THOMAS MINKA

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EDUCATION

Massachusetts Institute of Technology	SB	Elec.Eng.&Comp.Sci.	1994
Massachusetts Institute of Technology	MEng	Elec.Eng.&Comp.Sci.	1996
Massachusetts Institute of Technology	PhD	Elec.Eng.&Comp.Sci.	2001

EXPERIENCE

Microsoft Research Ltd, 2004—present
Researcher in Machine Learning and Perception.

Carnegie Mellon University, 2001–2003
Visiting Assistant Professor (Statistics Dept.) and Affiliated faculty (Center for Automated Learning and Discovery).

MIT Media Lab, 1994–2000
Research Assistant. Image database retrieval and Bayesian machine learning.

Justsystem Pittsburgh Research Center, 1999
Summer Intern. Statistical document modeling.

Xerox PARC, 1998
Summer Intern. Document image parsing.

NEC Research Institute, 1997
Summer Intern. Image database retrieval.

Interval Research Corporation, 1996
Visiting Researcher. Machine learning.

MIT Media Lab, 1993
Graphics programmer. Reaction-diffusion on a Connection Machine.

MIT Ocean Engineering, 1992
Graphics programmer. Animations of 3-D oceanographic data.

COURSES TAUGHT

CMU	Data Mining	2001–2003
CMU	Statistical Graphics and Visualization	2002–2003
CMU	Statistical Approaches to Learning and Discovery	2001
MIT	Pattern Recognition	1998

DOCTORAL DISSERTATION

"A family of algorithms for approximate Bayesian inference." (2001)
Supervised by Rosalind Picard (MIT Media Lab, Associate Professor).

PUBLICATIONS

1. "Structured Region Graphs: Morphing EP into GBP." M. Welling, T. Minka, Y.W. Teh.

In *Proceedings of the 21st Annual Conference on Uncertainty in Artificial Intelligence* (2005).

2. "Diagram Structure Recognition by Bayesian Conditional Random Fields." Y. Qi, M. Szummer, T. Minka. In *Proceedings of the IEEE International Conference on Computer Vision and Pattern Recognition* (2005).

3. "Bayesian Conditional Random Fields." Y. Qi, M. Szummer, T. Minka. In *Proceedings of the Tenth International Workshop on Artificial Intelligence and Statistics* (2005).

4. "Predictive Automatic Relevance Determination by Expectation Propagation." Y. Qi, T. Minka, R. Picard, and Z. Ghahramani. In *Proceedings of the Twenty-first International Conference on Machine Learning* (2004).

5. "Tree-structured Approximations by Expectation Propagation." T. Minka and Y. Qi. In *Advances in Neural Information Processing Systems 16* (2003).

6. "Bayesian Color Constancy with Non-Gaussian Models." C. Rosenberg, T. Minka, A. Ladsariya. In *Advances in Neural Information Processing Systems 16* (2003).

7. "Computing with the COM-Poisson distribution." T. Minka, G. Shmueli, J. Kadane, S. Borle, and P. Boatwright. CMU Statistics Department Technical Report 776 (2003).

8. "Expectation Propagation for Signal Detection in Flat-fading Channels." Y. Qi and T. Minka. In *Proceedings of IEEE International Symposium on Information Theory* (2003).

9. "Hessian-based Markov Chain Monte-Carlo Algorthms." Y. Qi and T. Minka. First Cape Cod Workshop on Monte Carlo Methods (2002).

10. "Novelty and Redundancy Detection in Adaptive Filtering." Y. Zhang, J. Callan, and T. Minka. In *Proceedings of the 25th Annual International ACM SIGIR Conference on Research and Development in Information Retrieval* (2002). (Best Paper Award)

11. "Bayesian Spectrum Estimation of Unevenly Sampled Nonstationary Data." Y. Qi, T. Minka, and R. Picard. In *Proceedings of the 27th International Conference on Acoustics, Speech, and Signal Processing* (2001).

12. "Expectation-Propagation for the Generative Aspect Model." T. Minka and J. Lafferty. In *Proceedings of the 18th Annual Conference on Uncertainty in Artificial Intelligence* (2002).

13. "Expectation Propagation for approximate Bayesian inference." T. Minka. In *Proceedings of the 17th Annual Conference on Uncertainty in Artificial Intelligence* (2001).

14. "Automatic choice of dimensionality for PCA." T. Minka. In *Advances in Neural Information Processing Systems 13* (2000).

15. "Document image decoding using iterated complete path search." T. Minka, D. Bloomberg, and K. Popat. In *Document Recognition and Retrieval VIII*, Photonics West (2001).

16. "The Bayesian Image Retrieval System, PicHunter: Theory, Implementation, and Psychophysical Experiments." I. Cox, M. Miller, T. Minka, T. Papathomas, and P. Yianilos. IEEE Transactions on Image Processing, Special Issue on Image and Video Processing for Digitial Libraries, 9(1):20–37 (2000).

17. "An Optimized Interaction Strategy for Bayesian Relevance Feedback." I. Cox, M. Miller, T. Minka, P. Yianilos. In *Proceedings of IEEE Conference on Computer Vision and Pattern Recognition* (1998).

18. "Interactive Learning using a 'Society of Models'." T. Minka and R. Picard. *Pattern Recognition* 30(4):565-581 (1997). (The Pattern Recognition Society awarded it Best Paper of 1997.)

19. "Vision Texture for Annotation." R. Picard and T. Minka. *ACM/Springer Journal of Multimedia Systems* 3(1): 3–14 (1995).

Online courses and tutorials:

- Tutorials on Bayesian inference
  `http://www.research.microsoft.com/~minka/papers/`
- Statistical Learning/Pattern Recognition Glossary
  `http://www.research.microsoft.com/~minka/statlearn/glossary/`
- Software Patterns
  `http://www.stat.cmu.edu/~minka/patterns/`
- Programming Language Exploration
  `http://www.stat.cmu.edu/~minka/PLE/`

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