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Objective

To do applied or pure research in the field of image analysis, where I can apply my technical knowledge and creative abilities.

Work Experience

- **Mayachitra, Inc.** Santa Barbara, USA
Research Staff Member *October 2006 - now*
 - Basic research and development of software tools for image registration, mosaicking and content-based retrieval.
 - Transition of state of the art image analysis technology in real life scenarios (security, defense, surveillance, medical).
 - SBIR (Small Business Innovation Research) proposal writing.
 - Transitioned successfully to Phase II in all the projects where I was the principal investigator.
- **Mitsubishi Electric ITE-VIL** Guildford, UK
Internship *Winter 2005*
 - Research concerning motion segmentation.
- **FriulROBOT S.r.l.** Udine, Italy
Internship *Summer 2000*
 - Designed and implemented a calibration algorithm for a robotic arm used to acquire high precision 3D measurements.
- **Reviewer**
Reviewed papers for both conference and journals
 - Conferences: CVPR, ICIP, Siggraph, SPCOM
 - Journals: PERS - Photogrammetric Engineering & Remote Sensing, IEEE Transactions on Multimedia, IEEE Transactions on Pattern Analysis and Machine Intelligence, International Journal of Image and Graphics, Image and Vision Computing Journal, Journal of Mathematical Imaging and Vision.

- **Teaching** University of California, Santa Barbara
Lecturer and Teaching Assistant
 - Fall 2007 - Computer Vision (graduate class)
Given a set of lectures regarding image registration and related topics.
 - Spring 2004, Spring 2006 - Introduction to Computer Vision
Prepared lab projects, homeworks, midterm and final, led office hours and discussion session.
 - Winter 2003 - Image Processing
Supervised lab projects, led office hours and graded homeworks.
 - Summer 2002 - Signals and Systems
Led discussion sessions, led office hours and graded homeworks.
 - Spring 2002 - Linear Algebra
Led discussion sessions, led office hours and graded homeworks.
 - Winter 2002 - Digital Control
Supervised lab projects and led office hours.
 - Fall 2001 - Digital Signal Processing
Planned and supervised lab activity and led office hours.

Students University of California, Santa Barbara
Ph. D. Committee Member

- Fall 2007 - Zefeng Ni working on 3D reconstruction

Education

- **University of California, Santa Barbara** Santa Barbara, USA
Ph.D. in Electrical Engineering *October 2006*
 - Ph.D. in Electrical Engineering with emphasis in image analysis.
 - Thesis title: “*Computational Methods for Automatic Image Registration.*”.
 - Advisor: prof. B.S. Manjunath
- **University of California, Santa Barbara** Santa Barbara, USA
M.S. in Electrical Engineering *June 2003*
 - Major Area: Signal Processing
 - Minor Area: Controls
 - Relevant graduate courses: Stochastic Processes, Advanced Digital Signal Processing, Digital Image Processing, Patter Recognition, Neural Networks, Matrix Analysis, Linear Systems I, Nonlinear Optimization, Optimal Estimation, Kalman Filtering, Finite Difference Methods for Partial Differential Equations, Level Set Methods and Their Applications.

– GPA 3.9

- **University of California, Santa Barbara** Santa Barbara, USA
Exchange Student *Sep 2000, June 2001*
 - Exchange student within the Education Abroad Program (EAP).
- **University of Padova** Padova, Italy
Laurea in Ingegneria Informatica *June 2001*
 - Major: Systems and Controls
 - Thesis title: “A Vision Based System to Recover the Trajectory of a Human Head”
 - Advisors: prof. R. Frezza and prof. B.S. Manjunath
 - Equivalent GPA 3.7

Research Interests

- Image analysis and computer vision, with special emphasis on registration and mosaicking.
- Numerical issues and algorithm stability for image analysis.
- Optimization and robust estimation.

Publications

- C. Kenney, B. Manjunath, M. Zuliani, G. Hewer, and A. Van Nevel. A condition number for point matching with application to registration and post-registration error estimation. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 25(11):1437–1454, November 2003
- M. Zuliani, C. Kenney, and B.S. Manjunath. A mathematical comparison of point detectors. In *Proc. of the 2nd IEEE Workshop on Image and Video Registration*, 2004
- M. Zuliani, S. Bhagavathy, C. S. Kenney, and B. S. Manjunath. Affine-invariant curve matching. In *IEEE International Conference on Image Processing*, October 2004
- M. Zuliani, C. S. Kenney, S. Bhagavathy, and B. S. Manjunath. Drums and curve descriptors. In *British Machine Vision Conference*, September 2004
- C. Kenney, M. Zuliani, and B.S. Manjunath. An axiomatic approach to corner detection. In *Proc. of IEEE Conference on Computer Vision and Pattern Recognition*, pages 191–197, San Diego, California, June 2005

- M. Zuliani, C. S. Kenney, and B. S. Manjunath. The MultiRANSAC algorithm and its application to detect planar homographies. In *IEEE International Conference on Image Processing*, September 2005
- M. Zuliani. *Computational Methods for Automatic Image Registration*. PhD thesis, Department of Engineering and Computer Engineering, University of California, Santa Barbara, October 2006
- M. Zuliani, L. Bertelli, C. S. Kenney, S. Chandrasekarnan, and B. S. Manjunath. Drums, curve descriptors and affine invariant region matching. *Image and Vision Computing Journal*, 2007. In press. Preprint available online <http://dx.doi.org/10.1016/j.imavis.2006.12.001>
- L. Bertelli, M. Zuliani, and B.S. Manjunath. Pairwise similarities across images for multiple view rigid/non-rigid segmentation and registration. In *Proceedings of the International Conference on Computer Vision (ICCV07)*, Oct 2007
- Marco Zuliani, Luca Bertelli, and B. S. Manjunath. An automatic method to learn and transfer the photometric appearance of partially overlapping images. In *Proc. IEEE International Conference on Image Processing*, October 2008

Invited Talks & Lectures

- M. Zuliani, C. S. Kenney, S. Bhagavathy, B. S. Manjunath, “Drums, Curve Descriptors and Image Correspondences,” Mitsubishi Electric ITE-VIL, Guildford, UK, Sep. 2004. (Host: Dr. M. Bober)
- M. Zuliani, C. S. Kenney, D. Fedorov, S. Bhagavathy, B. S. Manjunath, “Robust Techniques for Image Registration,” at:
 - Signal Processing Institute at EPFL, Switzerland, Jun. 2005 (Host: prof. T. Ebrahimi)
 - Laboratorio di Visione Computazionale e Navigazione Autonoma at University of Padova, Italy, Jun. 2005 (Host: prof. R. Frezza)
 - Vision, Image Processing & Sound Laboratory at University of Verona, Italy, Jun. 2005 (Host: prof. A. Fusiello)
- M. Zuliani, “Fundamentals of Image Registration”
A set of lectures for the graduate Image Processing course at the University of California, Santa Barbara. (Host: prof. B. S. Manjunath)
- M. Zuliani, “RANSAC: Estimating Parameters in Presence of Outliers”
Center for Control, Dynamical Systems, and Computation, University of California, Santa Barbara, Feb. 2009. (Host: prof. F. Bullo)

Membership & Awards

Dissertation fellowship from the Department of Electrical and Computer Engineering, UCSB, in 2005

Education Abroad Program (EAP) Scholarship, in 2000-2001

Skills

Programming: Highly proficient in Matlab (familiar with Simulink), proficient in C and C++. Familiar with C#, OpenGL, 80x86 (MMX & SIMD extensions) and MC68000 Assembly. Extensive experience with code optimization and portability issues.

Software: Intel Performance Primitives (IPP), Intel Math Kernel Libraries (MKL), Intel Thread Building Blocks (TBB), Intel OpenCV, BLAS and LAPACK, $\LaTeX_2\epsilon$. Visual Studio, XCode, gdb.

Operating Systems: Windows, Mac OS X, Linux, UNIX.

Languages: Italian (mother tongue), English (fluent).

Other: Excellent oral presentation skills. Visa status: H1-b

References

- prof. [B. S. Manjunath](#), University of California, Santa Barbara.
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- prof. [S. Chandrasekaran](#), University of California, Santa Barbara.
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- Dr. G. Hewer, Senior Scientist at NAVAIR Weapons Division, China Lake, CA
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