

# Jingpeng Wu

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## Education

- 2009–2014 **Doctor's Degree**, *Biomedical Engineering*, Huazhong University of Science & Technology, China.
- 2005–2009 **Bachelor's Degree**, *Bioinformatics*, Huazhong University of Science & Technology, China.

## Experience

- 2019–present **Associate Research Scholar**, *Princeton Neuroscience Institute*, Princeton University, NJ.
- 2014–2019 **Postdoctoral Research Associate**, *Princeton Neuroscience Institute*, Princeton University, NJ, Petabyte-scale dense neuron reconstruction based on Electron Microscopy images using cloud computing.
- 2011–2014 **Doctoral Student**, *Britton Chance Center for Biomedical Photonics*, HUST, Wuhan, China, Sparse tracing of the neuronal projection and blood vessels in the whole mouse brain.
- 2009–2010 **Doctoral Candidate**, *Britton Chance Center for Biomedical Photonics*, HUST, Wuhan, China, We built an atlas of whole mouse brain with the highest resolution in the world. Work was published in *Science* and featured in *Science News*.
- 2008 **Intern**, *CAS-MPG Partner Institute*, Shanghai, China, Gene expression analysis of repeats in the prefrontal cortex.
- 2006–2008 **Undergraduate**, *Britton Chance Center for Biomedical Photonics*, HUST, Wuhan, China, Vascular reconstruction of Chinese Digital Human.

## Computer Skills

Python	Proficient	<a href="#">chunkflow</a> , <a href="#">emirt</a>
C++	Intermediate	<a href="#">renew</a> , <a href="#">znn</a>
Julia	Proficient	<a href="#">BigArrays.jl</a> , <a href="#">RealNeuralNetworks.jl</a> , <a href="#">EMIRT.jl</a>
ConvNet	Intermediate	<a href="#">znn</a> : training; <a href="#">chunkflow</a> : inference with backends of <a href="#">PZnet</a> and <a href="#">PyTorch</a> .
MATLAB	Intermediate	<a href="#">netinsight-toolbox</a> : blood vessel tracing & morphological analysis.
Linux	Intermediate	Administrator of a small cluster.
Cloud	Basic	Distributed pipeline deployed using <a href="#">Docker</a> and <a href="#">Kubernetes</a> in <a href="#">AWS</a> & <a href="#">Google Cloud</a> : <a href="#">chunkflow</a> ; Serverless image volume cutout client: <a href="#">BigArrays.jl</a> .
MPI	Basic	A distributed image preprocessing program using <a href="#">MPI</a> and <a href="#">ITK</a> .
Qt	Basic	A <a href="#">blood vessel tracing plugin</a> of <a href="#">Vaa3D</a> .
R	Basic	Some experience with <a href="#">Jupyter Notebook</a> .

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## Computer Software Copyrights in China

- 2012 Quantitative Analysis of Brain Cyto-Vascular Architecture (QABCVA)  
2012 MOST-Preproc-Nissl *Image preprocessing of Nissl stained brain images.*  
2013 MOST-Voxel-Scooping-Vessel-Tracer *Automatic tracing of blood vessels in brain.*

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## Languages

English Fluent  
Mandarin Native

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## Honors & Awards

- 2014 Star of Science & Technology *Wuhan National Laboratory for Optoelectronics*  
2014 Distinguished Graduate Student *Huazhong University of Science & Technology*  
2013 Sanhao Graduate Student *Huazhong University of Science & Technology*  
2013 Discipline Contribution Award *Huazhong University of Science & Technology*  
2010 Outstanding Cadres *Huazhong University of Science & Technology*  
2010 Achievement in Science and Technology Award *Huazhong University of Science & Technology*

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## Editorial Duties & Professional Societies

- 2013, 2016 Member *Society for Neuroscience*  
2018-present Reviewer *Nature Communications, Frontiers in Neuroanatomy, Neuroinformatics, Frontiers in Neuroinformatics, Frontiers in Neural Circuit, Frontiers in Physiology*

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## Publications

Nicholas Turner, Kisuk Lee, Ran Lu, **Jingpeng Wu**, Dodam Ih, and H Sebastian Seung. Synaptic partner assignment using attentional voxel association networks. *IEEE International Symposium on Biomedical Imaging (ISBI) (accepted)*, 2020.

Sven Dorkenwald, Nicholas L. Turner, Thomas Macrina, Kisuk Lee, Ran Lu, **Jingpeng Wu (co-first author)**, Agnes L. Bodor, Adam A. Bleckert, Derrick Brittain, Nico Kemnitz, William M. Silversmith, Dodam Ih, Jonathan Zung, Aleksandar Zlateski, Ignacio Tartavull, Szi-Chieh Yu, Sergiy Popovych, William Wong, Manuel Castro, Chris S. Jordan, Alyssa M. Wilson, Emmanouil Froudarakis, JoAnn Buchanan, Marc Takeno, Russel Torres, Gayathri Mahalingam, Forrest Collman, Casey Schneider-Mizell, Daniel J. Bumbarger, Yang Li, Lynne Becker, Shelby Suckow, Jacob Reimer, Andreas S. Tolias, Nuno Maçarico da Costa, R. Clay Reid, and H. Sebastian Seung. Binary and analog variation of synapses between cortical pyramidal neurons. *bioRxiv*, 2019.

Kisuk Lee, Nicholas Turner, Thomas Macrina, **Jingpeng Wu**, Ran Lu, and H Sebastian Seung. Convolutional nets for reconstructing neural circuits from brain images acquired by serial section electron microscopy. *Current Opinion in Neurobiology*, 55:188–198, 2019.

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**Jingpeng Wu**, William M Silversmith, and H Sebastian Seung. Chunkflow: Distributed hybrid cloud processing of large 3d images by convolutional nets. *arXiv preprint arXiv:1904.10489*, 2019.

**Jingpeng Wu**, Congdi Guo, Shangbin Chen, Tao Jiang, Yong He, Wenxiang Ding, Zhongqin Yang, Qingming Luo, and Hui Gong. Direct 3D cellular and vascular analysis reveals inter-columnar vascular branching and columnar capillary bed distribution in the mouse barrel cortex. *Cerebral Cortex*, 26:23–31, 2016.

Yunlong Meng, Yong He, **Jingpeng Wu**, Shangbin Chen, Anan Li, and Hui Gong. Automatic detection and quantitative analysis of cells in the mouse primary motor cortex. In *Twelfth International Conference on Photonics and Imaging in Biology and Medicine (PIBM 2014)*, volume 9230, page 92301E. International Society for Optics and Photonics, 2014.

**Jingpeng Wu**, Yong He, Zhongqin Yang, Congdi Guo, Qingming Luo, Wei Zhou, Shangbin Chen, Anan Li, Benyi Xiong, Tao Jiang, and Hui Gong. 3D BrainCV: simultaneous visualization and analysis of cells and capillaries in a whole mouse brain with one-micron voxel resolution. *Neuroimage*, 87:199–208, 2014.

Hui Gong, Shaoqun Zeng, Cheng Yan, Xiaohua Lv, Zhongqin Yang, Tonghui Xu, Zhao Feng, Wenxiang Ding, Xiaoli Qi, Anan Li, **Jingpeng Wu**, and Qingming Luo. Continuously tracing brain-wide long-distance axonal projections in mice at a one-micron voxel resolution. *Neuroimage*, 74:87–98, 2013.

Wenxiang Ding, Anan Li, **Jingpeng Wu**, Zhongqin Yang, Yunlong Meng, Simin Wang, and Hui Gong. Automatic macroscopic density artefact removal in a nissl-stained microscopic atlas of whole mouse brain. *Journal of Microscopy*, 251(2):168–177, 2013.

Xing Ming, Anan Li, **Jingpeng Wu**, Cheng Yan, Wenxiang Ding, Hui Gong, Shaoqun Zeng, and Qian Liu. Rapid reconstruction of 3D neuronal morphology from light microscopy images with augmented rayburst sampling. *PLoS ONE*, 8(12):e84557, 2013.

Bin Zhang, Anan Li, Zhongqin Yang, **Jingpeng Wu**, Qingming Luo, and Hui Gong. Modified golgi-cox method for micrometer scale sectioning of the whole mouse brain. *Journal of Neuroscience Methods*, 197(1):1–5, 2011.

Anan Li, Hui Gong, Bin Zhang, Qingdi Wang, Cheng Yan, **Jingpeng Wu**, Qian Liu, Shaoqun Zeng, and Qingming Luo. Micro-optical sectioning tomography to obtain a high-resolution atlas of the mouse brain. *Science*, 330(6009):1404–1408, 2010.

**Jingpeng Wu**, Hang Feng, Chen Huang, Hui Gong, and Li Anan. Tracing segmentation and loft reconstruction method for blood vessels on chinese digital human. *Computer and Digital Engineering (Chinese Journal)*, 38(11):132–135, 2010.

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## Conferences & Presentations

Princeton Neuroscience Institute, Princeton University, 08544 NJ  
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- 2019 **Poster**, *Connectomic Study of Zebrafish Hindbrain Neurons Reveals Morphological and Connectivity Pattern*, Zebrafish Neural Circuits & Behavior, Cold Spring Harbor Laboratory, NY.
- 2019 **Talk**, *Chunkflow: Distributed Hybrid Cloud Processing of Large 3D Images by Convolutional Nets*, NSF NeuroNex Workshop, University of Texas at Austin, TX.
- 2019 **Poster**, *RealNeuralNetworks.jl: A Julia Package for Neuron Skeletonization, Morphological and Connectivity Analysis in Large Scale 3D Image Segmentation Dataset using Cloud Computing*, The 5th Annual BRAIN Initiative Investigators Meeting, Washington, D.C..
- 2017 **Talk**, *ChunkFlow: Distributed Inference Pipeline Inside & Beyond the AWS Cloud*, IARPA MICrONS Phase II Kickoff Meeting, MD.
- 2016 **Talk**, *DeepNeuron: applying convolutional networks as a web service for neuroscientists*, Internal Communication, Google Office NYC Chelsea, NY.
- 2016 **Poster**, *DeepNeuron: applying convolutional networks as a web service for neuroscientists*, 3rd Annual BRAIN Initiative® Investigators Meeting, Bethesda, MD.
- 2016 **Poster**, *DeepNeuron: applying convolutional networks as a web service for neuroscientists*, Society for Neuroscience 2018 Annual Meeting, San Diego, CA.  
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- 2014 **Attend**, Twelfth International Conference on Photonics and Imaging in Biology and Medicine, Wuhan, China.
- 2013 **Attend**, Development, Function and Disease of Neural Circuits, Cold Spring Harbor Asia, Suzhou, China.
- 2011 **Attend**, Tenth International Conference on Photonics and Imaging in Biology and Medicine, Wuhan, China.