



Yarin Gal

Contact Details

Department of Engineering, University of Cambridge, Trumpington Street, Cambridge CB2 1PZ, UK.

Email, yg279@cam.ac.uk.

Web, <http://mlg.eng.cam.ac.uk/yarin/>.

Principal Appointments

2016–present **Research Fellow in Computer Science**, *St Catharine's College, University of Cambridge*, Cambridge, UK.

2016–present **Research Fellow**, *Alan Turing Institute for Data Science*, London, UK.

Education

2012–2016 **PhD, Information Engineering, Machine Learning Group**, *University of Cambridge*, Cambridge, UK, supervised by Prof Zoubin Ghahramani FRS.

Supported by the Google European Doctoral Fellowship; Qualcomm Innovation Fellowship; Cambridge trusts honorary scholar.

2011–2012 **MSc, Computer Science with focus on Machine Learning**, *University of Oxford*, Oxford, UK, supervised by Prof Phil Blunsom.

Graduated with distinction.

2004–2009 **BSc, double degree in Mathematics and Computer Science**, *The Open University of Israel*, Israel, *Graduated with distinction.*

Ranked in the top 10% of graduates in 2009 (90.8 percentile); Dean's List for the years 2007-2009; Graduated at 18 years old.

Prizes and Scholarships

2016–2019 **The Michael and Morven Heller Research Fellowship in Computer Science.**

2015 **Alan Turing Institute Travel Award.**

2015–2016 **Qualcomm Innovation Fellowship**, [press release](#), [media coverage](#).

2015 **BNP 2015 Travel Award.**

2014 **Google DeepMind 2014 Travel Award.**

2014 **Art of Engineering photo competition.**

2014 **NIPS 2014 Travel Award.**

2014 **ISBA 2014 Travel Award.**

2013 **Tübingen MLSS grant**, [press release \(German\)](#).

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- 2012–2015 **Google European Doctoral Fellowship** – full PhD scholarship, [press release](#).
- 2012 **Cambridge overseas trusts** – offer of PhD scholarship.
- 2012 **Oxford-MAN Institute** – offer of PhD scholarship.
- 2012 **Karten Scholarship** – an offer of a £2,000 prize.
- 2004–2009 **Merit based scholarship for high-school students studying for a BSc while in high-school.**

Conferences and Peer Reviewing Activities

Workshop Organiser:

- 2016 **NIPS Workshop on “Bayesian Deep Learning”**.

Program Committee Member:

- 2016 **The 54th Annual Meeting of the Association for Computational Linguistics (ACL conference, for the area Machine Learning)**.
- 2015 **Advances in Approximate Bayesian Inference (NIPS workshop)**.
- 2015 **Bayesian Nonparametrics: The Next Generation (NIPS workshop)**.
- 2014 **Advances in Variational Inference (NIPS workshop)**.

Conference Papers Reviewing for:

- 2016 **Neural Information Processing Systems (NIPS)**.
- 2016 **International Conference on Machine Learning (ICML)**.
- 2016 **International Conference on Learning Representations (ICLR, workshop)**.
- 2016 **International Conference on Learning Representations (ICLR, conference)**.
- 2016 **Association for Computational Linguistics (ACL)**.
- 2015 **Artificial Intelligence and Statistics (AISTATS)**.
- 2015 **Neural Information Processing Systems (NIPS)**.
- 2015 **International Conference on Machine Learning (ICML)**.

Journal Articles Reviewing for:

- 2016 **Journal of the Royal Statistical Society**.
- 2016 **Journal of Machine Learning Research (JMLR)**.
- 2015 **IEEE Transactions on Neural Networks and Learning Systems (IEEE TNNLS)**.

Invited Participant:

- 2016 **GCHQ round-table discussion leader on machine learning**, *Government Communications Headquarters, UK*.
- 2016 **NASA–SETI machine learning think-tank**, *NASA’s Ames Research Center / SETI Institute*.
- 2016 **NVIDIA GPU machine learning tech summit**, *Santa Clara*.
- 2015 **First Deep Learning Symposium at NIPS 2015**, *Montreal*.
- 2015 **Alan Turing Institute Scoping Workshop on Deep Learning**, *Edinburgh*.
- 2015 **Google NLP PhD Summit**, *Zurich*.
- 2015 **“Bayesian Nonparametrics in the North” workshop**, *Ecole Centrale de Lille*.
- 2015 **Google Doctoral Fellowship Forum**, *Zurich*.

2013 **Google Doctoral Summit**, *Zurich*.

Recent Invited Talks

- 2016 **NASA AMES**, *Mountain View*.
- 2016 **Alan Turing Institute Deep Generative Models Workshop**, *Royal Society, London*.
- 2016 **Adaptive Brain Lab, Department of Psychology**, *Cambridge*.
- 2016 **MRC Cognition and Brain Science Unit**, *Cambridge*.
- 2016 **London Machine Learning Meetup**, *London*.
- 2016 **OpenAI**, *San Francisco*.
- 2016 **Google**, *Mountain View*.
- 2016 **33rd International Conference on Machine Learning**, *New York City, NY*.
- 2016 **Natural Language and Information Processing seminar series**, *University of Cambridge, Cambridge*.
- 2015 **Microsoft Research**, *Cambridge*.
- 2015 **Alan Turing Institute Deep Learning Open Workshop**, *Edinburgh University, Edinburgh*.
- 2015 **ATI Scoping Workshop**, *Edinburgh University, Edinburgh*.
- 2015 **ML Seminar series**, *ETH, Zurich*.
- 2015 **Computational Statistics and Machine Learning seminar series**, *UCL, London*.
- 2015 **Bayesian Nonparametrics in the North meeting**, *Ecole Centrale de Lille, Lille*.
- 2015 **Trinity College Mathematical Society**, *University of Cambridge, Cambridge*.
- 2015 **Gonville and Caius College**, *University of Cambridge, Cambridge*.
- 2015 **32nd International Conference on Machine Learning**, *Lille*.
- 2015 **NTT Labs**, *Kyoto, Japan*.
- 2015 **Microsoft Research**, *Cambridge*.
- 2015 **32nd International Conference on Machine Learning**, *Lille*.
- 2015 **10th Conference on Bayesian Nonparametrics**, *Raleigh, NC*.
- 2014 **NTT Labs**, *Kyoto, Japan*.
- 2014 **Workshop on New Learning Models and Frameworks for Big Data, ICML**, *Beijing, China*.
- 2013 **Workshop on Big Learning, NIPS**, *Lake Tahoe*.
- 2013 **Association for Computational Linguistics (NA-ACL)**, *Atlanta*.

Seminar Talks and Reading Groups

- 2016 **“Differentiable Data Structures (and POMDPs)”**, *MLG Seminar*.
- 2014 **“Symbolic Differentiation for Rapid Model Prototyping in Machine Learning and Data Analysis – a Hands-on Tutorial”**, *MLG Seminar*.
- 2014 **“Rapid Prototyping of Probabilistic Models using Stochastic Variational Inference”**, *Short talk*.
- 2014 **“Emergent Communication for Collaborative Reinforcement Learning”**, *MLG Seminar*.

- 2014 “**The Borel–Kolmogorov paradox**”, *Short talk*.
- 2013 “**Bayesian Nonparametrics in Real-World Applications: Statistical Machine Translation and Language Modelling on Big Datasets**”, *MLG Seminar*.

Academic Supervision

- 2015–2016 **Riashat Islam**, *Primary MPhil Thesis Supervision*, University of Cambridge.
- 2015–2016 **Jiří Hron**, *Primary MSc Thesis Supervision*, University College London (UCL).
- 2015–2016 **Ambrish Rawat**, *Primary MPhil Thesis Supervision*, University of Cambridge.

Select Publications

- [1] Yarin Gal and Zoubin Ghahramani. A theoretically grounded application of dropout in recurrent neural networks. In *Advances in Neural Information Processing Systems 29 (NIPS)*, 2016.
- [2] Yarin Gal, Rowan McAllister, and Carl E. Rasmussen. Improving PILCO with Bayesian neural network dynamics models. In *Data-Efficient Machine Learning workshop, ICML*, April 2016.
- [3] Yarin Gal and Zoubin Ghahramani. Dropout as a Bayesian approximation: Representing model uncertainty in deep learning. In *Proceedings of the 33rd International Conference on Machine Learning (ICML-16)*, 2016.
- [4] Yarin Gal and Zoubin Ghahramani. On modern deep learning and variational inference. In *Advances in Approximate Bayesian Inference workshop, NIPS*, 2015.
- [5] Yarin Gal. Rapid prototyping of probabilistic models: Emerging challenges in variational inference. In *Advances in Approximate Bayesian Inference workshop, NIPS*, 2015.
- [6] Yarin Gal and Zoubin Ghahramani. Bayesian convolutional neural networks with Bernoulli approximate variational inference. In *4th International Conference on Learning Representations (ICLR) workshop track*, 2016.
- [7] Yarin Gal and Zoubin Ghahramani. Dropout as a Bayesian approximation: Insights and applications. In *Deep Learning Workshop, ICML*, 2015.
- [8] Yarin Gal and Richard Turner. Improving the Gaussian process sparse spectrum approximation by representing uncertainty in frequency inputs. In *Proceedings of the 32nd International Conference on Machine Learning (ICML-15)*, 2015.
- [9] Yarin Gal, Yutian Chen, and Zoubin Ghahramani. Latent Gaussian processes for distribution estimation of multivariate categorical data. In *Proceedings of the 32nd International Conference on Machine Learning (ICML-15)*, 2015.
- [10] Yarin Gal, Tomoharu Iwata, and Zoubin Ghahramani. An infinite product of sparse Chinese restaurant processes. In *10th Conference on Bayesian Nonparametrics (BNP)*, 2015.
- [11] Hong Ge, Yarin Gal, and Zoubin Ghahramani. Dirichlet fragmentation processes. 2015 (under review).

- [12] Yarin Gal, Yutian Chen, and Zoubin Ghahramani. Latent Gaussian processes for distribution estimation of multivariate categorical data. In *Workshop on Advances in Variational Inference, NIPS*, 2014.
- [13] Yarin Gal, Mark van der Wilk, and Carl Rasmussen. Distributed variational inference in sparse Gaussian process regression and latent variable models. In *Advances in Neural Information Processing Systems 27 (NIPS)*. 2014.
- [14] Yarin Gal, Mark van der Wilk, and Carl E. Rasmussen. Distributed variational inference in sparse Gaussian process regression and latent variable models. In *Workshop on New Learning Models and Frameworks for Big Data, ICML*, 2014.
- [15] Yarin Gal and Zoubin Ghahramani. Feature partitions and multi-view clusterings. International Society for Bayesian Analysis (ISBA), 2014.
- [16] Yarin Gal and Zoubin Ghahramani. Pitfalls in the use of parallel inference for the Dirichlet process. In *Proceedings of the 31th International Conference on Machine Learning (ICML-14)*, 2014.
- [17] Yarin Gal and Zoubin Ghahramani. Pitfalls in the use of parallel inference for the Dirichlet process. In *Workshop on Big Learning, NIPS*, 2013.
- [18] Yarin Gal and Mark van der Wilk. Variational inference in the Gaussian process latent variable model and sparse GP regression – a gentle tutorial. *arXiv:1402.1412*, 2014.
- [19] Yarin Gal. Semantics, modelling, and the problem of representation of meaning – a brief survey of recent literature. Technical report, University of Cambridge, 2013.
- [20] Yarin Gal and Phil Blunsom. A systematic Bayesian treatment of the IBM alignment models. In *Proceedings of the 2013 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies*, Atlanta, Georgia, June 2013. Association for Computational Linguistics.
- [21] Yarin Gal. Relaxing HMM alignment model assumptions for machine translation using a Bayesian approach. Master’s thesis, University of Oxford, 2012.
- [22] Yarin Gal and Mireille Avigal. Overcoming Alpha-Beta limitations using evolved artificial neural networks. In *Ninth International Conference on Machine Learning and Applications (ICMLA)*. IEEE, 2010.

Industrial Experience

Consultancies:

2016 **NASA**, *Data Science Coach*, NASA Frontier Development Lab.

Vocational

2015 **Google Zurich**, *Research Engineer Intern*, Natural Language Processing group, 08/2015 to 01/2016.

2008–2011 **Software Engineer, head of Mobile Platforms development**, *IDesia Biometrics*, Caesarea, Israel.

A software company developing ECG based biometrics and consumer healthcare solutions.

Projects:

- UX and UI logic design;
- SDK development and code porting for mobile platforms:
 - MTK (Nucleus based embedded OS), Linux (Android, Maemo), Symbian, Windows mobile;
- QA tools development, offline simulation tools for the National Physical Laboratory (NPL).

2006–2007 **Web development**, *The TAO Centre*.

Commercial ASP web programming.

Volunteer work

2014-2016 **Member of Gonville and Caius College MCR committee**, *Computing officer*, Designed and deployed MCR website.

2013-2014 **Member of Gonville and Caius College MCR committee**, *Dining officer*, Initiated MCR dinners at Caius.

2007 **Teaching computer skills to the elderly**.

Interests

computing Computational aspects of pretty proofs, reverse engineering (windows platforms).

cool projects [extrapolated art](#) – winner of the Art of Engineering photo competition (2nd prize; media coverage: [IFLScience](#), [The Telegraph](#), [Daily Mail](#), [Wolfram blog](#), [Hacker News](#), [Kottke](#), [Boing Boing](#) (by [Cory Doctorow](#)), [Gigazine](#), [Habrahabr](#)).

Origami model design, autonomous game playing (2009), automated arbitrage search (2007), Java based database system (2006), web controlled robotic camera (2004).

Languages

English **Excellent**

Hebrew **Native**

Japanese **Studying**