

# Kai Xu

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[xuk.ai](http://xuk.ai)

**Research interests** Probabilistic programming, MCMC, probabilistic modelling, Bayesian inference, dimension reduction, data & model visualization, deep learning, knowledge distillation

**Education**

**U. of Edinburgh / Ph.D in Informatics: Machine Learning**  
Sept 2017 - PRESENT, Edinburgh, United Kingdom

- Being supervised by Dr. Charles Sutton
- Currently working on model interpretability using visualization of dark knowledge

**U. of Cambridge / M.Phil in Machine Learning, Speech & Language Technology**  
Oct 2015 - Sept 2016, Cambridge, United Kingdom

- Average grade 72.4%
- Thesis supervised by Prof. Zoubin Ghahramani and awarded distinction

**U. of Liverpool / B.Eng in Computer Science and Electronic Engineering**  
Sept 2013 - June 2015, Liverpool, United Kingdom

- Average grade 84.3%

**Xi'an Jiaotong-Liverpool University / B.Eng in Computer Science & Technology**  
Sept 2011 - June 2013, Suzhou, China

**Background**

**Machine Learning** / Statistical Pattern Recognition, (Advanced) Machine Learning, Reinforcement Learning, Information Theory, Statistical Speech Recognition, Statistical Speech Synthesis, Statistical Machine Translation, Dialogue Systems, Neural Networks

**Mathematics** / Calculus, Linear Algebra, Probability and Statistics, Game Theory

**Computer Science** / Computer Architecture, Operating Systems, Relational Database, Software Engineering, Cryptography, Functional Programming, Parallel Computing

**Engineering** / Image Processing, Computer Vision, Signal Processing, Communication Systems, Digital Electronics & Microprocessor Systems, Embedded Systems

**Publications**

Hong Ge, Kai Xu, and Zoubin Ghahramani. "Turing: Composable inference for probabilistic programming." *Artificial Intelligence and Statistics*. 2018.

Kai Xu. "Probabilistic programming in Julia." *M.Phil thesis*, August 2016.

**Experience**

**Cambridge Machine Learning Group / Research Assistant**  
Nov 2016 - July 2017, Cambridge, United Kingdom

Developed a new general probabilistic programming language named [Turing.jl](http://Turing.jl).  
Researched on composition of MCMC algorithms and efficient HMC variants.

**The Brain Charity / IT Maintainer and Software Developer**  
Aug 2014 - July 2015, Liverpool, United Kingdom

**Awards**

**U. of Edinburgh / Ph.D Studentship**  
Sept 2017, funded by Edinburgh Huawei Research Lab for 3-year Ph.D study (~£103,959 in total)

**U. of Liverpool / International Undergraduate Student Scholarship**  
Sept 2013, awarded with £15,251 (half tuition fee) for being the top 1 in the programme

**Xi'an Jiaotong-Liverpool University / Academic Excellence Award**  
Sept 2012, awarded with ¥10,000 for being the top 10% students in the university

**Skills**

**Programming** / Julia, Python, Java, Scala, MATLAB, Clojure, C++, HTML, CSS, JavaScript

**Other** / Git, Atom, Vim, Markdown, LaTeX, macOS, Linux, Android, iOS, Nginx, SQLite

**References**

**Dr. Charles Sutton** / [csutton@inf.ed.ac.uk](mailto:csutton@inf.ed.ac.uk)  
School of Informatics, University of Edinburgh

**Prof. Zoubin Ghahramani** / [zoubin@eng.cam.ac.uk](mailto:zoubin@eng.cam.ac.uk)  
Department of Engineering, University of Cambridge