Junpeng Lao, PhD

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Born 1986.09.05

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Professional History:

2018.7 – present Data Scientist at Google Zurich.

2013.9 – 2018.7 Post-doc at University of Fribourg. I am supported by the Swiss National Science Foundation (n° 100014_138627 and n° 100014_156490/1)

2012.9 – 2013.9 Research assistant at University of Fribourg. I was supported by National Center of Competence in Research (NCCR) Affective sciences financed by the Swiss National Science Foundation (n° 51NF40-104897).

Education:

2009.10 – 2013.9 University of Glasgow, Ph.D in Cognitive Neuroscience, Thesis title: "Tracking the temporal dynamics of cultural perceptual diversity in visual information processing". Advisor: Prof. Roberto Caldara and Prof. Lars Muckli.

2005.9 – 2009.6 Sun Yat-Sen University, B. Sc. in Psychology. Thesis title: "Control deprivation and styles of thinking". Advisor: Prof. Xinyue Zhou.

Software and Algorithms:

I contributed to various Open-Source Software regularly, more information could be found on Github: https://github.com/junpenglao

PyMC3 (https://github.com/pymc-devs/pymc3) – a Python package for Bayesian statistical modelling and Probabilistic Machine Learning. It implemented advanced Markov chain Monte Carlo and variational inference algorithms. I am part of the core development team pymc_devs.

***i*Map4** (https://github.com/iBMLab/iMap4) – a Matlab toolbox for statistical fixation mapping of eye movement data. It is a data-driven statistics toolbox implementing linear mixed model and non-parametric statistics based on permutation and bootstrap spatial clustering. It also has a full graphical user interface. *i*Map4 is one of the three finalists of the SMI Computing Competition in ECEM 2015.

JAEFA (https://github.com/junpenglao/jaefa) – Just Another Eye-movement Filtering Algorithm, a simple Matlab toolbox for eye movement event detection with a Convolution-based algorithm

Preprints

Vizioli, L., Bratch, A., **Lao, J.**, Ugurbil, K., Muckli, L., & Yacoub, E. (2018). Temporal Multivariate Pattern Analysis (tMVPA): a single trial approach exploring the temporal dynamics of the BOLD signal. *bioRxiv*, 273110. doi.org/10.1101/273110

Jones, B. C., Hahn, A. C., Fisher, C. I., Wang, H., Kandrik, M., **Lao, J.**, Han, C., ... & DeBruine, L. M. (2018). No evidence that more physically attractive women have higher estradiol or progesterone. *bioRxiv*, 136515. doi.org/10.1101/136515

Eulerich, M., Theis, JC., **Lao, J.**, and Ramon, M. (2017) Do Fine Feathers Make a Fine Bird? The Influence of Attractiveness on Fraud-Risk Judgments by Internal Auditors. *Available at SSRN*: https://ssrn.com/abstract=2988269

Lao, J. (2016). Reproducible Research with End-to-end Machine Inference Using Deep Learning and Bayesian Statistics, *Journal of Brief Ideas*, doi: 10.5281/zenodo.203086

Journal Articles:

Rodger, H., **Lao, J.**, & Caldara, R. (2018). Quantifying facial expression signal and intensity use during development. *Journal of Experimental Child Psychology, 174,* 41-59. doi: 10.1016/j.jecp.2018.05.005

Ramon, M., Sokhn, N., **Lao, J.**, & Caldara, R. (2018). Decisional space determines saccadic reaction times in healthy observers and acquired prosopagnosia. *Cognitive Neuropsychology,* doi: 10.1080/02643294.2018.1469482

Malaspina, M., Albonico, A., **Lao, J.**, Caldara, R., & Daini, R. (2018). Mapping self-face recognition strategies in congenital prosopagnosia. *Neuropsychology*, *32*(2), 123-137. doi: 10.1037/neu0000414

Lakens, D., Adolfi, F. G., …, **Lao, J.**, …, Zwaan, R. A. (2018). Justify Your Alpha. *Nature Human Behaviour, 2*, 168-171. doi:10.1038/s41562-018-0311-x

Turano[1], M. T., **Lao[1], J.**, Richoz, A-R., de Lissa, P., Degosciu, S. B., Viggiano, M. P., & Caldara, R. (2017). Fear boosts the early neural coding of faces. *Social cognitive and affective neuroscience*, *12*(12), 1959-1971. doi: 10.1093/scan/nsx110

[1]*Joint first authors*

Stoll, C., Palluel-Germain, R., Caldara, R., **Lao, J.**, Dye, M. W. G., Aptel, F., & Pascalis, O. (2017). Face Recognition is Shaped by the Use of Sign Language. *Journal of Deaf Studies and Deaf Education.* doi: 10.1093/deafed/enx034

Papinutto, M., **Lao, J.**, Ramon, M., Caldara, R., & Miellet, S. (2017). The Facespan—the perceptual span for face recognition. *Journal of Vision, 17(5)*:16. doi: 10.1167/17.5.16

Garcia-Burgos, D., **Lao, J.**, Munsch, S., & Caldara, R. (2017). Visual attention to food cues is differentially modulated by gustatory-hedonic and post-ingestive attributes. *Food Research International, 97,* 199-208. doi: 10.1016/j.foodres.2017.04.011

Lao, J., Miellet, S., Pernet, C., Sokhn, N., & Caldara, R. (2017). *i*Map4: An Open Source Toolbox for the Statistical Fixation Mapping of Eye Movement data with Linear Mixed Modeling. *Behavior Research Methods, 49(2),* 559-575. doi: 10.3758/s13428-016-0737-x

Ruffieux[1], N., Ramon[1], M., **Lao[1], J.**, Colombo, F., Stacchi, L., Borruat, FX., Accolla, E., Annoni JM., & Caldara, R. (2016). Residual Perception of Biological Motion in Cortical Blindness. *Neuropsychologia, 93,* 301-311. doi: 10.1016/j.neuropsychologia.2016.11.009
[1]*Joint first authors*

Geangu[1], E., Ichikawa[1], H., **Lao[1], J.**, Kanazawa, S., Yamaguchi, M. K., & Caldara[2], R., & Turati[2], C. (2016). Culture shapes 7-month-olds perceptual strategies in discriminating facial expressions of emotion. *Current Biology, 26,* 663–664. doi: 10.1016/j.cub.2016.05.072
[1]*Joint first authors and* [2]*joint last authors*

Bovet, J., **Lao, J.**, Bartholomée, O., Caldara, R., & Raymond, M. (2016). Mapping female bodily features of attractiveness. *Scientific Reports, 6,* 18551. doi: 10.1038/srep18551

Miellet, S., **Lao, J.**, & Caldara, R. (2014). An appropriate use of iMap produces correct statistical results: a reply to McManus (2013)"iMAP and iMAP2 produce erroneous statistical maps of eye-movement differences". *Perception*,*43*, 451-457.

Lao, J., Vizioli, L., & Caldara, R. (2013). Culture modulates the temporal dynamics of global/local processing. *Culture and Brain, 1(2-4),* 158-174.

Romeo, M., Vizioli, L., Breukink, M., Aganloo, K., **Lao, J.**, Cotrufo, S., Caldara, R., & Morley, S. (2013). A Functional Magnetic Resonance Imaging Paradigm to Identify Distinct Cortical Areas of Facial Function: A Reliable Localizer. *Plastic and reconstructive surgery*, *131(4),* 527e-533e.

Miellet, S., Zhou, X., He, L., **Lao, J.**, & Caldara, R. (2012). When East meets West: gaze-contingent Blindspots abolish cultural diversity in eye movements for faces. *Journal of Eye Movement Research*, *5*, 1-12.

Zhou, X., He, L., Yang, Q., **Lao, J.**, & Baumeister, R. F. (2012). Control deprivation and styles of thinking. *Journal of personality and social psychology*,*102(3),* 460.

Conference Presentations (Selected):

2018.7.6 – 8, Lao, J. (2018). All that likelihood with PyMC3. PyData Berlin.

2017.9.4 – 5, Lao, J., Stoll, C., Dye, M., Pascalis, O., & Caldara, R. (2017). Deafness Amplifies Visual Information Sampling during Face Recognition. 15th Biannual congress of the Swiss Psychological Society. (Lausanne, Switzerland, **oral presentation**)

2017.5.19 – 24 Lao, J., Stoll, C., Dye, M., Pascalis, O., & Caldara, R. (2017). Deafness Amplifies Visual Information Sampling during Face Recognition. *Journal of Vision,* 17(10): 24 (17th annual meeting of Vision Sciences Society, **oral presentation**)

2017.4.20 Lao, J. (2017). Statistical Inferences of Eye movement data using Bayesian smoothing. Bayes@Lund2017. (Lund, Sweden, **oral presentation**)

2015.9.8 – 9 Lao, J., Miellet, S., Pernet, C., Sokhn, N., & Caldara, R. (2015). *i*Map4: An Open Source Toolbox for the Statistical Fixation Mapping of Eye Movement data with Linear Mixed Modeling. 14th Biannual congress of the Swiss Psychological Society. (Geneva, Switzerland, **oral presentation**)

2015.8.16 – 21 Lao, J., Miellet, S., Pernet, C., Sokhn, N., & Caldara, R. (2015). *i*Map4: An Open Source Toolbox for the Statistical Fixation Mapping of Eye Movement data with Linear Mixed Modeling. 18th European Conference on Eye Movements. (Vienna, Austria, **oral presentation**)

2013.9.11 – 12 Lao, J., He, L, & Caldara, R. (2013). Microsaccades Boost Face Identification. 13th Biannual congress of the Swiss Psychological Society. (Basel, Switzerland, **oral presentation**)

2011.7.15 - 18 Lao, J., Vizioli, L., Miellet, S., & Caldara, R. (2011). Eyes like it, brain likes it: Tracking the neural tuning of cultural diversity in eye movements for faces. *i-Perception* 2(4) 356. (Asia-Pacific Conference on Vision, 2011, **oral presentation**)

2011.1.9 - 13 Lao, J., Vizioli, L., Miellet, S., & Caldara, R. (2011). Eyes like it, brain likes it: Tracking the neural tuning of cultural diversity in eye movements for faces. Alpine Brain Imaging Meeting 2011. (Champéry, Switzerland, **oral presentation**)

Teaching:

(Master course)

Cognitive Neuroscience

Statistical Analysis with MATLAB

Psychology Experiment with MATLAB and Psychtoolbox-3

(Workshop)

Advance Bayesian Modelling with PyMC3

Bayesian Cognitive Modelling

Bayesian Mixed-effect model in Python

Bayesian Deep Learning using PyMC3

Statistical Fixation Mapping of Eye Movement data with *i*Map

The Wonder of Gauss: GLM, GAM, and GP

Awards:

2010.12 Guarantors of Brain Travel Grant supporting the attendance of the Alpine Brain Imaging Meeting in January 2011

2010.5 Experimental Psychology Society Grindley Grant supporting the attendance of the Vision Science Society Annual Meeting in May 2010

2009.9 UK/China PhD Scholarships for Excellence programme funded by China Scholarship Council and the Scottish Government