Li Kevin Wenliang

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Education

Gatsby Computational Neuroscience Unit, University College London, PhD candidate **2015 – present**

- Supervised by **Prof. Maneesh Sahani** (primary) and **Prof. Peter Dayan** (secondary)
- **PhD Thesis: message passing using a distributed representation of probability distribution (DDC)**
  - State-space models: filtering, smoothing and learning of exponential family transition and observation
  - Stochastic processes: inference and learning on generic stochastic process (e.g. Gaussian process)
  - Representation of uncertainty in neural networks trained with supervision
  - Human perception as inference: theory on how the brain may encode uncertainty in the environment
- **Other research: density estimation and biological perception**
  - Deep kernel exponential family density estimator trained using score matching
  - Perceptual learning modelled by deep neural networks and Bayesian inference

University of Cambridge, Trinity College Information and Computer Engineering **2010 - 2014**

- Supervised by **Dr. Máté Lengyel**
- **M.Eng Thesis: inference and learning on nonlinear state space model for neural spiking data**
- B.A. (1st Hon.) and M.Eng. (Exceptional), scholarship £18,510 p.a. for 4 years, College Senior Scholar
- Ranked within top 10 of the year for 1st, 2nd and 4th years (3rd year at MIT)

Massachusetts Institute of Technology (1 Year undergraduate exchange) **2012 - 2013**

- GPA: 4.9/5.0, Cambridge-MIT Exchange in Electrical Engineering and Computer Science.
- Digital Image project: automatic shadow identification and removal, taught by **Prof J. Lim**
- Complex Network Analysis project: a model of public interest propagation, taught by **Prof D. Gamarnik**

Publications

- Li Wenliang, E. Vertés, M. Sahani, *Accurate and adaptive recognition*, in prep*,* COSYNE 2019 (top 6%)
- Li Wenliang, D. Sutherland, H. Strathmann, A. Gretton, *Learning deep kernels for exp. fam. densities*, submitted.
- Li Wenliang, A. Seitz, *Deep neural network for modeling visual perceptual learning,* J. of Neurosci. 2018
- Li Wenliang, M. Sahani, Neural network represents uncertainty by nonlinear moments, in prep, COSYNE 2018
- C. Liu, Wenliang Li, F. Sun and J. Zhang, *Grasp planning by human experience on a variety of objects with complex geometry*, Intelligent Robots and Systems (IROS) 2015

Experience

Machine Learning Summer School Teaching assistant **2019**

Brains, minds and machines summer school **Aug 2016**

Project: human perception of object stability, supervised by **Prof Josh Tenenbaum**

Illume Research **Dec 2016 – present**

Mentor, part-time, teaching elementary machine learning and programming to high school students

Tsinghua University

Research Intern, supervised by Prof Funchun Sun at National Key Lab of Intelligent Systems **Dec 2014 – Mar 2015**

- Non-parametric 3D object representation effective for identification and part segmentation

Microsoft Research Cambridge **July - Oct 2014**

Research Intern, supervised by Sebastian Nowozin (Machine Learning & Perception Group)

- Complex road networks recognition from satellite images of forests by marked point process

Skills

- **Programming:** Python (TensorFlow, PyTorch, Caffe), Julia, MatLab, C/C++, Ruby, HTML/CSS, JavaScript