Curriculum Vitae: Etienne Grégoire Grossmann

Civil status

Born: **1969, in France.**
Nationality: **U.S.A. and French citizen.**

Contact

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Professional experience

3D computer vision: *Very* high-accuracy calibration of stereo cameras (2006-), in an industrial setting. Optimal self-calibration of a moving camera (1997-2002). Theoretical and empirical performance analysis of 3D reconstruction methods. Design, implementation and evaluation of methods that take advantage of known geometric properties commonly found in man-made scenes. (1997-2002).

2D computer vision: Design, analysis and benchmarking of subpixel optic flow (2D motion) and stereo correspondence algorithms.

Video analysis: Background segmentation methods based on machine learning; detection and (Kalman) tracking of moving objects; detection of abandoned objects in cluttered scenes (2002-).

Image processing: Color image processing. Feature detectors in C++. Fast implementations of morphological operators and other image processing filters, in C++ and Octave.

Machine learning: Design and implementation of classifiers based on Adaboost, decision trees and cascades of classifiers (2002-2006). Application to face detection and video analysis. Control & optimization of computation cost.

Computational geometry: Design and implementations of algorithms, e.g. for solving metric embedding problems, sensor network topology discovery

Teaching: Undergraduate course in discrete mathematics (2004). Overseeing and counseling of graduate student projects.

Robotics: Vision-based control of a Puma robot arm (1994-1995).

Appointments

Where	What	When
Tyzx, Inc (USA)	Computer vision researcher	2006-present
University of Montréal (Canada)	Invited researcher	2006/03-06
University of Kentucky, Lexington (USA)	Assistant research professor	2003-2005
Institute of Systems and Robotics (ISR) and Superior Tech. Institute (IST) (Portugal)	Project researcher	2002-2003
ISR & IST	PhD student	1997-2002
ISR & IST	Visiting researcher	1996
U. of Genoa & Integrated Robotics Lab (Italy)	Research intern	1995

Education

Where	What	When
Lisbon Tech. University (Portugal)	PhD in Computer Vision	2002
Aix-Marseille II University (France)	DESS Mathematics for Engineers	1995
Nice-Sophia Antipolis University(France)	DEA Computer Vision and Robotics	1994
Aix-Marseille I University (France)	Bachelor in Science, Mathematics	1993

Courses taken

Graduate courses in computer vision, machine learning, estimation (includes Kalman, ARMA filtering), automatic control, statistics, numerical methods, error correcting codes, biological vision systems, databases, parallel programming.

Undergraduate courses in algebra (groups, rings, fields, vector spaces), analysis (metric spaces, functions, series, functional spaces, etc), topology, numerical methods, logic, lambda-calculus, integration, probability, statistics, differential geometry, mechanics, algorithmics, programming.

Computer skills

- Programming in C and C++. Experience with OpenCV and other scientific libraries.
- Algorithm development and prototyping in GNU Octave (a Matlab clone) and interfacing with C/C++ (see Octave-Forge project below). Programming in Matlab.
- Programming in Perl: for task automation, natural language processing, misc. utilities and libraries, desktop applications and CGI (see FreeWRL, Lingua::PT::Conjugate and Bloksi projects below).
- GNU development tools (automake, autoconf, make, CVS, svn...). Linux administration
- Experience with Prolog, S-plus, Pascal, the Gimp.

Related professional activities

Program committee member for the European Conf. on Computer Vision (ECCV)´06, IEEE Intl. Conf. on Computer Vision (ICCV)´05 and Computer Vision and Pattern Recognition (CVPR) ´05 and´06.

Scientific reviewing for the IEEE Transactions on Pattern Recognition and Machine Intelligence, Transactions on Robotics and Automation, Image and Vision Computing, Computer Vision and Image Understanding and for the conferences CVPR 2012, 2011, '10 '08 & '07, ICRA 2012, ICCV 2011, '09, '07, '05, ECCV 2010, '08, '02 & '00, RFIA '06, MultiMedia '04, Motion '04, ICAR '03, ICPR '00, EUROBOT '99, IROS '99 and SIRS '96.

Kentucky Inventor's Council active membership (2005).

Participation in free software projects

2002–present *Octave* : (a Matlab clone) optimization, graphics and utility functions for the Octave-Forge repository, `http://octave.sourceforge.net`, admin of Octave´s wiki, `http://wiki.octave.org`.

2000–2003 *FreeWRL* : Extensions allowing to save snapshots and films from the Virtual Reality Modeling Language browser FreeWRL, `http://www.crc.ca/FreeWRL`.

Personal free software projects

2000–2002 *Bloksi*, a block-sliding puzzle. Program developed for the Gnome desktop and packaged on the Debian GNU/Linux platform (`http://www.debian.org`).

1997–present *Lingua::Pt::Conjugate* : Perl module to automatically conjugate and recognize Portuguese verbs. Demo at `http://omni.isr.ist.utl.pt/~etienne/cgi-bin-etienne/pv.pl`.

Main collaborators

Tyzx, Inc. 2006 09-

Gaile Gordon	Tyzx, Inc.
John Woodfill	Tyzx, Inc.
Ron Buck	Tyzx, Inc.

Worldwide 2006-

José Gaspar	Robotics & Systems Instititute / Superior Technical Institute (Portugal)
Francesco Orabona	Milano University (Italy)

University of Montréal 2006 03-06

Edouard Auvinet	U. of Rennes (France), U. of Montréal.
Mohamed Dahmane	CS and Operations Research Dept., U. of Montreal.
Jean Meunier	CS and Operations Research Dept., U. of Montreal.
Caroline Rougier	CS and Operations Research Dept., U. of Montreal.

University of Kentucky 2003-2005

Sen-ching Samson Cheung	Center for Visualization and Virtual Environments / ECE.
Judy Goldsmith	Department of Computer Science.
Peter Hislop	Department of Mathematics.
Christopher Jaynes	Currently at Mersive.
Amit Kale	Currently at Siemens Corporate Technology, India.
Eun-Joo Lee	Currently at East Stroudsburg University of Pennsylvania.
David Nistér	Currently at Microsoft Corp., Redmond.
Henrik Stewénius	Currently at Google Switzerland, Zurich.
Ruigang Yang	Center for Visualization and Virtual Environments / CS.

Project CAVIAR, 2002-2003: Context Aware Vision using Image-based Active Recognition

Jim Crowley	National Polytecnic Institute and INRIA (Grenoble, France).
Robert Fisher	School of Informatics, University of Edimburgh (UK).

PhD Jury

José Santos-Victor	ISR & IST. (Portugal)	Thesis supervisor.
Pedro Aguiar	ISR & IST.	
Rachid Deriche	INRIA (France).	
Jorge Dias	ISR and University of Coimbra (Portugal).	
Mário Figueiredo	Institute of Telecommunications (Portugal) and IST.	
João Sentieiro	ISR & IST.	

Project VIRTUOUS, 1997-1999: Auton. Acquisition of VR Models from Real World Scenes

Karol Dobrovodsky	Institute of Control Theory and Robotics (Slovakia).
Michal Haindl	Institute of Information Theory and Automation (Czech Republic).
Andrew Stoddart	U. of Surrey (UK), now at 2d3.com.

LIRA-Lab - 1994, 1995

Giulio Sandini	LIRA-Lab, University of Genoa (Italy).

Publications

Downloadable by clicking on links below, or from `http://egdn.net`

PhD Dissertation

- "*Maximum likelihood 3D reconstruction from one or more views under geometric constraints*," Universidade Técnica de Lisboa, 2002.

In international refereed journals

- E. Grossmann, J. A. Gaspar and F. Orabona, "*Discrete camera calibration from pixel streams*," accepted for publication in Computer Vision and Image Understanding, V. 114, N. 2, pp. 198-209, 2010.
- E. Grossmann and J. Santos-Victor, "*Least-squares 3D reconstruction from one or more views and geometric clues*," Computer Vision and Image Understanding, V. 99, pp. 151-174, 2005.
- E. Grossmann and J. Santos Victor, "*Uncertainty analysis of 3D reconstruction from uncalibrated views*." Image and Vision Computing V. 18, pp. 685-696, 2000.
- E. Grossmann and J. Santos Victor, "*Performance evaluation of optical flow estimators: Assessment of a new affine flow method*," Journal of Robotics and Autonomous Systems, V. 21, pp. 69-82, Elsevier, 1997.

In refereed international conferences

- E. Grossmann, J. A. Gaspar and F. Orabona, "*Calibration from statistical properties of the visual world*,", European Conf. on Computer Vision, 2008.
- E. Grossmann, F. Orabona and J. A. Gaspar, "*Discrete camera calibration from the information distance between pixel streams*," OmniVis workshop at ICCV 2007.
- E. Grossmann, E-J Lee, P. Hislop, D. Nistér and H. Stewénius, "*Are two rotational flows sufficient to calibrate a smooth non-parametric sensor?*" IEEE Computer Vision and Pattern Recognition (CVPR), 2006.
- E. Auvinet, E. Grossmann, C. Rougier, M. Dahmane and J. Meunier, "*Left-luggage detection using homographies and simple heuristics*," IEEE International Workshop on Performance Evaluation in Tracking and Surveillance (PETS), 2006.
- E. Grossmann, A. Kale and C. Jaynes, "*Towards interactive generation of "ground-truth" in background subtraction from partially labeled examples*," IEEE International Conference on Computer Vision (ICCV) VS-PETS workshop, 2005.
- C. Jaynes, A. Kale, N. Sanders and E. Grossmann, *"The Terrascope Dataset: A Scripted Multi-Camera Indoor Video Surveillance Dataset with Ground-truth,"* IEEE ICCV VS-PETS workshop, 2005.
- D. Nistér, H. Stewénius, E. Grossmann, "*Non-parametric self-calibration*," IEEE ICCV 2005.
- E. Grossmann, A. Kale, C. Jaynes and S-C. Cheung, "*Offline generation of high-quality background subtraction* data," British Machine Vision Conference (BMVC) 2005.
- E. Grossmann, "*Automatic design of cascaded classifiers*," Statistical Pattern Recognition workshop (SPR´04), International Conference on Pattern Recognition, 2004.
- E. Grossmann "*AdaTree : boosting a weak classifier into a decision tree*," CVPR workshop on Learning in Computer Vision and Pattern Recognition, 2004.

- E. Grossmann and J. Santos-Victor, "*Maximum likelihood 3D reconstruction from one or more images under geometric constraints*," Proc. BMVC 2002, pp. 343-352.
- E. Grossmann, D. Ortin and J. Santos-Victor, "*Single and multi-view reconstruction of structured scenes*," Proc. Asian Conference on Computer Vision (ACCV) 2002, pp. 228-234.
- E. Grossmann, D. Ortin and J. Santos-Victor, "*Algebraic aspects of reconstruction of structured scenes from one or more views*," Proc. BMVC 2001, pp. 633-642.
- J. Gaspar, E. Grossmann and J. Santos-Victor "*Interactive reconstruction from an omnidirectional image*," Proc. Intl. Symposium on Intelligent Robotic Systems (SIRS) 2001.
- E. Grossmann and J. Santos Victor, "*Dual representations for vision-based 3D reconstruction*," Proc. BMVC 2000, pp. 516-526.
- E. Grossmann and J. Santos Victor, "*A closed-form solution for paraperspective reconstruction*," Proc. ICPR 2000, pp. 864-867.
- E. Grossmann and J. Santos Victor, "*The precision of 3D reconstruction from uncalibrated views*," Proc. BMVC 1998, Vol 1, pp 115-124.
- E. Grossmann and J. Santos Victor, "*Robust affine flow estimation*," Proc. SIRS 1996, pp. 285-292.
- P. Questa, E. Grossmann and G. Sandini, "*Camera self orientation and docking maneuver using normal flow*," Proc. SPIE AeroSense95, Orlando, Florida USA, 1995.

In refereed books

- J. Gaspar, N. Winters, E. Grossmann and J. Santos-Victor, *"Toward Robot Perception through Omni-directional Vision"* in "Innovations in Intelligent Machines - 1, Studies in Computational Intelligence", V. 70, Srikanta Patnaik ed., Springer 2007, pp. 223-270.
- E. Grossmann, J. Santos-Victor, "*Quality evaluation of optic flow estimators : A need for vision-based robotics*," in "Advances in Robotics Research", World Scientific, 1996.

Reports

- E. Grossmann, "*A Theory of Probabilistic Boosting, Decision Trees and Matryoshki*," submitted to ECML, arXiv cs.LG/0607110, 2006.
- E. Grossmann, "*Adatree 2: Boosting to build decision trees or Improving Adatree with soft splitting rules.*" Working paper, 2004.
- E. Grossmann and J. Santos-Victor, "*A differentiable analogue of the null() function.*" Technical report, Instituto de Sistemas e Robótica, 2002.

Grants

EPSCoR Co-PI. *Immersive Interactive Spaces: Research at the Center for Visualization and Virtual Environments*, This is a structural NSF EPSCoR grant. Award period: 2004-2006. Total award amount: $ 2,500,000.

Awards

Best poster award at the British Machine Vision Conference, 2005.
Best paper award at the British Machine Vision Conference, 1998.

Languages

Fluent French and English, good Portuguese, reasonable Italian, traces of Russian, Latin and Chinese.

Other interests

Swimming, reading, history, mathematical biology, programming, computer vision, cooking, etc.