

Curriculum Vitae: Triet Minh Le (10/13/2009)

CONTACT INFORMATION

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RESEARCH INTERESTS

Analysis of Images and High-Dimensional Data sets (Multi-scale Representations, Segmentation, Clustering, Local Scales of oscillatory patterns and on curves and surfaces). Non-linear PDE, Calculus of Variations, Function Spaces,

EDUCATION

University of California at Los Angeles (UCLA), California, USA.

- + Ph.D., Mathematics, June 2006.
 - Dissertation Topic: “Image segmentation and decomposition models in a variational approach”
 - Advisor: Prof. Luminita A. Vese, Department of Mathematics, UCLA.
- + M.A., Mathematics, June 2002.
- + B.S., Computer Science and Mathematics, June 2000.

EMPLOYMENT

- Associate Research Scientist, Dept. of Math., Yale University (07/2009 - 06/2010).
 - + Teaching two undergraduate courses a year.
 - + Advising freshmen undergraduates.
 - + Organizing Applied Analysis seminar.
- Gibbs Assistant Professor, Dept. of Math., Yale University (07/2006 - 06/2009).
 - + Teaching one graduate and two undergraduate semester courses a year.
 - + Advising freshman undergraduates.
- Visiting Research Assistant, Host: Jean-Michel Morel, Centre de Mathematiques et de Leurs Applications, Cachan, France (03/2006 - 06/2006).
- Faculty Mentor for Research in Industrial Projects for Students (RIPS), Institute for Pure and Applied Mathematics (IPAM), Los Angeles, California (07/2005 - 09/2005).
- Graduate Student Research Assistant, Los Alamos National Laboratory, Mathematical Modeling and Analysis, T-7 Division, (07/2004 - 09/2004 and 07/2003 - 09/2003).

GRANTS

- (PI). “Local Scales and Multi-Scale Image Decompositions”. NSF DMS 0809270, Computational Mathematics (07/2008 - 06/2011).
- (CO-PI with P. Jones). “Geometry and Scale Detection in Data Sets”. ONR N000140910108. (10/2008 - 09/2011).

PUBLICATIONS AND PREPRINTS

- J.B. Garnett, T.M. Le and L.A. Vese, *Some variational problems in image processing*. Preprint, October 2009.
- M. Barchiesi, S.H. Kang, T.M. Le, M. Morini and M. Ponsiglione, *A variational model for infinite perimeter segmentations based on Lipschitz level set functions: Denoising while keeping irregular oscillatory boundaries*, October 2009. Preprint. Submitted to SIAM: Multiscale Modeling and Simulation.
- Minh Ha-Quang, Sung Ha Kang and Triet M. Le, *Image and video colorization using reproducing kernel hilbert space*, UCLA CAM Report 09-46, May 2009. Submitted.
- P. Jones and T. Le, *Local Scales and Multiscale Image Decompositions*, Applied and Computational Harmonic Analysis, vol. 26, no. 3, pp. 371-394, 2009.

- J. Garnett, P. Jones, T. Le and L. Vese, *Modeling Oscillatory Components with the Homogeneous Spaces $BMO^{-\alpha}$ and $\dot{W}^{-\alpha,p}$* , UCLA CAM Report 07-21. (To appear in PAMQ).
- T. Le, L. Lieu, and L. Vese, *BV and the Dual of BV Image Decomposition Models and Minimization Algorithms*, J. of Mathematical Imaging and Vision, vol. 23, no. 2, pp. 135-148, 2009.
- J. Garnett, T. Le, Y. Meyer and L. Vese, *Image Decompositions Using Bounded Variation and Homogeneous Besov Spaces*, Applied and Computational Harmonic Analysis, vol. 23, no. 1, pp. 25-56, July 2007.
- T. Le and L. Vese, *Additive and Multiplicative Piecewise-Smooth Segmentation Models in a Functional Variational Approach*, Interpolation Theory and Applications, Contemporary Mathematics, vol. 445, pp. 207-224, 2007.
- T. Le, R. Chartrand, and T. Asaki, *A Variational Approach to Constructing Images Corrupted by Poisson Noise*, J. of Math. Imaging and Vision, vol. 27(3), pp. 257-263, April 2007.
- G. Chung, T. Le, L. H. Lieu, N. Tanushev, and L. Vese, *Computational methods for image restoration, image segmentation, and texture modeling*, Computational Imaging IV, edited by Charles A. Bouman, Eric L. Miller, Ilya Pollak, Proc. of SPIE-IS&T Electronic Imaging, SPIE Vol. 6065, pp. 60650J-1 – 60650J-15, 2006.
- T. Le and L. Vese, *Image Decomposition Using Total Variation and $\text{div}(BMO)$* , Multiscale Modeling and Simulation, SIAM Interdisciplinary Journal, vol. 4, no. 2, pp. 390-423, June 2005.

PROFESSIONAL
SERVICE

- Organizer: Local Scale: Theory and Applications, Mini-symposium for SIAM Imaging Science Conference 2010, April 12-14, 2010 in Chicago.
+ <http://www.siam.org/meetings/is10/>
- Co-Organizer: Applied Analysis Seminar, Department of Mathematics, Yale University, 2009-2010.
+ http://www.math.yale.edu/~tl292/seminar/applied_analysis_seminar.html
- Co-Organizer: Junior Trimester Program on Analysis: Calculus of Variation and Image Processing, Hausdorff Research Institute for Mathematics (HIM), Bonn, Germany (09/08 - 12/08).
+ Co-Organizers: M. Barchiesi, S.-H. Kang, T.M. Le, M. Morini, L. Mugnai, M. Ponsiglione.
+ Short term visitors include: A. Chambolle, R. March, M. Roger, H.-M. Zhou, among others.
+ <http://www.hausdorff-research-institute.uni-bonn.de/analysis/>
- Referee for:
+ Journal of Mathematical Imaging and Vision.
+ IEEE Transaction on Imaging Processing.
+ Journal of Pattern Recognition Society.

TEACHING
EXPERIENCE

- Dept. of Math., Yale University. Teaching Calculus (Math 115), Introduction to Analysis (Math 300 and Math 301), Linear Algebra and Matrix Theory (Math 225), Graduate Course on Image Analysis (Math 733). Fall 2006 - Spring 2009.
- Dept. of Math., UCLA. Conducting discussion sessions for undergraduate level Numerical Analysis (Math 151a), Computer Graphics (Math 149), and graduate level Numerical Analysis (Math 269b). Fall 2001 - Fall 2002.
- Program in Computing, Dept. of Math., UCLA. Conducting discussion sessions for C++ (Pic 10ab), Java (Pic 20a), Scheme and Lisp (Pic 15), and Cryptography (Pic 130). Fall 2000 - Spring 2001.

CONFERENCE AND
SEMINAR
PRESENTATIONS

- *Local Scales*, IMA Special Workshop: Research in Imaging Sciences. October 5-7, 2009. IMA, Minneapolis, Minnesota.

- *Modeling Oscillations and Automatic Scale Selection*, SIAM Conference on Imaging Science 2008, mini-symposium on Variational and PDE-based Methods in Image Processing, San Diego, CA, (07/07/2008 - 07/09/2008).
- *Local Scales*, AMS-SBM Joint Meeting, IMPA, Rio De Janeiro, Brazil, (June 4 - 7, 2008).
- *Local Scales and Multiscale Image Decomposition*, Multiscale Geometry and Analysis in High Dimensions Program (MGA) Reunion Conference, Lake Arrowhead, (06/10/2007 - 06/15/2007).
- *Image decomposition using bounded variation and homogeneous Besov spaces*, SIAM Conference on Imaging Science 2006, the mini-symposium on Variational and PDE based methods in Image Decomposition, Minneapolis, MN, (05/15/2006 - 05/17/2006).
- *Modeling oscillatory components with $\text{div}(BMO)$ and Homogeneous Besov spaces*, Department of Mathematics, UCLA, (10/31/2005).
- *Image decomposition using bounded variation and homogeneous Besov spaces*, AMS Sectional Meetings, Special Session on Mathematical Methods for the Analysis of Images and High-Dimensional Data, Annandale-on-Hudson, NY (10/08/2005 - 10/09/2005).
- *Image decomposition using total variation and $\text{div}(BMO)$* , AMS Sectional Meetings, Special Session on PDE-Based Methods in Imaging and Vision, Pittsburgh, PA. (11/06/2004 - 11/07/2004).
- *Image decomposition using total variation and $\text{div}(BMO)$* , AMS National Joint Mathematics Meetings, Special Session on Nonsmooth Analysis in Variational and Imaging Problems, Atlanta, GA (01/05/2005 - 01/08/2005).
- *Texture decomposition using $\text{div}(BMO)$ and $SL(1)$* , MGA Culminating Conference at Lake Arrowhead (12/12/2004 - 12/17/2004).

PROGRAMS AND
WORKSHOPS
ATTENDED

- Hot Topics Workshop: Multi-Manifold Data Modeling and Applications, IMA, Minneapolis, MN (10/27/2008 - 10/30/2008).
- 2007 Von Neumann Symposium: Sparse Representation and High-Dimensional Geometry, Snowbird, Utah (07/08/2007 - 07/12/2007).
- Random Shape Workshop IV, Image Processing for Random Shapes: Applications to Brain Mapping, Geophysics and Astrophysics, IPAM (05/21/2007 - 05/23/2007).
- Emphasis Week on Visual Recognition in the program on Mathematical, Computational and Statistical Aspects of Image Analysis, MSRI, Berkeley, CA, (03/21/2005 - 03/25/2005).
- Emphasis Week on Perceptual Organization in the program on Mathematical, Computational and Statistical Aspects of Image Analysis, MSRI, Berkeley, CA, (04/18/2005 - 04/22/2005).
- Multiscale Geometry and Analysis in High Dimensions (MGA) Program, IPAM, (09/17/04 - 12/17/04).

AWARDS AND
FELLOWSHIPS

- Dissertation Year Fellowship, Dept. of Math., UCLA (09/2005 - 06/2006).
- Research Fellow at IPAM, Multiscale Geometry and Analysis in High Dimensions Program (MGA) (09/2004 - 12/2004).
- Research Assistant Fellowship, Dept. of Math., UCLA (09/2002 - 06/2005).
- Teaching Assistant Fellowship, Dept. of Math., UCLA (09/2000 - 06/2002).
- Sherwood award for excellence undergraduate study. Dept. of Math., UCLA (06/2000).

REFEREES

1. John B. Garnett. Dept. of Math., UCLA. jbg@math.ucla.edu, (301) 825-3498.
2. Peter W. Jones. Dept. of Math., Yale. jones@math.yale.edu, (203) 288-3694.
3. Yves Meyer. CMLA, Cachan, France. yves.meyer@cmla.ens-cachan.fr. (33)-1-47-40-59-07.
4. Jean-Michel Morel. CMLA, Cachan, France. morel@cmla.ens-cachan.fr.
5. Luminita A. Vese. Dept. of Math., UCLA. lvese@math.ucla.edu. (310) 825-4201.
6. Kevin Vixie. Dept. of Math., Washington State University. vixie@speakeasy.net. (310) 740-2835.
7. Roger Howe (Teaching), Dept. of Math., Yale. howe@math.yale.edu, (203)432-4686.