Jeffrey A. Delmerico

CONTACT INFORMATION	Robotics and Perception Group University of Zürich Department of Informatics Andreasstrasse 15, AND 2.16 8050 Zürich, Switzerland

Office: +41 44 635 43 42
Mobile: +41 76 394 62 84
E-mail: jeffdelmerico@ifi.uzh.ch
Website: jeffdelmerico.com

CITIZENSHIP
United States

LANGUAGES
English (native), German (intermediate - B1), French (basic)

RESEARCH INTERESTS
Semantic perception, stereo/3D vision, navigation and mapping, for aerial, ground, and marine robots

EDUCATION

University at Buffalo, The State University of New York
Buffalo, New York USA

Ph.D., Computer Science and Engineering, September 2013
- Advisor: Associate Professor Jason Corso
- Dissertation Title: *Attributed Object Maps: Descriptive Object Models as High-level Semantic Features for Mobile Robotics*

Advanced Graduate Certificate in Computational Science, Mathematics, June 2008

M.A., Mathematics, June 2008
- Advisor: Professor Brian Spencer
- Areas of Study: Applied Mathematics, Computational Science

B.A., Mathematics and Physics, June 2003
- *Magna cum laude*
- Honors Scholar
- New York State Teaching Certification in Physics and Mathematics

AWARDS

University at Buffalo
- Presidential Fellowship, 2008 – 2012
- Computer Science and Engineering Artificial Intelligence Research Area Award, 2011
- Outstanding Senior Award, Physics Department, 2003
- Physics Department Sekula Scholarship, 2000 – 2002
- Honors Scholarship, 1998 – 2002

PROFESSIONAL EXPERIENCE

Robotics and Perception Group, University of Zürich, Switzerland

Postdoctoral Researcher   **August 2014 to Present**
- Developing 3D perception, path planning, and active vision algorithms for small camera-equipped autonomous aerial vehicles.
- Leading UZH Teams for the DARPA Fast Lightweight Autonomy challenge and the Mohamed Bin Zayed International Robotics Competition.

Field Robotics Laboratory, University of Hawai'i at Manoa, Honolulu, Hawai'i USA

Postdoctoral Researcher   **August 2013 to August 2014**
- Software and system development supporting existing lab research projects, including an autonomous underwater cable-laying vehicle, and an autonomous port security mapping and sensor platform.
- Instruction: lecturer for upper-level Dynamic Systems Laboratory course, Spring 2014.

US Army Research Laboratory, Adelphi, Maryland USA

Summer Intern/Research Assistant **Summers 2010 to 2012**
- Developed and deployed systems for building facade modeling, vision-based semantic classification of 3D laser scans, and stairway modeling for autonomous multi-floor exploration.

University at Buffalo, Buffalo, New York USA

Research Assistant/Teaching Assistant **September 2007 to June 2013**
- Research with the Vision and Perceptual Machines Laboratory (VPML) on computer vision algorithms for mobile robotics platforms.
- Instruction for courses in Calculus, Differential Equations, Numerical Analysis, Discrete Structures, Algorithms, and Data Structures.

Roswell Park Cancer Institute, Buffalo, New York USA

Research Assistant/Programmer **August 2008 to August 2009**
- Implemented application for IMRT radiation treatment optimization in conjunction with University at Buffalo's Center for Computational Research.

Holy Angels Academy, Buffalo, New York USA

High School Teacher **September 2003 to June 2006**
- Taught Regents-level Physics, Regents-level Earth Science, and Advanced Placement Physics.

FIELD EXPERIENCE

National Oceanic and Atmospheric Administration (NOAA) Research Vessel *Okeanos Explorer*

Northeast U.S. Canyons Expedition **Leg II: July 31 - August 17, 2013**
- Participated in launch, recovery, navigation, piloting, and maintenance of remotely operated vehicle *Deep Discoverer* and camera platform *Seirios*.

US Army Research Laboratory, Adelphi, Maryland USA

Source ATO Experiments **October 2011, September 2012**
- Tested deployed perception systems on iRobot Packbot platforms at the MOUT site at Marine Corps Base Camp Lejeune during two week-long field experiments.

ARL Field Exercises **June 2012**
- Deployed autonomous stairway search system for the Packbot platform at the Ft. Indiantown Gap MOUT site during a four day mission.

TECHNICAL SKILLS

Programming: C++, Python, MATLAB, C, git, CMake, UNIX shell scripting, GNU make, and others

Robotics: Package development with ROS and LCM; operations with a variety of aerial, terrestrial, and marine robots; with open source software packages including OpenCV and PCL. Sensor Modalities: stereo and mono cameras, structured light sensors, 2D and 3D laser range finders, inertial measurement units, sidescan and multibeam sonar, acoustic doppler current profilers, and load cells.

SERVICE

Publication Review: IEEE Transactions on Robotics (T-RO), IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), IEEE International Conference on Robotics and Automation (ICRA), IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), IEEE Robotics and Automation Letters (RA-L), Computer Vision and Image Understanding, Information Fusion.

Exhibition Chair for European Conference on Computer Vision (ECCV) 2014

Journal Publications	G. Costante, C. Forster, **J. Delmerico**, P. Valigi, and D. Scaramuzza, "Perception-aware path planning," *IEEE Transactions on Robotics*, Conditionally accepted, 2016
	J. Delmerico, S. Isler, P. Vechersky, R. Sabzevari, and D. Scaramuzza, "Information gain metrics for active 3d object reconstruction," *Autonomous Robots*, Under Review, 2016
	J. A. Delmerico, P. David, and J. J. Corso, "Building facade detection, segmentation, and parameter estimation for mobile robot stereo vision," *Image and Vision Computing*, vol. 31, no. 11, pp. 841–852, 2013
	T. C. Scofield, **J. A. Delmerico**, V. Chaudhary, and G. Valente, "Xtremedata dbx: an fpga-based data warehouse appliance," *Computing in Science & Engineering*, vol. 12, no. 4, pp. 66–73, 2010
Conference Publications	R. Kaeslin, P. Fankhauser, E. Stumm, Z. Taylor, E. Mueggler, **J. Delmerico**, D. Scaramuzza, R. Siegwart, and M. Hutter, "Collaborative localization of aerial and ground robots through elevation maps," in *International Symposium on Safety, Security, and Rescue Robotics (SSRR)*, 2016
	J. Delmerico, A. Giusti, E. Mueggler, L. M. Gambardella, and D. Scaramuzza, "On-the-spot training for terrain classification in autonomous air-ground collaborative teams," in *International Symposium on Experimental Robotics (ISER)*, 2016
	S. Isler, R. Sabzevari, **J. Delmerico**, and D. Scaramuzza, "An information gain formulation for active volumetric 3d reconstruction," in *IEEE International Conference on Robotics and Automation (ICRA)*, IEEE, 2016
	A. H. Sylvester, **J. A. Delmerico**, A. Z. Trimble, and B. S. Bingham, "Variable buoyancy control for a bottom skimming autonomous underwater vehicle," in *OCEANS*, IEEE, St. John's, 2014, pp. 1–6
	J. A. Delmerico, D. Baran, P. David, J. Ryde, and J. J. Corso, "Ascending stairway modeling from dense depth imagery for traversability analysis," in *IEEE International Conference on Robotics and Automation (ICRA)*, IEEE, 2013, pp. 2283–2290
	J. Ryde and **J. A. Delmerico**, "Extracting edge voxels from 3d volumetric maps to reduce map size and accelerate mapping alignment," in *Ninth Conference on Computer and Robot Vision (CRV)*, IEEE, 2012, pp. 330–337
	J. A. Delmerico, P. David, and J. J. Corso, "Building facade detection, segmentation, and parameter estimation for mobile robot localization and guidance," in *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, IEEE, 2011, pp. 1632–1639
	D. R. Schlegel, A. Y. Chen, C. Xiong, **J. A. Delmerico**, and J. J. Corso, "Airtouch: interacting with computer systems at a distance," in *IEEE Workshop on Applications of Computer Vision (WACV)*, IEEE, 2011, pp. 1–8
	J. A. Delmerico, J. J. Corso, and P. David, "Boosting with stereo features for building facade detection on mobile platforms," in *Western New York Image Processing Workshop (WNYIPW)*, IEEE, 2010, pp. 46–49
	J. A. Delmerico, N. A. Byrnes, A. E. Bruno, M. D. Jones, S. M. Gallo, and V. Chaudhary, "Comparing the performance of clusters, hadoop, and active disks on microarray correlation computations," in *International Conference on High Performance Computing (HiPC)*, IEEE, 2009, pp. 378–387
Thesis	**J. A. Delmerico**, "Attributed object maps: descriptive object models as high-level semantic features for mobile robotics," PhD thesis, State University of New York at Buffalo (SUNY Buffalo), Buffalo, New York, USA, September 2013
References	Available upon request