

Curriculum Vitae - Dilip Krishnan

Education

June 2008 – Present: PhD Candidate, Computer Science Department, Courant Institute of Mathematical Sciences, New York University, New York. Advisor: Rob Fergus. Current GPA: 4.0/4.0.

July 2005 - September 2007: Master of Science in Mathematics from National University of Singapore.

- Masters' thesis in the area of Image deconvolution. Techniques involved: convex analysis, numerical analysis and numerical linear algebra.
- Coursework included graduate level courses in analysis, algebra and differential equations.
- GPA 3.7/4.0.

July 2002– December 2004: Graduate Diploma in Mathematics from National University of Singapore.

- Graduate level course in mathematics. I took a number of courses in analysis, complex analysis, linear algebra and numerical analysis.
- GPA 3.9/4.0.

July 1994 – December 1997: Bachelor of Applied Science (Computer Engineering).

- Graduated with First Class Honours.
- Final-year thesis won the Sony Prize for most creative project.
- GPA 3.5/4.0.

Publications

- D. Krishnan, R. Szeliski, *Multigrid and Multilevel Preconditioners for Computational Photography*, To appear in SIGGRAPH Asia 2011.
- D. Krishnan, T. Tay, R. Fergus. *Blind Deconvolution using a Normalized Sparsity Measure*. Computer Vision and Pattern Recognition 2011.
- M. Zeiler, D. Krishnan, G. Taylor, R. Fergus. *Deconvolutional Networks*, Computer Vision and Pattern Recognition 2010.
- D. Krishnan, R. Fergus, *Analytic Hyper-Laplacian Priors for Fast Image Deconvolution*, Neural Information Processing Systems (NIPS), December 2009.
- D. Krishnan, R. Fergus, *Dark Flash Photography*. Proceedings of ACM SIGGRAPH August 2009.
- D. Krishnan, Q. V. Pham and A. M. Yip, *A Primal-dual Active-Set Algorithm for Bilaterally Constrained Total Variation Deblurring and Piecewise Constant Mumford-Shah Segmentation Problems*. Advances in Computational Mathematics, September 2008, doi 10.1007/s10444-008-9101-8.
- D. Krishnan, P. Lin and A. M. Yip, *A Primal-dual Active-set Method for Non-negativity Constrained Total Variation Deblurring Problems*, IEEE Trans. Image Processing, November 2007, pp. 2766-2777.
- D. Krishnan, P. Lin and X. C. Tai, *An Efficient Operator-Splitting Method for Noise Removal in Images*, Commun. Comput. Phys., 1 (2006), pp. 847-858.
- Showbhik Kalra, Dilip Krishnan and M. N. Chong, *An MRF Model Based Scheme for Accurate Detection and Adaptive Interpolation of Missing Data in Image Sequences*, Proceedings of ICIP 1999.

- Dilip Krishnan, M. N. Chong and Showbhik Kalra, *On the Computational Aspects of Gibbs-Markov Random Fields Modelling of Missing Data in Image Sequences*, IEEE Transactions on Image Processing, August 1999, pp 1139-1142.
- M. N. Chong, Dilip Krishnan, *An Edge-Preserving MRF Model for the Detection of Noise in Image Sequences*, IEEE Signal Processing Letters, April 1998, pp. 81-84.

Awards and Achievements

- 2010: Microsoft Research PhD Fellowship (2010-2011).
- 1998: Sony Prize for most creative final-year project.
- 1996: Part of 3-member Nanyang Technological University team which won the 1996 Texas Instruments Worldwide DSP Solutions Challenge. This was a university-level technical contest, and over 200 teams from universities worldwide took part. The challenge was to develop interesting applications for any of TI's family of DSP processors. Our team developed a set of motion picture restoration algorithms in a distributed multi-processor environment.
- 1994–1997: Undergraduate study at Nanyang Technological University sponsored by the SIA/NOL undergraduate scholarship scheme.
- 1994: Offered admission to the prestigious Indian Institutes of Technology (IIT). Secured rank 569 out of 100,000 students giving the entrance examinations to the IITs.
- 1993: Awarded National Talent Search Examination (NTSE) Scholarship by the Government of India to support high school and university studies.

Talks

- Invited Talk - Fast Image Deconvolution Using Hyper Laplacian Priors. *Group Meeting of Fredo Durand's graphics group, MIT (CSAIL), October 22, 2010.*
- Invited Talk - Dark Flash Photography and Fast Image Deconvolution Using Hyper Laplacian Priors. *Rick Szeliski's Interactive Visual Media Group, Microsoft Research, Seattle, December 3, 2009.*
- Dark Flash Photography. *SIGGRAPH 2009, New Orleans, August 7, 2009.*
- Dark Flash Photography. *Group meeting of Laboratory for Computational Vision, NYU, May 28, 2009.*
- Dark Flash Photography. *Group meeting of Professor Bill Freeman's Vision Group, MIT, May 19, 2009.*
- Dark Flash Photography. *Graphics Seminar, NYU, May 8, 2009.*

Professional Activities

- Reviewer for IEEE Transactions Pattern Analysis and Machine Intelligence.
- Reviewer for SIGGRAPH (ACM Transactions on Graphics).
- Reviewer for JVCIP (Journal for Visual Comm. and Image Representation).

Programming Languages

- C/C++, Matlab, NVIDIA CUDA, PHP/MySQL.

Work Experience

April 2010 – Present

- Technical Advisor: www.aniika.com

January 2007 – April 2008

Manager, Algorithms R&D, da Vinci Systems, Florida, USA (Now Black Magic Designs).

- Manager of the team that developed image processing algorithms on the NVIDIA G80 GPU (Graphics Processing Unit) platform. This was a critical project for our company's transition from custom hardware-based processing to GPU-based processing.
- Developed and optimized image and video processing algorithms for the G80 platform.

August 2005 – December 2006

Director and Consultant, da Vinci Technologies, Singapore.

- Project management and development, image processing algorithm research and development, software releases, code management (CVS), interaction with customers and product managers, and setting roadmaps for product lines.

April 2000 – August 2005

Engineering Manager and Director, da Vinci Technologies, Singapore.

- Manager of a team of software development engineers, working on da Vinci's Revival and Resolve line of products for the post-production and broadcast television industries.
- Research and development into video processing algorithms for digital restoration, digital color processing, image formatting and other types of image processing.
- Other responsibilities included leadership, software product development and management, personnel management, recruitment, annual reviews, product roadmap planning, interaction with customers, vendors, sales people, da Vinci management and annual budgeting. In short, all activities associated with running the Singapore office for the company were my responsibility.
- Execution of IDS development grant from the Economic Development Board of Singapore (2002-2004), worth S\$350,000.

September 1999 – April 2000

Chief Technology Officer and Co-Founder, Nirvana Digital, Singapore.

- Nirvana Digital was spun off from Singapore's Nanyang Technological University in June 1999, based on research performed by a team of 3 people including myself. Intellectual property was in the form of automated algorithms for digital film processing.
- In April 2000, Nirvana Digital was acquired by da Vinci Systems of Coral Springs, Florida, USA, and re-named da Vinci Technologies.

February 1998-September 1999:

Research Engineer, Centre for Signal Processing, Nanyang Technological University, Singapore.

- Responsible for technology development leading to spin-off company, Nirvana Digital. This was an "incubation period" during which time we moved the product from a concept phase to an actual working prototype.