

# Alexander Alemi

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## Current position

*Research Scientist*, Google, Machine Perception

## Previous experience

2016-2018 *Software Engineer*, Google, Mountain View, CA.  
2015-2016 *Postdoc*, Disney Research, Boston  
2009-2015 *Research Associate*, Laboratory of Atomic and Solid-State Physics (LASSP), Cornell  
2015 *Research Intern*, Google, Mountain View, CA.  
2014 *Research Intern*, Disney Research, Boston.

## Areas of specialization

Information Theory & Deep Learning • Physics • Machine Learning • Python Programming

## Education

2015 PhD in Physics, Cornell with Jim Sethna  
2013 MSc in Physics, Cornell  
2009 BSc in Physics, California Institute of Technology (Caltech)

## Publications & talks

- 2018f AA Alemi, JV Dillon, I Fischer, “Uncertainty in the Variational Information Bottleneck”, *UAI 2018 workshop on Uncertainty in Deep Learning, contributed oral* arXiv:1807.00906
- 2018e AA Alemi, I Fischer, “TherML: Thermodynamics of Machine Learning”, *ICML 2018 Workshop, contributed oral*.
- 2018d AA Alemi, I Fischer, “GILBO: One Metric to Measure Them All”, *NIPS 2018 Spotlight* arXiv:1802.04874
- 2018c JV Dillon, I Langmore, D Tran, E Brevdo, S Vasudevan, D Moore, B Patton, A Alemi, M Hoffman, RA Saurous, “TensorFlow Distributions”, arXiv:1711.10604
- 2018b S Abu-El-Haija, B Perozzi, R Al-Rfou, A Alemi, “Watch your step: Learning graph embeddings through attention”, *NIPS 2018 Poster* arXiv:1710.09599
- 2018a AA Alemi, B Poole, I Fischer, JV Dillon, RA Saurous, K Murphy, “Fixing a Broken ELBO”, *Talk ICML 2018* arXiv:1711.00464
- 2017e LX Hayden, AA Alemi, PH Ginparg, JP Sethna, “Jeffrey’s prior sampling of deep sigmoidal networks”, arXiv: 1705.10589
- 2017d K Fragkiadaki, J Huang, A Alemi, S Vijayanarasimhan, S Ricco, R Sukthankar, “Motion Prediction Under Multimodality with Conditional Stochastic Networks” arXiv: 1705.02082
- 2017c M Bierbaum, BD Leahy, AA Alemi, I Cohen, JP Sethna, “Light Microscopy at Maximal Prediction”, *PRX 7 (4)*, 041007, arXiv: 1702.07336
- 2017b C Szegedy, S Ioffe, V Vanhoucke, AA Alemi, “Inception-v4, Inception-ResNet and the Impact of Residual Connections on Learning.” *AAAI*, 4278-4284, arXiv: 1602.07261
- 2017 AA Alemi, I Fischer, JV Dillon, KP Murphy, “Deep Variational Information Bottleneck”, *ICLR 2017*, arXiv: 1612.00410
- 2016c R Shin, AA Alemi, G Irving, O Vinyals, “Tree-Structured Variational Autoencoder” *ICLR 2017 Submission*
- 2017 B Poole, AA Alemi, J Sohl-Dickstein, A Angelova, “Improved generator objectives for GANS” *NIPS GAN Workshop 2016*, arXiv: 1612.02780
- 2016 G Irving, C Szegedy, AA Alemi, N EEn, F Chollet, J Urban, “Deepmath-deep sequence models for premise selection”. *NIPS 2016*, arXiv: 1606.04442
- 2015g CJM Mathy, F Gonda, D Schmidt, N Derbinsky, AA Alemi, J Bento, FM Delle Fave, JS Yedidia, “SPARTA: Fast global planning of collision-avoiding robot trajectories”. Learning, Inference and Control of Multi-Agent Systems Workshop, NIPS 2015
- 2015f AA Alemi, “Zombies Reading Segmented Graphic Articles on the ArXiv”. PhD Thesis, Cornell University
- 2015e JM Cashore, X Zhao, AA Alemi, Y Liu, PI Frazier, “Clustering via Content-Augmented Stochastic Blockmodels”. arXiv: 1505.06538
- 2015d LX Hayden, R Chachra, AA Alemi, PH Ginparg, JP Sethna, “Canonical Sectors and Evolution of Firms in the US Stock Markets”. arXiv: 1503.06205. Submitted to PLoS one.
- 2015c AA Alemi, P Ginparg, “Text Segmentation Based on Semantic Word Embeddings”, arXiv: 1503.05543
- 2015b AA Alemi, M Bierbaum, CR Myers, JP Sethna, “The Statistical Mechanics of Zombies”, *Oral Presentation APS March Meeting 2015*
- 2015a AA Alemi, M Bierbaum, CR Myers, JP Sethna, “You Can Run, You Can Hide: The Epidemiology and Statistical Mechanics of Zombies”, arXiv: 1503.01104. Phys Rev E 92. 052801
- 2014b A Taloni, AA Alemi, E Ciusani, JP Sethna, S Zapperi, CAM La Porta, “Mechanical Properties of Growing Melanocytic Nevi and the Progression to Melanoma”, *PLoS one*, 9 (4), e94229
- 2014a A Alemi, R Chachra, P Ginparg, J Sethna, “Finding Structure in the ArXiv”, *Oral Presentations APS March Meeting 2014*
- 2013b MM Baraldi, AA Alemi, JP Sethna, S Caracciolo, C La Porta, S Zapperi, “Growth and Form of Melanoma Cell Colonies”, *Journal of Statistical Mechanics: Theory and Experiment*, 2013, 02, p02032
- 2013a PY Huang, S Kurasch, JS Alden, A Shekhawat, AA Alemi, PL McEuen, JP Sethna, UTE Kaiser, DA Muller, “Imaging Atomic Rearrangements in Two-Dimensional Silica Glass: Watching Silica’s

Dance”, *Science* 342, 6155 p224-227

2012 A Alemi, J Sethna, “A Group Theoretic Approach to Nonlinear and Gradient Elastic Terms for Graphene and Carbon Nanotubes”, *Oral Presentation, APS March Meeting* 57

2011 RS Ottens, V Quetschke, S Wise, AA Alemi, R Lundoc, G Mueller, DH Reitze, DB Tanner, BF Whiting, “Near-field radiative heat transfer between macroscopic planar surfaces”, *Physical Review Letters* 107 (1), 014301

2006 A Alemi, D Stevenson, “Why Venus has No Moon”, *Oral Presentation, AAS Meeting* 28, 491