

Jean-François Lalonde, Ph.D.

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EDUCATION

- Ph.D., Robotics, Carnegie Mellon University, USA 2011
- Advisors: Alexei A. Efros and Srinivasa G. Narasimhan
 - Thesis committee: Alexei A. Efros (co-chair), Srinivasa G. Narasimhan (co-chair), Martial Hebert, Peter Belhumeur
 - Thesis title: Understanding and Recreating Visual Appearance Under Natural Illumination
- M.S., Robotics, Carnegie Mellon University, USA 2006
- Advisor: Martial Hebert
 - Thesis title: Data Structure for Efficient Dynamic Processing in 3-D
 - Coursework: Computer vision, machine learning, statistical methods, graphical models, advanced perception
- B.Eng., Computer Engineering with honors, Laval University, Canada 2004
- Undergraduate thesis advisor: Patrick Hébert
 - Thesis title: Augmented-Reality Navigation System for Ground Vehicles
 - Coursework: Computer vision, signal processing, micro-controllers, circuit analysis, engineering design

HONORS AND AWARDS

- SCS Distinguished Dissertation Award Best Ph.D. Dissertation Award 2011
- Microsoft Research Ph.D. Fellowship 2009 2011
- Fonds de Recherche sur la Nature et les Technologies, Canada (FQRNT) Ph.D. Scholarship 2006 2009
- Fonds de Recherche sur la Nature et les Technologies, Canada (FQRNT) M.S. Scholarship 2004 2006
- National Research Council Canada Undergraduate Research Scholarship 2003
- IEEE Student Branch Best Teaching Assistant Award (undergraduate C++ class) 2003
- National Science and Engineering Research Council, Canada Undergraduate Research Scholarship 2001 2002
- Association des Diplôm(é)es de l'Université Laval (Alumni association) Admission Scholarship 2000

RESEARCH EXPERIENCE

- Computer Vision Scientist, Tandent Vision Science, USA March 2011 ...
- Research ways of removing illumination effects from images to achieve better performance in computer vision.
- Research Assistant, Carnegie Mellon University, USA 2006 2011
- Researched how knowledge about natural illumination, estimated automatically from image sequences and single images, can be used to understand and synthesize images;
 - Devised learning-based algorithm that automatically determines the relative position of the sun with respect to the camera, from a single image;
 - Published at ICCV 2009 and ECCV 2010.

- Built large-scale database of webcam images containing more than 6 millions images gathered from 1,000 webcams over one year; Devised method to automatically calibrate cameras by analyzing variations in sky appearance;
 - Published at ECCV 2008, SIGGRAPH Asia 2009, and IJCV 2010.
- Designed a system for intuitive creation of realistic images from a large set of photographic clip art objects, which involved the automatic analysis of thousands of single images.
 - Published at SIGGRAPH 2007.

Research Assistant, Carnegie Mellon University, USA 2004 2006

- Designed 3-D dynamic data structure that allows extremely fast computation of features on unstructured point clouds; Implemented and tested the data structure in C++ on-board a real, outdoor mobile robot for navigation;
 - Published at RSS 2005, JFR 2006, IROS 2007, and IJRR 2007.
- Designed novel algorithms for the scale-space analysis of point-sampled 2-D planes and 1-D curves in 3-D;
 - Published at 3DIM 2005 and 3DPVT 2007.

Research Assistant, National Research Council Canada 2003

- Designed and engineered a projector-based system for stereographic display using dual-resolution;
 - Published in IEEE VR 2004;
- Implement point-based rendering algorithm in OpenGL under Linux.

Research Assistant, Computer Vision and Systems Lab, Laval University, Canada 2001 2003

- Implemented a human detection method based on 2D skeleton fitting.

TEACHING

Guest lecturer, Undergraduate computer vision, Carnegie Mellon University 2010

Guest lecturer, Undergraduate computer graphics, Carnegie Mellon University, 6 lectures 2008 10

Guest lecturer, Computational photography, Carnegie Mellon University 2008

Teaching assistant, Learning-based methods in vision, Carnegie Mellon University 2007

Teaching assistant, C++ programming under Linux, Laval University 2003 04

- Won “Best Teaching Assistant Award”.

TALKS

“Understanding and Recreating Visual Appearance Under Natural Illumination”, Carnegie Mellon University 01/2011

“Estimating Illumination Conditions from a Single Outdoor Image”, Laval University, Quebec, Canada 09/2010

“Understanding and Recreating Visual App. under Natural Illumination”, Tandent Vision Science, Pittsburgh 08/2010

“Webcam Clip Art”, FMX’10, Stuttgart, Germany 05/2010

“Webcam Clip Art”, ACM SIGGRAPH Asia’09, Yokohama, Japan 12/2009

“Estimating Natural Illumination from a Single Outdoor Image”, ICCV’09, Kyoto, Japan 10/2009

“What Does the Sky Tell Us About the Camera?”, VASC Seminar, Carnegie Mellon University 11/2008

“Capturing the Illumination of a Scene: 2 Data-driven Approaches”, Laval University, Quebec, Canada 06/2008

“Photo Clip Art”, ACM SIGGRAPH’07, San Diego, CA 08/2007

“Mobile Robot Programming in Education”, ICRA’06, Orlando, FL 08/2006

“Data Structure for Efficient Processing in 3-D”, RSS’05, Boston, MA

06/2005

“Scale Selection for Classification of Point-sampled 3-D Surfaces”, 3DIM’05, Ottawa, Canada

06/2005

SELECTED PUBLICATIONS

Journal Articles

1. **J.-F. Lalonde**, A. A. Efros, and S. G. Narasimhan. Estimating Natural Illumination from a Single Outdoor Image. to appear in *International Journal of Computer Vision*, 2011
2. R. Unnikrishnan, **J.-F. Lalonde**, N. Vandapel, and M. Hebert. Scale Selection for Geometric Fitting in Noisy Point Clouds. in *International Journal of Computational Geometry & Applications*, 20(5):543–575, October 2010
3. **J.-F. Lalonde**, S. G. Narasimhan, and A. A. Efros. What do the Sun and the Sky Tell Us About the Camera? in *International Journal of Computer Vision*, 88(1):24–51, May 2010
4. **J.-F. Lalonde**, A. A. Efros, and S. G. Narasimhan. Webcam Clip Art: Appearance and Illuminant Transfer from Time-lapse Sequences. *ACM Transactions on Graphics (SIGGRAPH Asia 2009)*, 28(5), December 2009
5. M.H. Nguyen, **J.-F. Lalonde**, A. A. Efros, and F. de la Torre. Image-based Shaving. *Computer Graphics Forum Journal (Eurographics 2008)*, 27(2):627–635, April 2008
6. **J.-F. Lalonde**, D. Hoiem, A. A. Efros, C. Rother, A. Criminisi, and J. Winn. Photo Clip Art, *ACM Transactions on Graphics (SIGGRAPH 2007)*, 26(3), August 2007
7. **J.-F. Lalonde**, N. Vandapel, and M. Hebert. Data Structure for Efficient Dynamic Processing in 3-D. *Intl. Journal of Robotics Research*, 2007, 26(8):777–796, August 2007
8. **J.-F. Lalonde**, N. Vandapel, D. F. Huber, and M. Hebert. Natural Terrain Classification using Three-Dimensional Ladar Data for Ground Robot Mobility. *Journal of Field Robotics*, 23(10):839–861, October 2006

Refereed International Conference Articles

1. **J.-F. Lalonde**, A. A. Efros, and S. G. Narasimhan. Detecting Ground Shadows in Outdoor Consumer Photographs. In *European Conference on Computer Vision*, 2010
2. **J.-F. Lalonde**, A. A. Efros, and S. G. Narasimhan. Estimating Natural Illumination from a Single Outdoor Image. In *International Conference on Computer Vision*, 2009
3. **J.-F. Lalonde**, S. G. Narasimhan, and A. A. Efros. What Does the Sky Tell Us About the Camera? In *European Conference on Computer Vision*, October 2008
4. **J.-F. Lalonde** and A. A. Efros. Using Color Compatibility for Assessing Image Realism. In *International Conference on Computer Vision*, October 2007
5. N. Heckman, **J.-F. Lalonde**, N. Vandapel, and M. Hebert. Potential Negative Obstacle Detection by Occlusion Labeling. In *IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2007
6. R. Unnikrishnan, **J.-F. Lalonde**, N. Vandapel, and M. Hebert. Scale Selection for the Analysis of Point-Sampled Curves. In *International Symposium on 3D Data Processing, Visualization and Transmission*, June 2006
7. **J.-F. Lalonde**, C. Bartley and I. Nourbakhsh. Mobile Robot Programming in Education. In *IEEE International Conference on Robotics and Automation*, May 2006
8. **J.-F. Lalonde**, R. Unnikrishnan, N. Vandapel, and M. Hebert. Scale Selection for Classification of Point-sampled 3-D Surfaces. In *International Conference on 3-D Digital Imaging and Modeling*, June 2005.
9. **J.-F. Lalonde**, N. Vandapel, and M. Hebert. Data Structure for Efficient Processing in 3-D. *Robotics: Science and Systems*, June 2005. MIT Press
10. G. Godin, **J.-F. Lalonde**, and L. Borgeat. Dual-Resolution Stereoscopic Display with Scene-Adaptive Fovea Boundaries. In *Intl. Immersive Projection Technology Workshop*, 2004

11. G. Godin, **J.-F. Lalonde**, and L. Borgeat. Projector-Based Dual Resolution Display. In *International Conference on Virtual Reality*, 2004

Un-refereed Technical Reports

1. **J.-F. Lalonde** and A. A. Efros. Synthesizing Environment Maps from a Single Image. tech. report CMU-RI-TR-10-24, Robotics Institute, Carnegie Mellon University, July 2010
2. **J.-F. Lalonde**, N. Vandapel, and M. Hebert. Automatic Three-Dimensional Point Cloud Processing for Forest Inventory. tech. report CMU-RI-TR-06-21, Robotics Institute, Carnegie Mellon University, July 2006
3. **J.-F. Lalonde**, N. Vandapel, and M. Hebert. Scale Selection for Classification of Point-Sampled 3-D Surfaces. tech. report CMU-RI-TR-05-01, Robotics Institute, Carnegie Mellon University, January 2005

PATENTS

1. R. C. Coulter, R. Gross, **J.-F. Lalonde**, and B. A.-M. Simard. System and method of patient flow and treatment management, USPTO Application #20110054946, filed August 31, 2009

PROFESSIONAL EXPERIENCE

Software Engineer, Penthera Technologies, Pittsburgh, USA

05 09/2006

- Researched, developed and tested a real-time video recording algorithm for mobile devices;
- Wrote high-performance C++ code in a production environment.

SKILLS

Software

- Expertise with Matlab, esp. for rapid prototyping and visualization for computer vision and machine learning;
- Strong software engineering skills with C/C++ and Java.

Programming experience

- Primarily Matlab (with MEX) and C/C++;
- Strong Java, some Python and Perl;
- Webpage design HTML/CSS/Javascript.

Languages

- Native French, fluent English, basic Spanish

COVERAGE IN POPULAR PRESS

Photo Clip Art (SIGGRAPH 2007)

- CGWorld (Japan), “Photo Clip Art”, 15 April 2008
- The Independent (UK), “Instant makeup: perfect your holiday snaps”, 19 September 2007
- BBC News (UK), “Photo tool could fix bad images”, 8 August 2007
- CNet News.com (USA), “Researchers try Google approach to understanding photos”, 11 July 2007
- USAToday (USA), “Researchers try Google photo tactic”, 11 July 2007
- News.fr (France), “Le photomontage pour les nuls”, 19 July 2007
- C't - Magazin für Computertechnik (Germany), 15 July 2007

PROFESSIONAL ACTIVITIES

Program committee: ECCV 2010, CVPR 2011–12, ICCV 2011

Journal reviewer: PAMI 2011, IJCV 2010–11, SIGGRAPH 2008–11, SIGGRAPH Asia 2009–10, JVBR 2009–10

Conference reviewer: RSS 2011, ECCV 2010, CVPR 2008–10, ICPR 2010, Eurographics 2008–09, ICCP 2008, OMNIVIS 2008, ICRA 2007–12.

Graduate admissions committee, Robotics Institute, Carnegie Mellon University (2-year term)

IEEE student member

PERSONAL INTERESTS

Triathlon (sprint and olympic distance), Cross-country skiing, Classical piano, Tennis, Photography, Reading, Music