

David Chen

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Education

Ph.D. Candidate, Electrical Engineering

Stanford University

Advisor: Prof. Bernd Girod

Topic: Mobile Image Search

Stanford, CA

April 2008 –

Present

M.S., Electrical Engineering

Stanford University

Emphasis: Image Systems

GPA: 4.02/4.00

Stanford, CA

September 2006 –

March 2008

B.S., Electrical Engineering

Stanford University

Degree Honors: With Distinction

Emphasis: Signal Processing

GPA: 3.92/4.00

Stanford, CA

September 2003 –

December 2006

Work Experience

Research Assistant

Image, Video, and Multimedia Systems Group

Dept. Electrical Engineering, Stanford University

- Developed real-time image recognition of CD/DVD/book covers on mobile phones.
- Invented state-of-the-art compressed image/video retrieval techniques.
- Developed system for low-complexity distributed video coding.

Stanford, CA

September 2007 –

Present

Image Processing Engineer

3DGeo Development Inc.

- Developed high-performance viewer for seismic images.
- Achieved fast multi-resolution volume rendering of large seismic images.

Santa Clara, CA

Summer 2007

Image Processing Engineer

Stanford Exploration Project

Dept. Geophysics, Stanford University

- Created new data fusion algorithms for merging high- and low-frequency images.
- Developed new algorithm for projecting paths in seismic volumes.

Stanford, CA

Summer 2006

Research Assistant

Space, Telecommunications, and Radio Science Laboratory

Dept. Electrical Engineering, Stanford University

- Developed pattern recognition algorithms for locating echoes in plasmagrams.
- Successfully applied algorithms to NASA satellite data.

Stanford, CA

Summer 2005

Research Assistant

Stanford Linear Accelerator Center

- Developed statistical models for the behavior of large ensembles of particles.
- Created simulations of particle bombardment on sensitive detector equipment.

Menlo Park, CA

Summer 2004

Summer 2003

Publications

Journals

- D. Varodayan, **D. M. Chen**, M. Flierl, and B. Girod, “Wyner-Ziv coding of video with unsupervised motion vector learning,” *Signal Processing: Image Communication*, Vol. 23, No. 5, June 2008.
- D. Carpenter, T. Bell, **D. M. Chen**, D. Ng, C. Baran, B. Reinisch, and I. Galkin, “Proton cyclotron echoes and a new resonance observed by the RPI instrument on the IMAGE satellite,” *Journal of Geophysical Research*, Vol. 112, August 2007.

Conferences

- **D. M. Chen**, S. S. Tsai, R. Vedantham, R. Grzeszczuk, and B. Girod, “Streaming mobile augmented reality on mobile phones,” *International Symposium on Mixed and Augmented Reality*, October 2009.
- S. S. Tsai, **D. M. Chen**, G. Takacs, V. Chandrasekhar, J. Singh, and B. Girod, “Location coding for mobile image retrieval,” *International Mobile Multimedia Communications Conference*, September 2009.
- V. Chandrasekhar, **D. M. Chen**, Z. Li, G. Takacs, S. S. Tsai, R. Grzeszczuk, and B. Girod, “Low-rate image retrieval with tree histogram coding,” *International Mobile Multimedia Communications Conference*, September 2009.
- V. Chandrasekhar, G. Takacs, **D. M. Chen**, S. S. Tsai, R. Grzeszczuk, and B. Girod, “CHoG: compressed histogram of gradients,” *IEEE International Conference on Computer Vision and Pattern Recognition*, June 2009.
- S. S. Tsai, **D. M. Chen**, J. Singh, and B. Girod, “Image-based retrieval with a camera-phone,” technical demo, *IEEE International Conference on Acoustics, Speech, and Signal Processing*, April 2009.
- M. Makar, C.-L. Chang, **D. M. Chen**, S. S. Tsai, and B. Girod, “Compression of image patches for local feature extraction,” *IEEE International Conference on Acoustics, Speech, and Signal Processing*, April 2009.
- **D. M. Chen**, S. S. Tsai, V. Chandrasekhar, G. Takacs, J. Singh, and B. Girod, “Tree histogram coding for mobile image matching,” *IEEE Data Compression Conference*, March 2009.
- **D. M. Chen**, S. S. Tsai, V. Chandrasekhar, G. Takacs, J. Singh, and B. Girod, “Robust image retrieval using multiview scalable vocabulary trees,” *SPIE Visual Communications and Image Processing*, January 2009.
- V. Chandrasekhar, G. Takacs, **D. M. Chen**, S. S. Tsai, J. Singh, and B. Girod, “Transform coding of image feature descriptors,” *SPIE Visual Communications and Image Processing*, January 2009.
- S. S. Tsai, **D. M. Chen**, J. Singh, and B. Girod, “Rate-efficient, real-time CD cover recognition on a camera-phone,” technical demo, *ACM Multimedia*, October 2008.
- D. Varodayan, **D. M. Chen**, and B. Girod, “Network image coding for multicast,” *IEEE International Workshop on Multimedia Signal Processing*, October 2008.
- **D. M. Chen**, V. Chandrasekhar, G. Takacs, J. Singh, and B. Girod, “Color restoration for objects of interest using robust image features,” *IEEE International Workshop on Multimedia Signal Processing*, October 2008.
- **D. M. Chen**, D. Varodayan, M. Flierl, and B. Girod, “Wyner-Ziv coding of multiview images with unsupervised learning of disparity and Gray code,” *IEEE International Conference on Image Processing*, October 2008.
- **D. M. Chen**, D. Varodayan, M. Flierl, and B. Girod, “Wyner-Ziv coding of multiview images with unsupervised learning of two disparities,” *IEEE International Conference on Multimedia and Expo*, June 2008.
- **D. M. Chen**, D. Varodayan, M. Flierl, and B. Girod, “Distributed stereo image coding with improved disparity and noise estimation,” *IEEE International Conference on Acoustics, Speech, and Signal Processing*, March 2008.
- **D. M. Chen** and C. Musat, “Vis3D: a new data viewer with fast volume rendering,” *American Geophysical Union Annual Conference*, December 2007.
- A. Mavlankar, **D. M. Chen**, S. Zakhary, M. Flierl, and B. Girod, “Noise processing for simple Laplacian pyramid synthesis based on dual frame reconstruction,” *Picture Coding Symposium*, November 2007.
- **D. M. Chen**, R. Clapp, and B. Biondi, “Data-fusion of volumes, visualization of paths, and revision of viewing sequences in Ricksep,” *American Geophysical Union Annual Conference*, December 2006.
- **D. M. Chen**, A. Chang, D. Bates, M. Pivi, and T. Raubenheimer, “Single-bunch electron cloud effects in the GLC/NLC US-Cold and Tesla low emittance transport lines,” *European Particle Accelerator Conference*, July 2004.

Service as Peer Reviewer

ACM Multimedia: 2009

IEEE International Conference on Communications: 2009

IEEE Communication Letters: 2008, 2009

IEEE Transactions on Multimedia: 2008

Course Work

Image Processing and Image Systems

Image Communication I (Images), Image Communication II (Video), Digital Image Processing, Medical Imaging I (X-ray), Medical Imaging II (MRI and Ultrasound), Fourier Optics, Computer Graphics, Applied Vision.

Signal Processing

Linear Dynamical Systems, Statistical Signal Processing I, Statistical Signal Processing II, Feedback Control, Digital Filtering, Fourier Analysis, Information Theory I, Information Theory II, Dynamic Programming, Machine Learning, Adaptive Signal Processing, Quantization Noise.

Software Skills

Programming experience includes C/C++, Java, Symbian C, Qt, OpenGL, Python, MATLAB.

Familiar with Windows, Unix, Linux.

Awards

Best Project Award, EE 398B Image Communication, Stanford University, Spring 2007

Best Project Award, EE 133, Analog Communications Design Lab, Stanford University, Winter 2006

KLA-Tencor Scholarship Recipient, 2003 - 2007

California Byrd Scholarship Recipient, 2003 - 2007

State Winner, US Institute of Peace Essay Contest, 2002

Regional Winner, Native Sons of the Golden West Public Speaking Contest, 2001