Lucas Theis

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Education

2011 - 2015	**Neural Information Processing, PhD** (summa cum laude) *University of Tübingen, International Max Planck Research School* Title: *Advances in Probabilistic Modeling of Natural Images* Advisor: Matthias Bethge
2007 - 2010	**Cognitive Science, BSc** (final grade: 1.0) *University of Osnabrück* Title: *On Likelihood Estimation in Deep Belief Networks*

Employment and Internships

01/2020 - present	**Senior Research Scientist** *Google, Berlin*
06/2016 - 07/2019	**Senior Machine Learning Researcher** *Twitter Cortex, London*
01/2016 - 06/2016	**Machine Learning Researcher** *Magic Pony Technology, London*
07/2014 - 10/2014	**Internship** *Creative Technologies Lab, Adobe Systems, San Francisco* Supervisor: Matthew Hoffman
05/2010 - 04/2011 08/2008 - 09/2008 02/2008 - 03/2008	**Internship** *Max Planck Institute for Biological Cybernetics, Tübingen* Host: Matthias Bethge
08/2009 - 12/2009	**Internship** *Vision, Dynamics and Learning Lab, Johns Hopkins University, Baltimore* Host: René Vidal

Publications

I. Korshunova, H. Xiong, M. Fedoryszak, and L. Theis
Discriminative Topic Modeling with Logistic LDA
Advances in Neural Information Processing Systems 33, 2019 (PDF)

T. Nguyen-Phuoc, C. Li, L. Theis, C. Richardt, and Y.-L. Yang
HoloGAN: Unsupervised learning of 3D representations from natural images
International Conference on Computer Vision, 2019 (PDF)

L. Theis, I. Korshunova, A. Tejani, and F. Huszár
Faster gaze prediction with dense networks and Fisher pruning
arXiv:1801.05787, 2018 (PDF, Blog)

K. Storrs, S. V. Leuven, S. Kojder, L. Theis, and F. Huszár
Adaptive Paired-Comparison Method for Subjective Video Quality Assessment on Mobile Devices
Picture Coding Symposium, 2018 (PDF, Blog)

C. Ledig, L. Theis, F. Huszár, J. Caballero, A. Aitken, A. Tejani, et al.
Photo-Realistic Single Image Super-Resolution Using a Generative Adversarial Network
Computer Vision and Pattern Recognition, 2017 (PDF)

L. Theis, W. Shi, A. Cunningham, and F. Huszár
Lossy Image Compression with Compressive Autoencoders
International Conference on Learning Representations, 2017 (PDF, Poster, Article)

I. Korshunova, W. Shi, J. Dambre, and L. Theis
Fast Face-swap Using Convolutional Neural Networks
International Conference on Computer Vision, 2017 (PDF)

C. Sønderby, J. Caballero, L. Theis, W. Shi, and F. Huszár
Amortised MAP Inference for Image Super-resolution
International Conference on Learning Representations, 2017 (PDF)

L. Theis, A. van den Oord, and M. Bethge
A note on the evaluation of generative models
International Conference on Learning Representations, 2016 (PDF)

L. Theis, P. Berens, E. Froudarakis, J. Reimer, M. Roman-Roson, T. Baden, T. Euler, A. S. Tolias, *et al.*
Benchmarking spike rate inference in population calcium imaging
Neuron, 2016 (PDF)

L. Theis and M. Bethge
Generative Image Modeling Using Spatial LSTMs
Advances in Neural Information Processing Systems 25, 2015 (PDF)

L. Theis and M. D. Hoffman
A trust-region method for stochatic variational inference with applications to streaming data
International Conference on Machine Learning, 2015 (PDF)

M. Kümmerer, L. Theis, and M. Bethge
Deep Gaze I: Boosting Saliency Prediction with Feature Maps Trained on ImageNet
ICLR workshop, 2015 (PDF)

S. Sra, R. Hosseini, L. Theis, and M. Bethge
Statistical inference with the elliptical gamma distribution
Artificial Intelligence and Statistics, 2015

H. Gerhard, L. Theis, and M. Bethge
Modeling Natural Image Statistics
Biologically-inspired Computer Vision, Wiley VCH, 2015 (PDF)

A. Chagas, L. Theis, B. Sengupta, M. Stüttgen, M. Bethge, and C. Schwarz
Functional analysis of ultra high information rates conveyed by rat vibrissal primary afferents
Frontiers in Neural Circuits, 2013 (PDF)

L. Theis, A. M. Chagas, D. Arnstein, C. Schwarz, and M. Bethge
Beyond GLMs: A Generative Mixture Modeling Approach to Neural System Identification
PLoS Computational Biology, 2013 (PDF)

L. Theis, J. Sohl-Dickstein, M. Bethge
Training sparse natural image models with a fast Gibbs sampler of an extended state space
Advances in Neural Information Processing Systems 25, 2012 (PDF, Poster)

L. Theis, R. Hosseini, M. Bethge
Mixtures of conditional Gaussian scale mixtures applied to multiscale image representations
PLoS ONE, 2012 (PDF, Poster)

L. Theis, S. Gerwinn, F. Sinz, and M. Bethge

In All Likelihood, Deep Belief Is Not Enough
Journal of Machine Learning Research, 2011 (PDF)

Patents

Z. Wang, R. D. Bishop, F. Huszár, and L. Theis
Training end-to-end video processes
US Patent App. 15/707,294, 2018

W. Shi, C. Ledig, Z. Wang, L. Theis, and F. Huszár
Super-resolution using a generative adversarial network
US Patent App. 15/856,759, 2018

L. Theis, Z. Wang, and R. D. Bishop
Multiscale 3D texture synthesis
US Patent App. 15/856,759, 2018

Z. Wang, R. D. Bishop, L. Theis
Super resolution using fidelity transfer
US Patent App. 15/856,895, 2018

Talks

04/2018	**Evaluating Generative Models**	
	DeepMind CSML Seminar Series, UCL, London	
10/2017	**Evaluating Generative Models**	
	ICCV Tutorial on GANs, Venice	
08/2017	**Compressing Images with Neural Networks**	
	Creative AI meetup, London	
05/2016	**A note on the evaluation of generative models**	
	International Conference on Learning Representations	
	San Juan, Puerto Rico	
09/2014	**Nonlinear approaches to neural system identification**	
	Workshop on "Statistical Challenges in Neuroscience"	
	University of Warwick, Coventry	
09/2013	**Beyond GLMs: A Generative Mixture Modeling Approach to Neural System Identification**	
	Workshop on "Recent Advances in Neural Response Modeling"	
	Bernstein Conference 2013, Tübingen	
08/2012	**Hierarchical models of natural images**	
	Stanford University	
	Host: Surya Ganguli	
07/2012	**Hierarchical models of natural images**	
	Redwood Center for Theoretical Neuroscience, Berkeley	
	Host: Bruno Olshausen	

Workshops Organized

6/2020	Workshop and Challenge on Learned Image Compression (CLIC2020) *Computer Vision and Pattern Recognition, Long Beach*
6/2019	Workshop and Challenge on Learned Image Compression (CLIC2019) *Computer Vision and Pattern Recognition, Long Beach*
6/2018	Workshop and Challenge on Learned Image Compression (CLIC2018) *Computer Vision and Pattern Recognition, Salt Lake City*
4/2018	Goals and Principles of Representation Learning *Data, Learning, and Inference (DALI), Lanzarote*

Teaching

10/2013 - 01/2014	Lecturer, "Essential Mathematics" *University of Tübingen, International Max Planck Research School*
10/2012 - 01/2013	Lecturer, "Essential Mathematics" *University of Tübingen, International Max Planck Research School*
04/2009 - 07/2009	Teaching assistant, "Perception and Action" *University of Osnabrück, Lecturer: Prof. Dr. Frank Pasemann*
11/2008 - 02/2009	Tutor, "Introduction to Logic" *University of Osnabrück, Lecturer: Prof. Dr. Sven Walter*

Scholarships

2009	RISE scholarship for a research project at the Johns Hopkins University issued by the German Academic Exchange Foundation (DAAD)
2011	DFG stipend within the "Fast-Track" doctoral program at the Werner Reichardt Centre for Integrative Neuroscience Tübingen