# Jianbo **Jiao**

POSTDOCTORAL RESEARCHER
*VGG & BioMedIA, University of Oxford*

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## **Exp**erience

**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 Porf. **Qingxiong 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

## **Edu**cation

**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.

## **Pub**lications

**Self-Supervised Ultrasound to MRI Fetal Brain Image Synthesis**
**Jianbo Jiao**, Ana Namburete, Aris Papageorghiou, Alison Noble
*IEEE Transactions on Medical Imaging (**TMI**), 2020*

**Unified Image and Video Saliency Modeling**
Richard Droste\*, **Jianbo Jiao\***, Alison Noble (\*Equal contribution)
*European Conference on Computer Vision (**ECCV**), Spotlight Presentation, 2020*

**Self-supervised Video Representation Learning by Pace Prediction**
Jiangliu Wang, **Jianbo Jiao**, Yun-Hui Liu
*European Conference on Computer Vision (**ECCV**), 2020*

**Self-supervised Contrastive Video-Speech Representation Learning for Ultrasound**
**Jianbo Jiao**, Yifan Cai, Mohammad Alsharid, Lior Drukker, Aris Papageorghiou, Alison Noble
*Medical Image Computing and Computer Assisted Interventions (**MICCAI**), Oral Presentation, 2020*

**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*

### Tactile Sketch Saliency
**Jianbo Jiao**, Ying Cao, Manfred Lau, Rynson Lau
*ACM Internatioanl Conference on Multimedia (**ACMMM**), 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 Papageorghiou, Alison Noble
*IEEE International Symposium on Biomedical Imaging (**ISBI**), 2020*

### Cross-Task Representation Learning for Anatomical Landmark Detection
Zeyu Fu, **Jianbo Jiao**, Michael Suttie, Alison Noble
***MICCAI** Workshop (MLMI), 2020*

### Differentiating Operator Skill during Routine Fetal Ultrasound Scanning using Probe Motion Tracking
Yipei Wang, Richard Droste, **Jianbo Jiao**, Harshita Sharma, Lior Drukker, Aris Papageorghiou, Alison Noble
***MICCAI** Workshop (ASMUS), 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 Papageorghiou, Alison Noble
***MICCAI** Workshop (MLMI), Oral Presentation, 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 Presentation, 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 Presentation, 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 Presentation, 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 Presentation, **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

# **Hon**ors & Awards

| | | |
|---|---|---|
| Jun. 2020 | Outstanding Reviewer Award | *ECCV 2020* |
| 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* |

# **Tea**ching Experience

| | | |
|---|---|---|
| Summer 2020 | **Co-superviser** CDT short project of DPhil student | *University of Oxford* |
| 2020 - 2021 | **Co-superviser** 4th year project of undergraduate student | *University of Oxford* |
| 2015 - 2016 | **Certificate of Merit** for good performance in *Teaching Students: First Steps* | *Graduate Studies, CityU* |
| Jan. 2017 – May 2017 | **Teaching Assistant** Computer Graphics (CS4182/CS5182) | *Department of Computer Science, CityU* |
| Aug. 2016 – Jan. 2017 | **Teaching Assistant** Multimedia Technologies and Applications (CS4185) | *Department of Computer Science, CityU* |
| Jan. 2016 – May 2016 | **Teaching Assistant** Computer Vision for Interactivity (CS4187) | *Department of Computer Science, CityU* |
| Sep. 2015 – Jan. 2016 | **Teaching Assistant** Computer Programming (CS2311) | *Department of Computer Science, CityU* |
| Mar. 2013 – Jun. 2013 | **Teaching Assistant** Digital Media Software and System Development (04703920) | *School of Electronic and Computer Engineering, PKU* |
| Sep. 2012 – Jan. 2013 | **Teaching Assistant** Fundamentals of Digital Media Technology (04713901) | *School of Electronic and Computer Engineering, PKU* |

# Professional Activities

**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
- MICCAI Membership
- 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. |