Curriculum Vitae

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John "Ernie" Esser

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Education

UCLA, Los Angeles, California

- Ph.D. Mathematics, 2010
- M.A. Mathematics, 2004

University of Washington, Seattle, Washington

- B.S. Mathematics with College Honors, 2003
- B.S. Applied and Computational Mathematical Sciences (ACMS), 2003
- B.A. Italian, 2003
- Minor: Physics, 2003

Research Interests

Convex Optimization, Inverse Problems, Image Processing, Sparse Approximation

Papers

- Ernie Esser, Yifei Lou and Jack Xin, *A Method for Finding Structured Sparse Solutions to Non-negative Least Squares Problems with Applications*, December 2012
- Ernie Esser, Michael Möller, Stanley Osher, Guillermo Sapiro and Jack Xin, *A convex model for non-negative matrix factorization and dimensionality reduction on physical space*, IEEE Transactions on Image Processing, Vol. 21, No. 7, 2012
- Ernie Esser, *A Convex Model for Image Registration*, January 2010
- Ernie Esser, Xiaoqun Zhang and Tony F. Chan, *A General Framework for a Class of First Order Primal-Dual Algorithms for Convex Optimization in Imaging Science*, SIIMS Vol. 3, No. 4, 2010
- Ernie Esser, *Applications of Lagrangian-Based Alternating Direction Methods and Connections to Split Bregman*, April 2009

Conferences

- DTRA/NSF Algorithm Workshop, San Diego, November 2012
- SIAM Conference on Imaging Science, Philadelphia, May 2012
- MAIPCV Winter School, Tohoku University, November 2011
- ICIAM, Vancouver, July 2011
- DTRA/NSF Algorithm Workshop, Boston, June 2011
- Park City Mathematics Institute, Summer 2010
- DTRA/NSF Algorithm Workshop, Chapel Hill, June 2010
- SIAM Conference on Imaging Science, Chicago, April 2010
- SIAM Annual Meeting, San Diego, July 2008
- Stanford 50, March 2007
- SIAM 50th Anniversary and Annual Meeting, Philadelphia, July 2002

Presentations

- *A Primal Dual Method for Solving a Convex Model for DOAS Analysis*, SIAM Conference on Imaging Science, Philadelphia, May 2012
- *Primal Dual Algorithms for Convex Optimization in Imaging Science*, Tohoku University, MAIPCV Winter School, November 2011
- *A convex model for non-negative matrix factorization and dimensionality reduction on physical space*, UCI AI/ML Seminar, October 2011, and University of Tokyo, November 2011
- *Primal Dual Methods in Imaging Science*, ICIAM, July 2011
- *A General Framework for a Class of First Order Primal Dual Algorithms for Convex Optimization in Imaging Science*, Georgia Tech Applied and Computational Mathematics Seminar, November 2010
- *A Convex Model for Image Registration*, PCMI, Summer 2010
- *A General Framework for a Class of First Order Primal-Dual Algorithms for TV Minimization*, SIAM Conference on Imaging Science, Chicago, April 2010
- *An Explicit Primal-Dual Algorithm for Large Non-Differentiable Convex Problems, SIAM Conference on Imaging Science*, SIAM Conference on Imaging Science, Chicago, April 2010

- *Primal Dual Algorithms for Convex Models and Applications to Image Restoration, Registration and Nonlocal Inpainting*, UCLA, Math 290J Seminar: Mathematical models for image processing and medical imaging, February 2010
- *A General Framework for a Class of Primal-Dual Algorithms for TV Minimization*, UCI, CAM Seminar, September 2009
- *What Makes Boomerangs Come Back?*, Summer Institute for Mathematics at the University of Washington, Summer 2007, 2008, and University of Washington, Mathday, 2003-2012

Teaching Experience

UCI

- Numerical differential equations lab, Spring 2011
- iCAMP teaching
  - Signal Processing, Fall 2010, Winter 2011
  - Image Processing, Winter 2011, Spring 2012
  - Summer research mentoring, 2011, 2012

UCLA

- Instructor for introductory linear algebra class, Spring 2008
- Taught math subject GRE prep course, Summer 2007
- Teaching assistant, Fall 2004 - Winter 2009
  - Integration and Infinite Series
  - Mathematical Modeling
  - Applied Numerical Methods
  - Mathematical Imaging
  - Introduction to Programming (C++)
  - Introduction to Programming for Internet

University of Washington

- Teaching assistant for Research Experience for Undergraduates (REU) program on discrete inverse problems, Summer 2002, 2003, 2005, 2006, 2008
- Teaching assistant for advanced calculus course, 2001-2003

Scholarships and Awards

- Graduate Research Mentorship, UCLA 2006-2007
- NSF VIGRE Fellowship 2003-2004
- Outstanding ACMS Graduate, University of Washington 2003
- Graduated Magna Cum Laude with GPA of 3.88 over 289 credits
- MAA award for outstanding paper in COMAP's Mathematical Contest in Modelling (MCM), joint with Jeff Giansiracusa and Simon Pai, 2003
- SIAM award for outstanding paper in MCM, joint with Jeff Giansiracusa and Ryan Card, 2002

Personal Information

- Born May 19, 1980, in Seattle, Washington
- Hobbies include soccer, badminton, trebuchets and boomerangs