

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.

iMap4 (<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. iMap4 is one of the three finalists of the SMI Computing Competition in ECEM 2015.

Preprints

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](https://doi.org/10.5281/zenodo.203086)

Journal Articles

Stacchi, L., Ramon, M., **Lao, J.**, & Caldara, R. (2019). Neural Representations of Faces are Tuned to Eye Movements. *Journal of Neuroscience*, 2968(18). doi: [10.1523/JNEUROSCI.2968-18.2019](https://doi.org/10.1523/JNEUROSCI.2968-18.2019)

Nicholls, V. I., Jean-Charles, G., **Lao, J.**, de Lissa, P., Caldara, R., & Miellet, S. (2019). Developing attentional control in naturalistic dynamic road crossing situations. *Scientific Reports*, 9(4176). doi: [10.1038/s41598-019-39737-7](https://doi.org/10.1038/s41598-019-39737-7)

Luisier, A-C., Petitpierre, G., Bérød, A. C., Richoz, A-R., **Lao, J.**, Caldara, R., & Bensafi, M. (2019). Visual and Hedonic Perception of Food Stimuli in Children with Autism Spectrum Disorders and their Relationship to Food Neophobia. *Perception*, 0301006619828300. doi: [10.1177/0301006619828300](https://doi.org/10.1177/0301006619828300)

Wyssen, A., **Lao, J.**, Rodger, H., Humbel, N., Lennertz, J., Schuck, K., Isenschmid, B., Milos, G., Trier, S., Whinyates, K., & Assion, H.J. (2019). Facial Emotion Recognition Abilities in Women Experiencing Eating Disorders. *Psychosomatic medicine*, 81(2), 155-164. doi: [10.1097/PSY.0000000000000664](https://doi.org/10.1097/PSY.0000000000000664)

Lüthold, P., **Lao, J.**, He, L., Zhou, X., & Caldara, R. (2019). Waldo reveals cultural differences in return. *Visual Cognition*, 26(10), 817-830. doi: [10.1080/13506285.2018.1561567](https://doi.org/10.1080/13506285.2018.1561567)

Han, C., Wang, H., Fasolt, V., Hahn, A., Holzleitner, I. J., **Lao, J.**, ... & Jones, B. (2018). No clear evidence for correlations between handgrip strength and sexually dimorphic acoustic properties of voices. *American Journal of Human Biology*, e23178. doi: [10.1002/ajhb.23178](https://doi.org/10.1002/ajhb.23178)

Eulerich, M., Theis, J.C., **Lao, J.**, & Ramon, M. (2018). Do Fine Feathers Make a Fine Bird? The Influence of Attractiveness on Fraud-Risk Judgments by Internal Auditors. *International Journal of Auditing*, 1-13. doi: [10.1111/ijau.12137](https://doi.org/10.1111/ijau.12137)

Richoz, A-R., **Lao, J.**, Pascalis, O., & Caldara, R. (2018). Tracking the recognition of static and dynamic facial expressions of emotion across the life span. *Journal of Vision*, 18(9):5, 1-27. doi: [10.1167/18.9.5](https://doi.org/10.1167/18.9.5)

Jones, B. C., Hahn, A. C., Fisher, C. I., Wang, H., Kandrik, M., **Lao, J.**, Han, C., ... & DeBruine, L. M. (2018). No compelling evidence that more physically attractive young adult women have higher estradiol or progesterone. *Psychoneuroendocrinology*, 98, 1-5. doi: [10.1016/j.psyneuen.2018.07.026](https://doi.org/10.1016/j.psyneuen.2018.07.026)

Vizioli, L., Bratch, A.¹, **Lao, J.**¹, Ugurbil, K., Muckli, L., & Yacoub, E. (2018). Temporal multivariate pattern analysis (tmVPA): A single trial approach exploring the temporal dynamics of the BOLD signal. *Journal of Neuroscience Methods*, 308, 74-87. doi: [10.1016/j.jneumeth.2018.06.029](https://doi.org/10.1016/j.jneumeth.2018.06.029)

¹Equal contribution

- 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](https://doi.org/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](https://doi.org/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](https://doi.org/10.1037/neu0000414)
- Lakens, D., Adolffi, F. G., ..., **Lao, J.**, ..., Zwaan, R. A. (2018). Justify Your Alpha. *Nature Human Behaviour*, 2, 168-171. [doi:10.1038/s41562-018-0311-x](https://doi.org/10.1038/s41562-018-0311-x)
- Turano¹, M. T., **Lao¹, 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](https://doi.org/10.1093/scan/nsx110)
- ¹Joint 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](https://doi.org/10.1093/deafed/enx034)
- Papinutto, M., **Lao, J.**, Ramon, M., Caldara, R., & Mielle, S. (2017). The Facespan—the perceptual span for face recognition. *Journal of Vision*, 17(5):16. [doi: 10.1167/17.5.16](https://doi.org/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](https://doi.org/10.1016/j.foodres.2017.04.011)
- Lao, J.**, Mielle, S., Pernet, C., Sokhn, N., & Caldara, R. (2017). iMap4: 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](https://doi.org/10.3758/s13428-016-0737-X)
- Ruffieux¹, N., Ramon¹, M., **Lao¹, 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](https://doi.org/10.1016/j.neuropsychologia.2016.11.009)
- ¹Joint first authors
- Geangu¹, E., Ichikawa¹, H., **Lao¹, J.**, Kanazawa, S., Yamaguchi, M. K., & Caldara², R., & Turati², 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](https://doi.org/10.1016/j.cub.2016.05.072)
- ¹Joint first authors and ²joint 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](https://doi.org/10.1038/srep18551)
- Mielle, 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

- 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**)
- 2017.8.27 – 31** Lao, J., Stoll, C., Dye, M., Pascalis, O., & Caldara, R. (2017). Deafness Amplifies Visual Information Sampling during Face Recognition. 40th European Conference on Visual Perception. (Berlin, Germany)
- 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**)
- 2016.5.13 – 18** Lao, J., Richoz, A-R., Stoll, C., Pascalis, O., Dye, M., & Cladara, R. (2016). Mapping the recognition of facial expression of emotions in deafness. *Journal of Vision*, 16(12): 1391 (16th annual meeting of Vision Sciences Society)
- 2015.9.8 – 9** Lao, J., Miellet, S., Pernet, C., Sokhn, N., & Caldara, R. (2015). iMap4: 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). iMap4: 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**)
- 2015.5.15 – 20** Lao, J., Miellet, S., Pernet, C., Sokhn, N., & Caldara, R. (2015). iMap4: An Open Source Toolbox for the Statistical Fixation Mapping of Eye Movement data with

Linear Mixed Modeling. *Journal of Vision*, 15(12): 793 (15th annual meeting of Vision Sciences Society)

2015.1.24 Lao, J., & Caldara, R. (2015). Reverse correlating facial feature use in free-viewing EEG signals. Annual Meeting of Swiss Society for Neuroscience (Fribourg, Switzerland)

2015.1.11 – 15 Lao, J., & Caldara, R. (2015). Reverse correlating facial feature use in free-viewing EEG signals. Alpine Brain Imaging Meeting 2015. (Champéry, Switzerland)

2014.8.24 – 28 Lao, J., He, L., & Caldara, R. (2014). Microsaccades boost face identification as a function of culture. 37th European Conference on Visual Perception. (Belgrade, Serbia)

2014.5.16 – 21 Lao, J., Vizioli, L., Muckli, L., & Caldara, R. (2014). Decoding culture from the human primary visual cortex. *Journal of Vision*, 14(10):1093 (14th annual meeting of Vision Sciences Society)

2014.1.12 – 16 Lao, J., Vizioli, L., Muckli, L., & Caldara, R. (2014). Decoding Culture from the Human Primary Visual Cortex. Alpine Brain Imaging Meeting 2014. (Champéry, Switzerland)

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**)

2013.5.10 – 15 Lao, J., He, L., & Caldara, R. (2013). Microsaccades Boost Face Identification. *Journal of Vision*, 13 (9): 1344(13th annual meeting of Vision Sciences Society)

2012.1.8 – 12 Lao, J., Vizioli, L., Rodger, H., & Caldara, R. (2012). Neural Adaptation Reveals Early Cultural Tunings in Perceptual Sensitivity to Local/Global Shapes. Alpine Brain Imaging Meeting 2012. (Champéry, Switzerland)

2011.7.15 - 18 Lao, J., Vizioli, L., Mielle, 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**)

2011.5.6 - 11 Lao, J., Mielle, S., Vizioli, L., Fusco, R., & Caldara, R. (2011). Eyes like it, brain likes it: Tracking the neural tuning of cultural diversity in eye movements for faces. *Journal of Vision*, 11(11): 628. (11th annual meeting of Vision Sciences Society)

2011.3.26 Lao, J., Vizioli, L., Mielle, S., & Caldara, R. (2011). Eyes like it, brain likes it: Tracking the neural tuning of cultural diversity in eye movements for faces. Annual Meeting of Swiss Society for Neuroscience (Basel, Switzerland)

2011.1.9 - 13 Lao, J., Vizioli, L., Mielle, 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**)

2010.5.7 - 12 Lao, J., Foreman, K., Zhou, X., Lages, M., Hillis, J., & Caldara, R. (2010). Social judgments from faces are universal. *Journal of Vision*, 10(7): 698. (10th annual meeting of Vision Sciences Society)

Teaching

(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 iMap

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