

Pengcheng Zhou

*Postdoctoral research scientist
Department of Statistics &
Center for Theoretical Neuroscience
Columbia University in the City of New York*

(last update: April 5, 2020)

CONTACT INFORMATION

<i>Email</i>	zhoupc1988@gmail.com	3227 Broadway
<i>Homepage</i>	https://zhoupc.github.io	Jerome L. Greene Science Center, L5-080
<i>Skype</i>	cmu.zhoupc	New York, NY, 10027, USA

EDUCATION

Ph.D., Neural Computation and Machine Learning 2011-2016
Carnegie Mellon University

- ▷ Center for the Neural Basis of Cognition & Machine Learning Department
- ▷ Advisor: Robert Kass
- ▷ Thesis: “Computational tools for identification and analysis of neuronal population activity ”

B.Sc., Physics 2006-2010
University of Science and Technology of China

- ▷ Department of Optics and Optical Engineering, School of Physical Sciences
- ▷ Advisor: Guoqiang Bi

POSITIONS

Postdoctoral Research Scientist 2017-present
Columbia University

- ▷ Department of Statistics & Center for Theoretical Neuroscience & Grossman Center for the statistics of mind
- ▷ Advisor: Liam Paninski

Research Assistant 2010-2011
University of Science and Technology of China

- ▷ Super-resolution microscopy; Population analysis of the neuronal reverberation
- ▷ Advisor: Guoqiang Bi

TEACHING EXPERIENCES

3. **Machine Learning**, TA, 2015 Fall, (Lecturer: Seyoung Kim)
2. **Statistical Methods for Neuroscience and Psychology**, TA, 2014 Spring, (Lecturer: Robert Kass)
1. **undergraduate Program for Neural Computation (uPNC)**, TA, 2012 & 2013 Summers

SUPERVISED STUDENTS

3. Amol Pasarkar @ Columbia U, 2018-present
2. Shijie Gu @ ShanghaiTech U, 2018-2019, later Ph.D. student at UC Berkeley & UCSF
1. Jonathan Yu @ CMU, 2013-2014, later Ph.D. student at U Pittsburgh

PUBLICATIONS [Google Scholar]

(★: highlighted publications; [e](#): link)

11. Lu, R., Liang, Y., Meng, G., **Zhou, P.**, Svoboda, K., Paninski, L. and Ji, N., 2020. Rapid mesoscale volumetric imaging of neural activity with synaptic resolution. *Nature Methods*, pp.1-4. [e](#)
10. Sun, Y., Jin, S., Lin, X., Chen, L., Qiao, X., Jiang, L., **Zhou, P.**, Johnston, K.G., Golshani, P., Nie, Q. and Holmes, T.C., 2019. CA1-projecting subiculum neurons facilitate object-place learning. *Nature neuroscience*, pp.1-19. [e](#)
9. Giovannucci, A., Friedrich, J., Gunn, P., Kalfon, J., Brown, B.L., Koay, S.A., Taxidis, J., Najafi, F., Gauthier, J.L., **Zhou, P.**, Khakh, B.S., Tank, D.W., Chklovskii D.B., and Pnevmatikakis, E.A., 2019. CaImAn an open source tool for scalable calcium imaging data analysis. *eLife*, 8, p.e38173. [e](#)
8. **Zhou, P.**, Resendez, S.L., Rodriguez-Romaguera, J., Jimenez, J.C., Neufeld, S.Q., Giovannucci, A., Friedrich, J., Pnevmatikakis, E.A., Stuber, G.D., Hen, R., Kheirbek, M.A., Sabatini, B.L., Kass, R.E. and Paninski L., 2018. Efficient and accurate extraction of in vivo calcium signals from microendoscopic video data. *eLife*, 7, p.e28728. [e](#) ★ (highlighted by *Nature Methods*)
7. Jimenez, J.C., Su, K., Goldberg, A.R., Luna, V.M., Biane, J.S., Ordek, G., **Zhou, P.**, Ong, S.K., Wright, M.A., Zweifel, L. and Paninski, L., 2018. Anxiety Cells in a Hippocampal-Hypothalamic Circuit. *Neuron*.[e](#)
6. Yu, K., Ahrens, S., Zhang, X., Schiff, H., Ramakrishnan, C., Fenno, L., Deisseroth, K., Zhao, F., Luo, M.H., Gong, L., He, M., **Zhou P.**, Paninski L. and Li B., 2017. The central amygdala controls learning in the lateral amygdala. *Nature neuroscience*, 20(12), p.1680.[e](#)
5. Klaus, A., Martins, G.J., Paixao, V.B., **Zhou, P.**, Paninski, L. and Costa, R.M., 2017. The spatiotemporal organization of the striatum encodes action space. *Neuron*, 95(5), pp.1171-1180.[e](#)
4. Friedrich, J., **Zhou, P.** and Paninski, L., 2017. Fast online deconvolution of calcium imaging data. *PLoS computational biology*, 13(3), p.e1005423.[e](#) ★
3. **Zhou, P.**, Burton, S.D., Snyder, A.C., Smith, M.A., Urban, N.N. and Kass, R.E., 2015. Establishing a statistical link between network oscillations and neural synchrony. *PLoS computational biology*, 11(10), p.e1004549.[e](#) ★
2. Scott, J.G., Kelly, R.C., Smith, M.A., **Zhou, P.** and Kass, R.E., 2015. False discovery rate regression: an application to neural synchrony detection in primary visual cortex. *Journal of the American Statistical Association*, 110(510), pp.459-471.[e](#)

1. **Zhou, P.**, Burton, S., Urban, N. and Ermentrout, G.B., 2013. Impact of neuronal heterogeneity on correlated colored noise-induced synchronization. *Frontiers in computational neuroscience*, 7, p.113. [e](#) ★

PREPRINTS

6. **Zhou, P.**, Reimer, J., Zhou, D., Pasarkar, A., Kinsella, I.A., Froudarakis, E., Yatsenko, D., Fahey, P., Bodor, A., Buchanan, J. and Bumbarger, D.J., 2020. EASE: EM-Assisted Source Extraction from calcium imaging data. bioRxiv. ★
5. Lau, Y., Qu, Q., Kuo, H.W., **Zhou, P.**, Zhang, Y. and Wright, J., 2019. Short-and-Sparse Deconvolution—A Geometric Approach. arXiv preprint arXiv:1908.10959. [e](#) (accepted by ICLR 2020.)
4. Wei, X.X., Zhou, D., Grosmark, A., Ajabi, Z., Sparks, F., **Zhou, P.**, Brandon, M., Losonczy, A. and Paninski, L., 2019. A zero-inflated gamma model for post-deconvolved calcium imaging traces. bioRxiv, p.637652. [e](#)
3. Giovannucci, A., Friedrich, J., Gunn, P., Kalfon, J., Koay, S.A., Taxidis, J., Najafi, F., Gauthier, J.L., **Zhou, P.**, Tank, D.W. and Chklovskii, D.B., 2018. CaImAn: An open source tool for scalable Calcium Imaging data Analysis. bioRxiv, p.339564. [e](#) (accepted by eLife in 2019.)
2. Buchanan, E.K., Kinsella, I., Zhou, D., Zhu, R., **Zhou, P.**, Gerhard, F., Ferrante, J., Ma, Y., Kim, S., Shaik, M. and Liang, Y., 2018. Penalized matrix decomposition for denoising, compression, and improved demixing of functional imaging data. bioRxiv, p.334706. [e](#)
1. **Zhou, P.**, Resendez, S.L., Stuber, G.D., Kass, R.E. and Paninski, L., 2015. Efficient and accurate extraction of in vivo calcium signals from microendoscopic video data. arXiv preprint arXiv:1605.07266*. [e](#) ★ (accepted by eLife in 2018.)

INVITED PRESENTATIONS AND WORKSHOPS

8. [Statistics and Probability Seminar Series](#) , Neural data science: from raw neuroscience recordings to scientific discoveries, Boston U, MA, (01/2020),
7. [Statistical Analysis of Neuronal Data \(SAND9\)](#), young investigator talk, CMU, PA, (05/2019),
6. [SCGB NY-Area Postdoc Meeting](#), EASE: EM-Assisted Source Extraction from calcium imaging data, Simons Foundation, NY (01/2019)
5. [MCCS/ICLM workshop](#), Imaging the behaving brain with miniscopes, UCSD, CA (11/2018)
4. [Junior Scientist Workshop on Machine Learning and Computer Vision](#), Janelia Research Campus, 10/2017
3. [Computational Tutorial](#): Calcium Imaging Data Cell Extraction, MIT, MA, (07/2017)
2. [FACM](#):Optical Imaging Data Analysis, NJIT, NJ, (06/2016)
1. [CCNS](#): Workshop on Optical Imaging Data Analysis, SAMSI, NC, (02/2016)

PROFESSIONAL SERVICES

- Journal reviewer:
[Scientific Reports](#) (3)
[Frontiers in Neural Circuits](#) (1)
[Frontiers in Computational Neuroscience](#) (1)
[IEEE Transactions on Medical Imaging](#) (1)
- Conference reviewer:
[NeurIPS](#) (2016)
[Cosyne](#) (2016)

COMPUTER SKILLS

- **Programming languages:** MATLAB, Python, R, C/C++
- **Operating systems:** Linux/Unix
- **Others:** Latex, SQL, Git

REFERENCES

1. [Liam Paninski](#), Professor @ Columbia University, liam@stat.columbia.edu
2. [Robert Kass](#), Professor @ Carnegie Mellon University, kass@stat.cmu.edu
3. [Andreas Tolias](#), Professor @ Baylor College of Medicine, astolias@bcm.edu
4. [Jacob Reimer](#), Assistant professor @ Baylor College of Medicine, reimer@bcm.edu
5. [Mazen Kheirbek](#), Assistant professor @ UC San Francisco, Mazen.Kheirbek@ucsf.edu