Jiao, Ronggang Wang, Zhenyu Wang, Wenmin Wang, Wen Gao

US Patent, **US10424075B2**, 2019

### Depth/Disparity Map Post-processing Method and Device

Jianbo Jiao, Ronggang Wang, Zhenyu Wang, Wenmin Wang, Wen Gao

Chinese Patent, **CN105517677B**, 2018

### Radar disparity map optimization method, stereo matching optimization method and system for disparity map

Jianbo Jiao, Ronggang Wang, Zhenyu Wang, Wen Gao, Wenmin Wang, Shengfu Dong

Chinese Patent, **CN104680510B**, 2017

### Autoencoder Learning Method, Device, Computer Equipment and Storage Medium

Jianbo Jiao, Linchao Bao, Yunchao Wei, Honghui Shi, Rynson Lau, Wei Liu, Thomas Huang

Chinese Patent App., **CN109948796A**, 2019

### Autoencoder Training and Representation Extraction Method and Device

Jianbo Jiao, Linchao Bao, Yunchao Wei, Honghui Shi, Rynson Lau, Wei Liu, Thomas Huang

Chinese Patent App., **201910219343.X**, 2019

### Depth/Disparity Map Post-processing Method and Device

Jianbo Jiao, Ronggang Wang, Zhenyu Wang, Wenmin Wang, Wen Gao

PCT Patent App., **WO2016176840A1**, 2018

## Honors & Awards

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Aug. 2019	Outstanding Reviewer Award	ICCV 2019
Jan. 2019	GPU Grant Award	NVIDIA Corporation
Apr. 2018	Outstanding Reviewer Award	Journal of Visual Communication and Image Representation
Aug. 2017	Outstanding Academic Performance Award	CityU
2017 - 2018	Research Tuition Scholarship	CityU
2015 - 2018	Hong Kong PhD Fellowship Scheme (Top scholarship for Hong Kong PhD)	RGC of Hong Kong
2015 - 2016	Chow Yei Ching School of Graduate Studies Entrance Scholarships	CityU
Jul. 2015	Outstanding Graduate Thesis of Peking University	PKU
Jul. 2015	Outstanding Graduate of Beijing	Beijing Municipal Education Commission
Jun. 2015	Outstanding Graduate of Peking University	PKU
Dec. 2014	National Scholarship (graduate student)	Ministry of Education of the P.R.C
Oct. 2014	"Innovation Award" of Peking University (Top 0.8%)	PKU
2014	Outstanding Scholarship	Cooperative Medianet Innovation Center
2014	Research Excellence Award, twice	Digital Media R&D Center, PKU
2014	Best Student Paper (candidate)	IEEE International Conference on Multimedia and Expo
Dec. 2013	"Wu Si" Scholarship	PKU
Dec. 2013	Social Work Award	PKU
Nov. 2011	Medal of "Si Shi Yang Hua" (Highest personal honor of SWJTU)	SWJTU
Nov. 2010	National Scholarship (undergraduate student)	Ministry of Education of the P.R.C
2008 - 2012	Undergraduate Scholarships (each semester), Merit student	SWJTU

## Teaching Experience

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2015 - 2016	<b>Certificate of Merit</b> for good performance in <i>Teaching Students: First Steps</i>	Graduate Studies, CityU
Jan. 2017 - May 2017	<b>Teaching Assistant</b> Computer Graphics (CS4182/CS5182)	Department of Computer Science, CityU
Aug. 2016 - Jan. 2017	<b>Teaching Assistant</b> Multimedia Technologies and Applications (CS4185)	Department of Computer Science, CityU
Jan. 2016 - May 2016	<b>Teaching Assistant</b> Computer Vision for Interactivity (CS4187)	Department of Computer Science, CityU
Sep. 2015 - Jan. 2016	<b>Teaching Assistant</b> Computer Programming (CS2311)	Department of Computer Science, CityU
Mar. 2013 - Jun. 2013	<b>Teaching Assistant</b> Digital Media Software and System Development (04703920)	School of Electronic and Computer Engineering, PKU
Sep. 2012 - Jan. 2013	<b>Teaching Assistant</b> Fundamentals of Digital Media Technology (04713901)	School of Electronic and Computer Engineering, PKU

## Professional Activities

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### Program Committee Member / Reviewer

- IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR) 2020
- European Conference on Computer Vision (ECCV) 2020
- Medical Image Computing and Computer Assisted Interventions (MICCAI) 2020
- AAAI Conference on Artificial Intelligence (AAAI) 2020
- International Joint Conferences on Artificial Intelligence (IJCAI) 2020
- IEEE International Conference on Computer Vision (ICCV) 2019
- IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR) 2019
- Medical Image Computing and Computer Assisted Interventions (MICCAI) 2019
  
- IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
- IEEE Transactions on Image Processing (TIP)
- IEEE Transactions on Neural Networks and Learning Systems (TNNLS)
- IEEE Transactions on Multimedia (TMM)
- IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)
- IEEE Transactions on Cybernetics
- IEEE Multimedia
- IEEE Signal Processing Letters
- Neurocomputing
- Journal of Visual Communication and Image Representation
- Computer Vision and Image Understanding
- Pacific Graphics 2018
- Computer Graphics Forum
- The Visual Computer: International Journal of Computer Graphics

### Memberships

- IEEE Membership
- IEEE Young Professionals
- Pattern Analysis and Machine Intelligence, IEEE Computer Society Technical Committee on

## Skills

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Programming    C/C++, Matlab, Python, etc.

Tools & Framework    Proficient in PyTorch/Torch, MatConvNet and OpenCV. Experienced in QT, OpenMP, OpenGL, etc.