

CV Laurent COHEN

24 ans d'expérience comme Chercheur ou Ingénieur de Recherche dans divers domaines des Mathématiques Appliquées et de l'Informatique.

46 ans, Français. Marié, 3 enfants.

ETUDES. DIPLOMES :

Juin 1979: Baccalauréat C, Mention B.

1979-1981: Classes préparatoires aux Grandes Ecoles au Lycée Louis-le-Grand à Paris.

1981-1985: Elève de l'École Normale Supérieure (45 rue d'Ulm, Paris).

Juin 1982: Maîtrise de Mathématiques, Mention TB, à Paris VI.

Juin 1983: DEA d'Analyse Numérique, Mention TB, à Paris VI.

Juillet 1983: reçu Major à l'Agrégation de Mathématiques.

1983-1986: Doctorat de Mathématiques sous la direction du Pr H. BREZIS à Paris VI. Jury composé de MM. H. Brezis, P. Baras, H. Berestycki et P. Ciarlet.

Juin 1985: DEA d'Intelligence Artificielle et Reconnaissance des Formes à Paris VI

1988-1990: Second Doctorat en Informatique à Paris XI-Orsay, regroupant certaines de mes contributions au traitement d'images à l'INRIA. Jury composé de MM. N. Ayache, R. Azencott, A. Gagalowicz, H. Maitre et C. Puech.

1995: Habilitation à Diriger des Recherches à Paris IX-Dauphine, Jury composé de MM. J.-M. Morel, P. Cinquin, D. Terzopoulos, N. Ayache, R. Azencott, M. Brady, P.-L. Lions.

SITUATION ACTUELLE :

CNRS: Directeur de Recherche 1ère classe au CEREMADE (UMR 7534, Université Paris-Dauphine, dirigé par E. SÉRÉ), dirige le groupe Mathématiques et Analyse d'Images sur les applications des méthodes variationnelles et EDP au traitement d'images (CR1 Depuis Janvier 1990, DR2 depuis Octobre 1998, DR1 depuis Octobre 2006).

Direction de 15 thésards (12 soutenances entre 1992 et 2009, 3 en cours) et de 28 stagiaires de DEA. Directeur du GDR Mathématiques des systèmes perceptifs et cognitifs (11 journées, 5 séminaires et 6 colloques internationaux organisés depuis 1996).

Environ 200 Publications, la plupart internationales, dont 50 articles de journaux ou chapitres de livres, et 5 brevets.

Collaborations académiques : INRIA Sophia, Georgiatech, Technion, UCLA, Berkeley, University of Pennsylvania, ENS Ulm (Physique et Biologie), UPS Toulouse, Hong Kong.

Collaborations hospitalières : Mayo Clinic, Hôpital de Créteil (Ophtalmologie), Hôpital de Kremlin-Bicêtre (Cardiologie), CREATIS (Radiologie), University College London Hospital (Heart Hospital).

Collaborations industrielles (Négociation, réalisation et gestion de contrats): Philips Medical Systems, CEA, Matra/EADS, ELF,

Participation au pôle de compétitivité Cap Digital, Membre du Projet Infomagic.

Membre de 4 projets ANR depuis 2005 (dont 2 comme responsable d'équipe, et 1 comme coordinateur), ce qui a permis d'accueillir 5 postdocs.

Enseignement: Cours de Master 2 à Dauphine et l'ENS Cachan sur les applications des modèles déformables au traitement d'images. Responsable à Dauphine pour le Master 2 MVA.

Participation aux modules de Robotique et vision à Leonard de Vinci, EPF, Centrale, Telecom, INT, EPITA, aux Mines, à l'ENSEA DEA Cergy, à l'ENSTA, au DEA Orsay et à l'INSTN. (Selon les années depuis 1989).

Intervention à des écoles d'été CEMRACS (2002, 2004, 2007, 2008).

Expert Conseil en traitement d'images pour des projets en compression d'image, restauration d'images de radiographie industrielle, extraction de contours et segmentation, reconnaissance de formes pour SCHLUMBERGER Montrouge Recherche, EPS Clamart, SLCSE Sécurité et Contrôle, EuropScan, Matra-MS2I/EADS, CEA Alcatel Alsthom Recherche, MKL et Algotec (Filiale imagerie médicale de Kodak) (Depuis Janvier 1988).

Prix/Distinctions: Prix CS 2002 en Traitement du Signal et Image, Juin 2002, décerné par la société CS Communications et Systèmes, la SMAI et l'ASTI.

Prix du meilleur papier RFIA 2004 pour le [146] de la liste de publications.

Prix du meilleur papier CVBIA 2005 pour le [152] de la liste de publications.

Prix Taylor & Francis (editeur): "2006 prize for Outstanding innovation in computer methods in biomechanics & biomedical engineering."

Lauréat 2009 d'un Grand Prix de l'Académie des Sciences: Prix de la Fondation d'entreprise EADS (sciences de l'information) (voir <http://www.academie-sciences.fr/prix/gpmp.htm>)

IEEE Senior Member (1996)

Activités Editoriales et d'Expertise: Membre du comité éditorial du *Journal of Mathematical Imaging and Vision* (Kluwer Academic Publishers), de *Medical Image Analysis*, (Elsevier) et de *Machine Vision and Applications* (Springer). **Guest Editor** pour trois numéros spéciaux sur “Mathematics and Image Analysis” du *Journal of Mathematical Imaging and Vision*, Mai 2001, début 2004 et 2009. Membre des comités de programme pour une trentaine de congrès internationaux, dont les plus importants du domaine, comme *IEEE International Conference on Computer Vision ICCV*, *European Conference on Computer Vision ECCV*, *IEEE Computer Vision and Pattern Recognition CVPR*, *International Workshop on Energy Minimization Methods in Computer Vision and Pattern Recognition (EMMCVPR)*, etc..

Membre des Comités de programme et d'**organisation** des six colloques *Mathématiques et reconnaissance de formes*, Luminy, Novembre 1997 et Avril 1999, *Mathematics and Image Analysis, MIA 2000*, Paris, Septembre 2000, *MIA 2002*, Paris, Septembre 2002, *MIA 2004*, Paris, Septembre 2004 (**organisateur principal**, 200 participants), *MIA 2006*, Paris, Septembre 2006 (**organisateur principal**, 250 participants).

Organisateur d'une école CIMPA “Traitement d'images et Equations aux Dérivées Partielles” à Pékin, Chine, Mai 1999.

Participation aux comités de lecture pour les principaux journaux internationaux (IEEE PAMI, TMI, TIP; IJCV; CVGIP; JMIV; MEDIA; MVA; TS;) et conférences internationales (IEEE ICCV, CVPR; ECCV;) (Depuis 1989).

EXPERIENCE PROFESSIONNELLE ANTERIEURE:

Avril-Juin 1984: “Avions Marcel Dassault-Breguet Aviation” (S^t Cloud). Stage dans le Service d'Aérodynamique Théorique de P. PERRIER.

Novembre-Décembre 1984: “International Centre for Theoretical Physics” à Trieste (Italie). Tuteur pendant l'“Autumn Course on Semigroups, Theory and Applications”.

Mai-Décembre 1985: “SCHLUMBERGER Palo Alto Research” (Palo Alto, Californie, Etats-Unis): Chercheur dans le groupe “Perception & Graphics” de Traitement et Synthèse d'Images dirigé par A. WITKIN.

1986 - 1987: “SCHLUMBERGER Montrouge Recherche” (Montrouge, France): Ingénieur Position II, Chef du Projet de Recherche en Théorie de l'Information et Algorithmique comprenant des études en Cryptographie, Sécurité Informatique, Compression de Données texte et Image, Traitement d'Images.

Janvier-Décembre 1988: INRIA (Institut National de Recherche en Informatique et Automatique, Rocquencourt, France) : Chercheur dans le projet SYNTIM de traitement et synthèse d'images dirigé par A. GAGALOWICZ travaillant sur le projet de Stéréovision par mise en correspondance de régions après segmentation.

Janvier-Décembre 1989: INRIA Rocquencourt : Conseiller Scientifique (à temps plein) pour le projet d'imagerie médicale EPIDAURE dirigé par N. AYACHE travaillant sur les applications des modèles déformables pour la segmentation des images médicales.

1990-1998: INRIA :Conseiller Scientifique pour le projet d'imagerie médicale EPIDAURE dirigé par N. AYACHE. Direction de stagiaires et thésards sur les applications des modèles déformables à l'extraction et la reconstruction de formes dans les images médicales.

EXPERIENCE INFORMATIQUE: PC sous windows et Linux, Matlab, L^AT_EX, HP sous Unix, SUN, DEC VAX/VMS, Machine LISP de Symbolics; Langages C, LISP, PASCAL, FORTRAN, SMP, HTML.

Liste des thèmes de recherche abordés: Traitement d'Images. Modèles déformables élastiques. Méthodes variationnelles. Equations aux dérivées partielles. Reconstruction de courbes et surfaces. Mailage de surfaces. Reconnaissance des Formes.

Indexation d'images par le contenu. Suivi du mouvement et Mise en correspondance. Restauration d'images. Compression d'images. Synthèse d'images. Théorie de l'information (Compression de données et cryptographie).

Parcours: Après une formation plutôt théorique aux Equations aux dérivées partielles, puis quelques années d'expérience chez Schlumberger et à l'INRIA, principalement en Traitement d'images, ayant conduit à deux DEA et doctorats, j'ai combiné ces deux domaines en me spécialisant dans les EDP et méthodes variationnelles en Analyse d'images. Mes préoccupations ont le plus souvent traité aussi bien la formulation mathématique des problèmes et leur résolution que la mise en oeuvre effective de l'application en imagerie médicale, aérienne ou industrielle (notamment avec Schlumberger, CEA, Matra, Philips). Cela est particulièrement utile pour l'extraction ou la reconstruction d'objets déformables dans des images ou séquences d'images 2D ou 3D biomédicales. Nous avons été pionniers dans ce domaine, alors que l'imagerie médicale était à ses débuts. Depuis une dizaine d'années une grande partie de mes travaux portent sur les chemins minimaux et lignes géodésiques, avec plusieurs brevets déposés concernant en particulier la recherche de ligne centrale d'un vaisseau et l'endoscopie virtuelle. Selon Google Scholar, deux de mes articles sur le

modèle déformable Ballon et sur les surfaces déformables, totalisent plus de 1000 citations chacun, et 10 articles totalisent plus de 75 citations chacun. Plus récemment, afin de montrer l'importance des activités de notre équipe, on peut noter que je suis coauteur de 4 articles au dernier congrès ECCV'08, (l'un des plus selectifs), et de 4 articles au congrès SSVM'09, qui est le plus en adéquation avec ma thématique.

Liste de Publications de Laurent Cohen

Thèses.

- [1] Laurent D. Cohen. *Etude de quelques problèmes semi-linéaires paraboliques et elliptiques*. PhD thesis, Université Paris 6, 1986.
- [2] Laurent D. Cohen. *Etude des modèles de contours actifs et d'autres techniques de traitement d'Images*. 2nd PhD thesis, Université Paris-Sud Orsay, 1990.
- [3] Laurent D. Cohen. *Méthodes Variationnelles pour le Traitement d'images*. Université Paris Dauphine, 1995. Mémoire d'Habilitation à diriger des recherches. Accompagné des 10 publications les plus significatives des années 1988-1995.

Articles de Revues Internationales à comité de lecture et Chapitres de Livres

- [4] P. Baras and Laurent D. Cohen. Explosion totale après T_{max} de la solution d'une équation de la chaleur non linéaire. *Comptes Rendus de l'Académie des Sciences Sér.I*, 300(10), 1985.
- [5] P. Baras and Laurent D. Cohen. Complete blow-up after T_{max} for the solution of a semilinear heat equation. *Journal of Functional Analysis*, 71(1):142–174, March 1987.
- [6] Laurent D. Cohen. On active contour models. In *Active perception and Robot vision*. Springer, July 1989.
- [7] N. Ayache, J.D. Boissonnat, Laurent D. Cohen, B. Geiger, O. Monga, J. Levy-Vehel, and P. Sander. Steps toward the automatic interpretation of 3D images. *NATO ASI Series on 3D Imaging in Medicine*, F 60:107–120, Springer, 1990.
- [8] Laurent D. Cohen and Isaac Cohen. Using a finite element method for active contour models and 3-D reconstruction from cross sections. In Y.A. Feldman and A. Bruckstein, editors, *Artificial Intelligence and Computer Vision*, pages 237–247. Elsevier Science Publishers B.V., North-Holland, 1991.
- [9] Laurent D. Cohen. On active contour models and balloons. *Computer Vision, Graphics, and Image Processing: Image Understanding*, 53(2):211–218, March 1991. Cet article a été intégré dans un livre collectant les **meilleurs articles des 10 dernières années** sur le sujet.
- [10] Isaac Cohen, Laurent D. Cohen, and Nicholas Ayache. Using deformable surfaces to segment 3-D images and infer differential structures. *Computer Vision, Graphics, and Image Processing: Image Understanding*, 56(2):242–263, September 1992. Cet article a été intégré dans un livre collectant les **meilleurs articles des 10 dernières années** sur le sujet.
- [11] Laurent D. Cohen and Isaac Cohen. Finite element methods for active contour models and balloons for 2-D and 3-D images. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, PAMI-15(11):1131-1147, November 1993.
- [12] N. Ayache, P. Cinquin, I. Cohen, Laurent D. Cohen, F. Leitner, and O. Monga. Segmentation of complex 3D medical objects: a challenge and a requirement for computer assisted surgery planning and performing. In R. Taylor and S. Lavallee, editors, *Computer Integrated Surgery*, pages 59–74. MIT Press, 1995.
- [13] Isaac Cohen and Laurent D. Cohen. A hybrid hyperquadric model for 2-D and 3-D data fitting. *International Journal on Computer Vision and Image Understanding*, 63(3):527–541, May 1996.
- [14] Laurent D. Cohen. Auxiliary variables and two-step iterative algorithms in computer vision problems. *Journal of Mathematical Imaging and Vision*, 6(1):61–86, January 1996.
- [15] E. Bardinet, Laurent D. Cohen, and N. Ayache. Tracking and motion analysis of the left ventricle with deformable superquadrics. *MEDIA, Medical Image Analysis, an international journal on Computer Vision, Visualisation and Image Guided Intervention in Medicine*, 1(2):129–149, 1996. Accompagné d'une vidéo dans la version CD du journal.
- [16] E. Bardinet, Laurent D. Cohen, and N. Ayache. Suivi de données médicales 3D avec un modèle paramétrique déformable. *Journal TSI, Technique et Science Informatiques*, 16(3/97):355-381, Mars 1997.
- [17] E. Bardinet, Laurent D. Cohen, and N. Ayache. A parametric deformable model to fit unstructured 3D data. *International Journal on Computer Vision and Image Understanding*, 71(1):39–54, July 1998.

- [18] Laurent D. Cohen. Avoiding local minima for deformable curves in image analysis. In *Curves and Surfaces with Applications in CAGD*, pages 77–84. A. Le Méhauté, C. Rabut, and L. L. Schumaker (eds.), 1997.
- [19] Laurent D. Cohen and R. Kimmel. Global minimum for active contour models: A minimal path approach. *International Journal of Computer Vision*, 24(1):57-78, August 1997.
- [20] Denis Pellerin, Laurent D. Cohen, Fabrice Larrazet, Floris Pajany, Serge Witchitz, and Colette Veyrat. Preejectional left ventricular wall motion in normal subjects using doppler tissue imaging and correlation with ejection fraction. In *American Journal of Cardiology*, volume 80, pages 601–607, September 1997.
- [21] D Pellerin, A Berdeaux, L Cohen, JF Giudicelli, S Witchitz, and C Veyrat. Preejectional left ventricular wall motions studied on conscious dogs using doppler myocardial imaging. relationships with indexes of left ventricular function. *Ultrasound in Medicine and Biology*, 24:1271–1283, 1998.
- [22] C Veyrat, D Pellerin, L Cohen, F Larrazet, C Fournier, and S Witchitz. Dynamique pariétale prééjectionnelle du ventricule gauche par imagerie doppler tissulaire. *Archives des Maladies du Cœur et des Vaisseaux*, 91:29–38, 1998.
- [23] Laurent D. Cohen. *Deformable Models in Medical Image Analysis*, chapter 4. On Active Contour Models and Balloons. IEEE Press, October 1998.
- [24] Isaac Cohen, Laurent D. Cohen, and Nicholas Ayache. *Deformable Models in Medical Image Analysis*, chapter 13. Using Deformable Surfaces to Segment 3-D Images and Infer Differential Structures. IEEE Press, October 1998.
- [25] Pellerin D, Berdeaux A, Cohen L, Giudicelli JF, Witchitz S., and Veyrat C. Comparison of two myocardial velocity gradient assessment methods during dobutamine infusion using doppler myocardial imaging. *Journal of the American Society of Echocardiography*, 12:22–31, 1999.
- [26] Veyrat C, Pellerin D, Cohen L, Larrazet F, Extramiana F, and Witchitz S. Spectral, one-or two-dimensional tissue velocity doppler imaging: which to choose? *Cardiology*, 9(1):9–18, 2000.
- [27] T. Deschamps and L.D. Cohen. Path Extraction in 3D Medical Images for Virtual Endoscopy. *Journal of Computer Aided Surgery*, 5(5), 2000.
- [28] M. Lefebure and L. D. Cohen. Image registration, optical flow and local rigidity. *Journal of Mathematical Imaging and Vision*, 14(2), March 2001. CEREMADE TR 0102, Jan 2001.
- [29] L. D. Cohen. Multiple contour finding and perceptual grouping using minimal paths. *Journal of Mathematical Imaging and Vision*, 14(3), May 2001. CEREMADE TR 0101, Jan 2001.
- [30] Zakaria Ben Sbeh, Laurent D. Cohen, Gérard Mimoun, and Gabriel Coscas. A new approach of geodesic reconstruction for drusen segmentation in eye fundus images. *IEEE Transactions on Medical Imaging*, December 2001.
- [31] T. Deschamps and L.D. Cohen. Fast extraction of minimal paths in 3D images and application to virtual endoscopy. *MEDIA, Medical Image Analysis, an international journal of Computer Vision, Visualisation and Image Guided Intervention in Medicine*, 5(4):281–299, December 2001. Video in the web version of the journal.
- [32] Thomas Deschamps and Laurent D. Cohen. Grouping connected components using minimal path techniques. In Springer, *Geometrical Method in Biomedical image processing*. R. Malladi (ed.), 2002.
- [33] Frederic Richard and Laurent D. Cohen. A new image registration technique with free boundary constraints: application to mammographs. *International Journal on Computer Vision and Image Understanding*, Special Issue of on Nonrigid Image Registration, Volume 89, Issues 2-3, Pages 166-196 February - March 2003.
- [34] Laurent D. Cohen. Chemins minimaux et modèles déformables en analyse d’images. *Traitement du Signal*, Volume 20 numéro 3, Numéro spécial: Le traitement du signal à l’aube du XXIème siècle, Pages 225–241, Décembre 2003.
- [35] Pablo Arbelaez and Laurent D. Cohen. Energy Partitions and Image Segmentation. *Journal of Mathematical Imaging and Vision*, 20(1-2):43–57, January - March 2004.
- [36] Laurent D. Cohen. Editeur des Actes du Colloque International *Mathematics and Image Analysis, MIA’04*, 400 pages, sous forme du Cahier de Mathématiques du CEREMADE No 0441, Paris, September 2004.

- [37] Pablo Arbelaez and Laurent D. Cohen. Segmentation d’Images Couleur par partitions de Voronoi. *Traitement du Signal*, Volume 21 numéro 5, Numéro spécial: L’image numérique couleur, Pages 407-421, Février 2005.
- [38] Laurent D. Cohen. Minimal Paths and Fast Marching Methods for Image Analysis. In *Mathematical Models in Computer Vision: The Handbook*, Nikos Paragios and Yunmei Chen and Olivier Faugeras Editors, Springer 2005.
- [39] Stephane Bonneau, Maxime Dahan and Laurent D. Cohen. Single Quantum Dot tracking based on perceptual grouping using minimal paths in a spatio-temporal volume. *IEEE Transactions on Image Processing, special issue on Molecular and Cellular Imaging*, 14(9):1384–1395, September 2005.
- [40] Gabriel Peyre and Laurent D. Cohen. Geodesic Computations for Fast and Accurate Surface Remeshing and Parameterization. in *Elliptic and Parabolic Problems : A Special Tribute to the Work of Haim Brezis (C. Bandle et al. eds.)*, Progress in Nonlinear Differential Equations and Their Applications, vol. 63, Pages 157–171, Birkhauser 2005.
- [41] Roberto Ardon and Laurent D. Cohen. Fast Constrained Surface Extraction by Minimal Paths. *International Journal of Computer Vision*, Special Issue on Variational and Level Set Methods in Computer Vision (VLSM 2003), 69(1):127–136, August 2006.
- [42] Gabriel Peyre and Laurent D. Cohen. Geodesic Remeshing Using Front Propagation *International Journal of Computer Vision*, Special Issue on Variational and Level Set Methods in Computer Vision (VLSM 2003), 69(1):145–156, August 2006.
- [43] Pablo Arbelaez and Laurent D. Cohen. A Metric Approach to Vector-Valued Image Segmentation *International Journal of Computer Vision*, Special Issue on Variational and Level Set Methods in Computer Vision (VLSM 2003), 69(1):119–126, August 2006.
- [44] Laurent D. Cohen. Editeur des Actes du Colloque International *Mathematics and Image Analysis, MIA’06*, sous forme du Cahier de Mathématiques du CEREMADE No 2006-41, Paris, September 2006.
- [45] Roberto Ardon, Laurent D. Cohen and Anthony Yezzi. Fast surface segmentation guided by user input using implicit extension of minimal paths. *Journal of Mathematical Imaging and Vision*, 25(3):289–305, October 2006.
- [46] Hua Li, Anthony Yezzi and Laurent D. Cohen. Fast 3D Brain Segmentation Using Dual-front Active Contours With Optional User-Interaction *International Journal of Biomedical Imaging*, Special issue on Recent Advances in Mathematical Methods for the Analysis of Biomedical Images. 2006.
- [47] Roberto Ardon, Laurent D. Cohen and Anthony Yezzi. A new implicit method for surface segmentation by minimal paths in 3D images. *Applied Mathematics and Optimization*, 55(2):127-144, March 2007.
- [48] Laurent D. Cohen and Thomas Deschamps. Segmentation of 3D tubular objects with adaptive front propagation and minimal tree extraction for 3D medical imaging. *Computer Methods in Biomechanics and Biomedical Engineering*, 10(4):289 - 305, August 2007.
- [49] Gabriel Peyre and Laurent D. Cohen. Heuristically Driven Front Propagation for Fast Geodesic Extraction. *International Journal for Computational Vision and Biomechanics*, 1(1), 55–67, Jan-June 2008.
- [50] Fethallah Benmansour and Laurent D. Cohen Fast Object Segmentation by Growing Minimal Paths from a Single Point on 2D or 3D Images *Journal of Mathematical Imaging and Vision*. To appear, 2009.
- [51] Gabriel Peyré and Laurent D. Cohen, Geodesic Methods for Shape and Surface Processing in *Advances in Computational Vision and Medical Image Processing: Methods and Applications*, Springer, 2009.
- [52] N. Barreira and M. G. Penedo and Laurent Cohen and M. Ortega. Topological Active Volumes: a Topology-Adaptive Deformable Model for Volume Segmentation To appear, *Pattern Recognition*, 2009.

Actes de Colloques comme conférencier invité

- [53] Laurent D. Cohen and Isaac Cohen. Deformable models for medical images using finite elements & balloons. Conférence invitée. In *Actes Ecoles CEA - EDF - INRIA; Problèmes Non Linéaires Appliqués: Modélisations Mathématiques pour le traitement d'images*, pages 180–200, Rocquencourt, France, March 1992.
- [54] Laurent D. Cohen. Deformable surfaces and parametric models to fit and track 3D data. Conférence invitée à la session 3D shape Recovery and Analysis. In *IEEE International Conference on Systems, Man and Cybernetics*, Beijing, China, Oct 1996.
- [55] Laurent D. Cohen and R. Kimmel. Finding the global minimum for active contours using a level set approach. Conférence invitée à la session Partial Differential Equations. In *IEEE International Conference on Image Processing (ICIP'96)*, pages I:473–476, Lausanne, Suisse, September 1996.
- [56] Laurent D. Cohen. Modèles déformables. Conférence invitée. In *Actes de l'Ecole Thématique ISIS*, pages 1–20, Marly le Roy, Avril 1997.
- [57] Laurent D. Cohen and Thomas Deschamps. Minimal Paths for 3D medical images and Virtual endoscopy. Conférence invitée. In *Mathematics and Image Analysis, MIA '00*, Paris, September 2000.
- [58] Laurent D. Cohen and Benjamin Mauroy. Multiple minimal paths and perceptual grouping. Conférence invitée. In *Mathematics and Image Analysis, MIA '00*, Paris, September 2000.
- [59] Laurent D. Cohen. Fast marching methods for minimal paths in 2D and 3D images. Conférence plénière invitée. In *Proc. Workshop on Hamilton-Jacobi Bellman equations and their applications.*, Paris, France, October 2000.
- [60] Laurent D. Cohen. Chemins minimaux et Modèles Déformables en Analyse d'images. Conférence plénière invitée. In *Proc. Journées d'études SEE: Le Traitement d'Images à l'Aube Du XXIème Siecle.*, Paris, France, Mars 2002.
- [61] Laurent D. Cohen and Pablo Arbelaez. Minimal Paths and Image Segmentation. Conférence invitée. In *Mathematics and Image Analysis, MIA '02*, Paris, September 2002.
- [62] Laurent D. Cohen. Fast Marching and Front Propagation methods in Image Analysis. Conférence invitée. In *Fifth European Conference on Elliptic and Parabolic Problems*, Gaeta, Italy, June 2004.
- [63] Laurent D. Cohen. Fast Marching and Deformable Models in Image Analysis. Conférence invitée. In *IFIP workshop on shape optimization and control*, Lisbon, Portugal, May 2004.
- [64] Laurent D. Cohen and Roberto Ardon. Surface extraction by minimal paths, applications in 3D Medical Images. Conférence invitée. In *Mathematics and Image Analysis, MIA '04*, Paris, September 2004.
- [65] Laurent D. Cohen. Minimal Paths and Deformable Models for Image Analysis. Conférence invitée. In *76. Jahrestagung der Gesellschaft für Angewandte Mathematik und Mechanik e.V., GAMM05*, Université du Luxembourg, 28 Mars - 01 April 2005.
- [66] Laurent D. Cohen Minimal Paths and Deformable Models for Image Analysis. Conférence invitée. In *Mini-invasive Procedures in Medicine and Surgery: Mathematical and Numerical Challenges*, Centre de recherches mathématiques, Université de Montreal, Canada, May 16-27, 2005.
- [67] Laurent D. Cohen and Roberto Ardon. A level set method for constrained object segmentation. Conférence invitée. In *22nd IFIP TC 7 Conference on System Modeling and Optimization, special session on shape analysis and optimization*, Turin, Italy, July 18-22, 2005.
- [68] Laurent D. Cohen. Surface Segmentation and Remeshing using front propagation in Medical Images. Conférence invitée. In *Actes Ecoles CEA - EDF - INRIA; Numerical Simulations of Blood Flows*, December 6-9, 2005, Rocquencourt, France.
- [69] Laurent D. Cohen. Deformable models for medical image Analysis. Conférence invitée. In *Israel-France Meeting in Medical Imaging*, Hadassah University Hospital, Jerusalem, Israel, February 27-March 1st, 2006.
- [70] Laurent D. Cohen. Surface Segmentation using Front Propagation in Medical Images. Conférence invitée. In *7th international symposium on computer methods in biomechanics and biomedical engineering, special session on Computer Assisted Surgery and Planning*, Antibes, March 22-25, 2006.

- [71] Laurent D. Cohen. Invited to organize the minisymposium on Minimal Paths and Fast Marching Methods in Image Analysis. In *2006 SIAM Conference on Imaging Science.*, Minneapolis, Minnesota, USA, 15-17 may, 2006.
- [72] Laurent D. Cohen. Minimal Paths and Fast Marching Methods for Surface Segmentation and Meshing. In *Curves and Surfaces*, invited to minisymposium on Numerical geometry of images, Avignon, June 29- July 5, 2006.
- [73] Laurent D. Cohen and Gabriel Peyre. Exact and Heuristically Driven Geodesic Computations. In *Curves and Surfaces*, invited to minisymposium on Mesh generation, Avignon, June 29- July 5, 2006.
- [74] Laurent D. Cohen. Fast Marching and Minimal paths for Curve and Surface Segmentation. Conférence invitée. In *Journées de Metz 2007*, PDE and variational methods in image analysis, Metz, May 3-4-5, 2007.
- [75] Laurent D. Cohen. Front Propagation and Minimal paths for Image Segmentation. Conférence invitée. In *RIMA '07*, Rencontres MIP-LAMSIN en Imagerie Mathématique, Institut de Mathématiques de Toulouse, France, 11 et 12 Juin 2007.
- [76] Laurent D. Cohen. Geodesic Remeshing using front propagation. Conférence invitée. In *Summer Mathematical Research Center on Scientific Computing and Its Applications.*, Cemracs'07, Pre and Post Processing in Scientific Computing, Luminy, France, 23rd July-31st August 2007.
- [77] Laurent D. Cohen. Fast Curve and Surface Segmentation by finding geodesics. Invited Keynote. Conférence invitée. In *VipIMAGE 2007*, International ECCOMAS Thematic Conference on computational vision and medical image processing, FEUP, Porto, Portugal, 17-19th October 2007.
- [78] Laurent D. Cohen. Front propagation and Fast Marching for fast segmentation of objects in 2D and 3D images. Invited Keynote. Conférence invitée. In *Joint International Meeting of the AMS and Sociedade Brasileira de Matematica*, Special session on Mathematical Methods in Image Processing, IMPA, Rio de Janeiro, Brazil, June 4-7th 2008.
- [79] Laurent D. Cohen. Curve and Surface Segmentation Using Minimal Paths. In *2008 SIAM Annual Meeting*. Invited to Minisymposium on Segmentation and Data Mining, San Diego, California, USA, July 7-11, 2008.
- [80] Laurent D. Cohen. Curve and Surface Segmentation using Fast Marching approaches for medical images. Conférence invitée. In *Imaging and Measurements in Biomedical Engineering* Paris, France October 2-3, 2008.
- [81] Laurent D. Cohen. Lignes géodésiques et segmentation d'images. Conférence invitée. In *SMAI-AFA Approximation, Modélisation Géométrique et Applications .*, CIRM, Luminy, France, 24-28 novembre 2008.
- [82] Laurent D. Cohen. Lignes géodésiques et analyse d'images. Conférence invitée. In *Séminaire de Mathématiques appliquées du Collège de France*, Paris, France 16 Janvier 2009.
- [83] Laurent D. Cohen. Lignes géodésiques et analyse d'images médicales. Conférence invitée. In *1ère Journée de la Recherche Dauphine* Paris, France 12 mai 2009.

Actes de Colloques avec comité de lecture

Remarquer que certaines entrées regroupent plusieurs publications.

La presque totalité de ces conférences sont internationales.

- [84] Laurent D. Cohen. A new approach of vector quantization for image data compression and texture detection. In *International Conference on Pattern Recognition (ICPR'88)*, Rome, 1988.
- [85] Laurent D. Cohen, Laurent Vinet, Peter T. Sander, and André Gagalowicz. Hierarchical region based stereo matching. In *Proc. IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR'89)*, San Diego, June 1989.
- [86] Laurent D. Cohen, Laurent Vinet, Peter T. Sander, and André Gagalowicz. Cooperative segmentation and stereo matching. In *Proc. Topical Meeting on Image Understanding and Machine Vision*, Cape Cod, Massachusetts, June 1989. See also In *Proc. 6th Scandinavian Conference on Image Analysis*, Oulu, Finland, June 1989.

- [87] N. Ayache, J.D. Boissonnat, E. Brunet, Laurent D. Cohen, J.P. Chièze, B. Geiger, O. Monga, J.M. Rocchisani, and P. Sander. Building highly structured volume representations in 3D medical images. In *Computer Aided Radiology*, Juin 1989. Berlin, West-Germany.
- [88] Laurent D. Cohen and Isaac Cohen. A finite element method applied to new active contour models and 3D reconstruction from cross sections. In *Proc. Third IEEE International Conference on Computer Vision (ICCV'90)*, pages 587–591, Osaka, Japan, December 1990.
- [89] Isaac Cohen, Laurent D. Cohen, and Nicholas Ayache. Introducing deformable surfaces to segment 3D images and infer differential structures. In *Proc. IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR'91)*, pages 738–739, Lahaina, Maui, Hawaii, 1991. voir aussi Proc. IEEE EMBS'91 et RR Inria 1403, May 1991.
- [90] Laurent D. Cohen and Isaac Cohen. Deformable models for 3D medical images using finite elements & balloons. In *Proc. IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR'92)*, Champaign, Illinois, June 1992.
- [91] Isaac Cohen, Laurent D. Cohen, and Nicholas Ayache. Using deformable surface to segment 3-D images and infer differential structures. In *Proc. Second European Conference on Computer Vision (ECCV'92)*, pages 648–652, Santa Margherita Ligure, Italy, May 1992. In Lecture Notes in Computer Science: Computer Vision, Vol. 588 Springer-Verlag. Accompagné d'une vidéo dans les videoproceedings.
- [92] Laurent D. Cohen, Eric Bardinet, and Nicholas Ayache. Reconstruction of digital terrain model with a lake. In *Proceedings SPIE 93 Conference on Geometric Methods in Computer Vision*, San Diego, CA, July 1993. autre version RR Inria 1824, Décembre 1992.
- [93] Isaac Cohen and Laurent D. Cohen. A hybrid hyperquadric model for 2-D and 3-D data fitting. In *Proceedings of the 12th IEEE International Conference on Pattern Recognition (ICPR'94)*, pages B–403–405, Jerusalem, 1994.
- [94] Eric Bardinet, Laurent D. Cohen, and Nicholas Ayache. Fitting 3D data using superquadrics and free-form deformations. In *Proceedings of the 12th IEEE International Conference on Pattern Recognition (ICPR'94)*, pages A–79–83, Jerusalem, October 1994. voir aussi congrès IEEE WBIA'94 et CVRMed'95.
- [95] Laurent D. Cohen. Auxiliary variables for deformable models. In *Proc. Fifth IEEE International Conference on Computer Vision (ICCV'95)*, pages 975–980, Cambridge, USA, June 1995.
- [96] Laurent D. Cohen and Anne Gorre. On the convexity of the active contour energy. In *Proceedings of GRETSI*, Juan-les-Pins, September 1995.
- [97] Eric Bardinet, Laurent D. Cohen, and Nicholas Ayache. Tracking medical 3D data with a parametric deformable model. In *Proceedings of the IEEE International Symposium On Computer Vision*, Coral Gables, Florida, November 1995.
- [98] E. Bardinet, Laurent D. Cohen, and N. Ayache. Tracking medical 3D data with a deformable parametric model. In *Proc. Third European Conference on Computer Vision (ECCV'96)*, pages I:317–328, Cambridge, U. K., April 1996. Accompagné d'une vidéo dans les videoproceedings.
- [99] Laurent D. Cohen and Ron Kimmel. Global Minimum for Active Contour Models: A Minimal Path approach. In *Proc. IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR'96)*, pages 666–673, San Francisco, USA, June 1996.
- [100] Laurent D. Cohen and Ron Kimmel. Regularization properties for minimal geodesics of a potential energy. In *Proc. 12th International Conference on Analysis and Optimization of Systems: Images, Wavelets and PDE's (ICAOS'96)*, Paris, France, June 1996.
- [101] B. Leroy, I. Herlin, and Laurent D. Cohen. Multi-resolution algorithms for active contour models. In *Proc. 12th International Conference on Analysis and Optimization of Systems: Images, Wavelets and PDE's (ICAOS'96)*, Paris, France, June 1996.
- [102] Laurent D. Cohen. Deformable curves and surfaces in image analysis. In *Third International Conference on Curves and Surfaces*, Chamonix, July 1996. Association Francaise d'Approximation (A.F.A.).
- [103] B. Leroy, I. Herlin, and Laurent D. Cohen. Face identification by deformation measure. In *Proc. 13th IEEE International Conference on Pattern Recognition (ICPR'96)*, Vienne, Austria, August 1996.

- [104] Laurent D. Cohen, F. Pajany, D. Pellerin, and C. Veyrat. Cardiac wall tracking using doppler tissue imaging (DTI). In *In Proc. of International Conference on Image Processing (ICIP'96)*, pages III-295-298, Lausanne, Suisse, Septembre 1996. Voir aussi communications à annual congress of the *American Society of Echocardiography*, Chicago, June 96. et 13th congress of the *European Society of cardiology*, Birmingham, UK.
- [105] Zakaria Ben Sbeh, Laurent D. Cohen, Gérard Mimoun, Gabriel Coscas, and Gisèle Soubrane. Une méthode adaptative pour la segmentation de drusen. In *Proceedings of GRETSI*, Grenoble, Septembre 1997.
- [106] Martin Lefébure and Laurent D. Cohen. Un algorithme multirésolution de recalage de signaux et d'images. In *Proceedings of GRETSI*, Grenoble, Septembre 1997. Présenté aussi aux journées Orasis, La colle sur Loup, Octobre 1997.
- [107] Zakaria Ben Sbeh, Laurent D. Cohen, Gérard Mimoun, Gabriel Coscas, and Gisèle Soubrane. An adaptive contrast method for segmentation of drusen. In *In Proc. of International Conference on Image Processing (ICIP'97)*, Santa Barbara, California, October 1997.
- [108] Martin Lefébure and Laurent D. Cohen. A multiresolution algorithm for signal and image registration. In *In Proc. of International Conference on Image Processing (ICIP'97)*, Santa Barbara, California, October 1997.
- [109] T. Deschamps, J.-M. Letang, B. Verdonck, and L.D. Cohen. Automatic construction of minimal paths in 3D images: An application to virtual endoscopy. In *Computer Assisted Radiology and Surgery*, Paris, France, June 23-26 1999.
- [110] C Veyrat, D Pellerin, and L Cohen. Respective advantages of spectral, 2D and M mode color tissue doppler imaging. In *X Congress of the International Cardiac Doppler Society*, Kagawa, Japan, November 25-27 1998.
- [111] T. Deschamps and L.D. Cohen. Path extraction in 3D medical images for virtual endoscopy. In *in Proc. Third Israeli Symposium on Computer-Aided Surgery, Medical Robotics, and Medical Imaging*, Technion, Haifa, Israel, May 18 2000.
- [112] Sylvie Naudet, Marc Viala, Patrick Sayd, Laurent Cohen, Frédéric Jallon, Arnauld Dumont, and J. Monnerie. An as-build on line modeling technique AOMS. In *Proceedings of XIXth ISPRS Congress*, Amsterdam, July 2000.
- [113] T. Deschamps and L.D. Cohen. Minimal paths in 3D images and application to virtual endoscopy. In *Proc. sixth European Conference on Computer Vision (ECCV'00)*, Dublin, Ireland, 26th June - 1st July 2000.
- [114] Andres Almensa and L.D. Cohen. Fingerprint Image Matching by minimization of a thin-plate energy using a two-step algorithm with auxiliary variables. In *Proc. Workshop on Applications of Computer Vision (WACV'00)*, December 2000, Palm Springs.
- [115] Patrick Sayd, Sylvie Naudet, Marc Viala, Laurent Cohen, and Arnaud Dumont. Aoms un outil de releve 3d d'environnements industriels. In *Actes du congrès de Vision ORASIS 2001*, Cahors, Juin 2001.
- [116] S. Vinson, L. D. Cohen and F. Perlant Extraction of Rectangular Buildings using DEM and Orthoimage. In *Proc. Scandinavian Conference on Image Analysis (SCIA'01)*, June 2001, Bergen, Norway.
- [117] M. Lefebure and L. D. Cohen. Image registration, optical flow and local rigidityimage registration, optical flow and local rigidity. In *Proc. of IEEE Scale-Space and Morphology in Computer Vision 2001*, Vancouver, Canada, July 2001.
- [118] L. D. Cohen. Multiple contour finding and perceptual grouping using minimal paths. In *Proc. IEEE Workshop on Variational and Level Set Methods in Computer Vision*, Vancouver, Canada, July 2001. IEEE.
- [119] M. Lefebure and L. D. Cohen. Optical Flow and Image Registration : a New Local Rigidity Approach for Global Minimization. In *Proc. of Third International Workshop on Energy Minimization Methods in Computer Vision and Pattern Recognition (EMMCVPR - 2001)*, Sophia-Antipolis, September 2001.
- [120] Laurent D. Cohen and Thomas Deschamps. Multiple Contour Finding and Perceptual Grouping as a set of Energy Minimizing Paths. In *Proc. of Third International Workshop on Energy Minimization Methods in Computer Vision and Pattern Recognition (EMMCVPR - 2001)*, Sophia-Antipolis, September 2001.

- [121] R. Truyen And T. Deschamps And L.D. Cohen. Clinical evaluation of an automatic path tracker for virtual colonoscopy. In *Proc. Medical Image Computing and Computer-Assisted Intervention, MICCAI'01, Utrecht, Netherlands*, October, 2001.
- [122] Valerie Moreau and Laurent Cohen and Denis Pellerin. Deformation Field Estimation for the Cardiac Wall using Doppler Tissue Imaging. In *Proc. Functional Imaging and Modeling of the Heart FIMH'01*, November, 2001.
- [123] Laurent D. Cohen and Thomas Deschamps. Grouping connected components using minimal path techniques. In *Proc. IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR'01)*, December, 2001.
- [124] Frédéric Richard and Laurent D. Cohen. Une nouvelle technique de recalage d'images avec des contraintes aux bords libres: applications aux mammographies. In *Actes de la conférence Reconnaissance des Formes et Intelligence Artificielle, RFIA '02*, pages 453–462, Angers, Janvier 2002.
- [125] Samuel Vinson and Laurent D. Cohen. Extraction des bâtiments complexes à partir d'images aériennes et de MNE. In *Actes de la conférence Reconnaissance des Formes et Intelligence Artificielle, RFIA '02*, pages 125–134, Angers, Janvier 2002.
- [126] Laurent D. Cohen and Thomas Deschamps Groupement de Composantes Connexes à l'aide de Chemins Minimaux. In *Actes de la conférence Reconnaissance des Formes et Intelligence Artificielle, RFIA '02*, pages 723–732, Angers, Janvier 2002.
- [127] P. Sayd, S. Naudet, F. Gaspard, M. Viala, A. Dumont, F. Jallon, J.B. Monnerie, L. Cohen 3D Modeling of Industrial Installation: Toward the Digital Factory . In *Proc. Business Applications of Virtual Reality, BAVR 2002*, Poznan, Poland April 24-25, 2002.
- [128] Frédéric Richard and Laurent D. Cohen. A new Image Registration Technique with Free Boundary Constraints : Application to Mammography. In *Proc. seventh European Conference on Computer Vision (ECCV'02)*, Copenhagen, Denmark, May 2002.
- [129] O. Gérard, T. Deschamps, Myriam Greff and Laurent D. Cohen. Real-time Interactive Path Extraction with On-the-fly Adaptation of the external forces. In *Proc. seventh European Conference on Computer Vision (ECCV'02)*, Copenhagen, Denmark, May 2002.
- [130] L.D. Cohen and T. Deschamps. Fast Extraction of 3D tubular and tree structures. In *in Proc. Fifth Israeli Symposium on Computer-Aided Surgery, Medical Robotics, and Medical Imaging*, Tel Aviv, Israel, May 22 2002.
- [131] Frédéric Richard and Laurent D. Cohen. Non-Rigid Mammogram Registration With Free Boundary Constraints. In *Proc. 6th International Workshop on Digital Mammography (IWDM'02)*, Bremen, Germany, June 2002.
- [132] Thomas Deschamps, Laurent D. Cohen. Fast surface and Tree Structure Extraction of Vascular Objects in 3D Medical Images. In *Proc. Fifth International Conference on Curves and Surfaces*, Saint-Malo, France, June 27 - July 3, 2002.
- [133] Thomas Deschamps and Laurent D. Cohen. Fast extraction of tubular and tree 3D surfaces with front propagation methods. In *Proc. 16th IEEE International Conference on Pattern Recognition (ICPR'02)*, Quebec, Canada, August 2002.
- [134] Valerie Moreau, Laurent D.Cohen and Denis Pellerin. Estimation and Analysis of the Deformation of the Cardiac Wall using Doppler Tissue Imaging. In *Proc. 16th IEEE International Conference on Pattern Recognition (ICPR'02)*, Quebec, Canada, August 2002.
- [135] Samuel Vinson and Laurent D. Cohen. Multiple rectangle model for Buildings Segmentation and 3D Scene Reconstruction. In *Proc. 16th IEEE International Conference on Pattern Recognition (ICPR'02)*, Quebec, Canada, August 2002.
- [136] Laurent D. Cohen. Minimal Paths and Deformable Models for Image Analysis. In *Demo session at IEEE Workshop on Applications of Computer Vision (WACV'02)*, Orlando, Florida, December 2002.
- [137] Laurent D. Cohen and Samuel Vinson. Segmentation of Complex Buildings from Aerial Images and 3D Surface Reconstruction. In *Proc. IEEE Workshop on Applications of Computer Vision (WACV'02)*, Orlando, Florida, December 2002.
- [138] Pablo A. Arbelaez and L. D. Cohen. Partitions d'énergies et segmentation d'images. In *Actes du congrès de Vision ORASIS 2003*, pages 375–384, Gerardmer, France, Mai 2003.

- [139] Pablo A. Arbelaez and L. D. Cohen. The Extrema Edges. In *Proc. of 4th International Conference on Scale-Space theories in Computer Vision*, pages 180–195, Isle of Skye, Scotland, UK, June 2003.
- [140] Pablo A. Arbelaez and L. D. Cohen. Extrema mosaic and image segmentation. In *Proc. of 4th International Workshop on Energy Minimization Methods in Computer Vision and Pattern Recognition (EMMCVPR - 2003)*, pages 246–260, Lisbon, Portugal, July 2003.
- [141] Pablo A. Arbelaez and L. D. Cohen. Generalized Voronoi Tesselations for Vector-Valued Image Segmentation. In *Proc. of 2nd IEEE Workshop on Variational, Geometric and Level Set Methods in Computer Vision (VLSM'03)*, Nice, October 2003.
- [142] Roberto Ardon and L. D. Cohen. Fast Constrained Surface Extraction by Minimal Paths. In *Proc. of 2nd IEEE Workshop on Variational, Geometric and Level Set Methods in Computer Vision (VLSM'03)*, Nice, October 2003.
- [143] Gabriel Peyre and L. D. Cohen. Geodesic re-meshing and parameterization using front propagation. In *Proc. of 2nd IEEE Workshop on Variational, Geometric and Level Set Methods in Computer Vision (VLSM'03)*, pages 33-40, Nice, October 2003.
- [144] Pablo A. Arbelaez et L. D. Cohen. Segmentation d'Images Vectorielles par Partitions de Voronoi Généralisées. In *Actes de la conférence Reconnaissance des Formes et Intelligence Artificielle, RFIA '04*, Toulouse, Janvier 2004.
- [145] Roberto Ardon et L. D. Cohen. Extraction rapide de surfaces contraintes par chemins minimaux. In *Actes de la conférence Reconnaissance des Formes et Intelligence Artificielle, RFIA '04*, Toulouse, Janvier 2004.
- [146] Gabriel Peyre et L. D. Cohen. Remaillage géodésique par propagation de fronts. In *Actes de la conférence Reconnaissance des Formes et Intelligence Artificielle, RFIA '04*, Toulouse, Janvier 2004. Ce papier a reçu le **prix du meilleur papier**.
- [147] Stephane Bonneau and Laurent D. Cohen and Maxime Dahan. A Multiple Target Approach for Single Quantum Dot Tracking. In *Proc. of IEEE International Symposium on Biomedical Imaging: From Nano to Macro, ISBI'04*, Arlington, USA, April 2004.
- [148] Roberto Ardon and Laurent D. Cohen. Efficient initialization for constrained active surfaces, applications in 3D Medical Images. In *Proc. of Computer Vision Approaches to Medical Image Analysis (CVAMIA) and Mathematical Methods in Biomedical Image Analysis (MMBIA) Workshop 2004*, Springer, Prague, Czech Republic, May 2004.
- [149] Gabriel Peyre and Laurent D. Cohen. Surface Segmentation Using Geodesic Centroidal Tesselation. In *Proc. of 2nd IEEE International Symposium on 3DPVT (3D Data Processing, Visualization, and Transmission)*, pages 995-1002, Thessaloniki, Greece, September 2004.
- [150] Stephane Bonneau, Maxime Dahan and Laurent D. Cohen. Tracking Single Quantum Dots in Live Cells with Minimal Paths. in *Proc. IEEE CVPR05 Workshop on Computer Vision Methods for Bioinformatics* San Diego, USA, June 2005.
- [151] Roberto Ardon, Laurent D. Cohen and Anthony Yezzi implicit surface segmentation by minimal paths, Applications in 3D medical images. in *Proc. IEEE ICIP'05 International Conference on Image Processing* Genova, September 11-14, 2005
- [152] Hua Li, Anthony Yezzi and Laurent D. Cohen Fast 3D Brain Segmentation Using Dual-Front Active Contours with Optional User-Interaction. in *Proc. IEEE CVBIA '05 Computer Vision for Biomedical Image Applications: Current Techniques and Future Trends, An International Conference on Computer Vision (ICCV'05) Workshop* Beijing, China, October 21, 2005. **Best Paper**.
- [153] Gabriel Peyre and Laurent D. Cohen. Heuristically Driven Front Propagation for Geodesic Paths Extraction. In *Proc. of 3rd IEEE Workshop on Variational, Geometric and Level Set Methods in Computer Vision (VLSM'05)*, Nice, Springer LNCS, p.173-184, Oct. 2005.
- [154] Roberto Ardon, Laurent D. Cohen and Anthony Yezzi A new implicit method for surface segmentation by minimal paths: Applications in 3D medical images. in *Proc. EMMCVPR 2005, Fifth International Workshop on Energy Minimization Methods in Computer Vision and Pattern Recognition* St. Augustine, FL, USA, November 9-11, 2005. Lecture Notes in Computer Science, LNCS 3757 Springer.

- [155] Stephane Bonneau, Laurent D. Cohen and Maxime Dahan. Détection et suivi d'objets ponctuels dans des séquences d'images de fluorescence. In *Proc. RFIA 2006, 15e congrès francophone AFRIF-AFIA, Reconnaissance des Formes et Intelligence Artificielle*, Tours, 25-27 janvier 2006.
- [156] Gabriel Peyre and Laurent D. Cohen. Landmark-based Computation for Heuristically Driven Path Planning. in *Proc. IEEE CVPR06 Conference on Computer Vision and Pattern Recognition* New York, USA, June 17-22, 2006.
- [157] Adrian Ion and Gabriel Peyre and Yll Haxhimusa and Samuel Peltier and Walter G. Kropatsch and Laurent Cohen. Shape Matching Using the Geodesic Eccentricity Transform - A Study. In *Proceedings of OAGM'07*, Schloss Krumbach, Austria, 3-4 May 2007.
- [158] Adrien Auclair and Laurent Cohen and Nicole Vincent A Robust Approach for 3D model reconstruction from a video sequence of Cars. In *Proceedings of 15th Scandinavian Conference on Image Analysis, SCIA 2007*, Aalborg, Denmark, June 14-17, 2007. Lecture Notes in Computer Science, Springer, Berlin,
- [159] Adrien Auclair and Laurent Cohen and Nicole Vincent How to Use SIFT Vectors to Analyze an Image with Database Templates. In *Proceedings of 5th International Workshop on Adaptive Multimedia Retrieval, AMR'07*, Paris, France, 5-6 July 2007.
- [160] Oudom Somphone and Sherif Makram-Ebeid and Laurent Cohen. Image Registration with a Partition of Unity Finite Element Method. In *International Conference on Nonconvex programming: local and global approaches, Theory, Algorithms and Applications, NPC'07*, Rouen, France, 17-21 December, 2007.
- [161] Fethallah Benmansour and Stephane Bonneau and Laurent D. Cohen Finding a Closed Boundary by Growing Minimal Paths from a Single Point on 2D or 3D Images. in *Proc. IEEE Mathematical Methods in Biomedical Image Analysis MMBIA 2007, An International Conference on Computer Vision (ICCV'07) Workshop* Rio de Janeiro, Brazil, October 14-15, 2007.
- [162] Fethallah Benmansour and Stephane Bonneau and Laurent D. Cohen Finding a Closed Boundary by Growing Minimal Paths from a Single Point. in *Proc. of the Thematic Conference on Computational Vision and Medical Image Processing* Porto, Portugal, October 2007.
- [163] Fethallah Benmansour and Stephane Bonneau and Laurent D. Cohen An Implicit Approach to Closed Surface and Contour Segmentation Based on Geodesic Meshing and Transport Equation in *Actes RFIA 2008, 16e congrès francophone AFRIF-AFIA Reconnaissance des Formes et Intelligence Artificielle* Amiens, France, 22-25 Janvier, 2008.
- [164] Oudom Somphone and Sherif Makram-Ebeid and Laurent D. Cohen. Robust Image Registration Based on a Partition of Unity Finite Element Method In *Proc. Fifth IEEE International Symposium on Biomedical Imaging (ISBI'08)*, Paris, France, May 14-17, 2008.
- [165] Fethallah Benmansour and Laurent D. Cohen. From a single point to a surface patch by growing minimal paths. In *Seventh International Conference On Mathematical Methods For Curves and Surfaces*, Tonsberg, Norway, June 26-July 1, 2008.
- [166] Adrian Ion and N. M. Artner and Gabriel Peyre and S. B. L. Marmol and Walter G. Kropatsch and Laurent D. Cohen. Shape Matching Using the Geodesic Eccentricity Transform - A Study. In *Proceedings of S3D (Search in 3D), an IEEE CVPR08 Workshop*, Anchorage, Alaska, June 27, 2008.
- [167] Pablo Arbelaez and Laurent D. Cohen. Constrained Image Segmentation from Hierarchical Boundaries. In *Proceedings of IEEE CVPR08*, Anchorage, Alaska, June 23-28, 2008.
- [168] Youssef Rouchdy and Laurent D. Cohen and Olivier Pascual and Alain Bessis Segmentation of microglia from confocal microscope images combining the Fast Marching Method with Harris Points. In *Proceedings of third international workshop on Microscopic Image Analysis with Applications in Biology, MIAAB 2008*, in conjunction with MICCAI in New York, NY, September 06, 2008.
- [169] Adrien Auclair and Laurent Cohen and Nicole Vincent Using Point Correspondences Without Projective Deformation For Multi-View Stereo Reconstruction. In *Proceedings of IEEE ICIP 2008*, San Diego, California, USA, October 15-18, 2008.

- [170] Sébastien Bougleux and Gabriel Peyré and Laurent D. Cohen. Anisotropic Geodesics for Perceptual Grouping and Domain Meshing. In *Proc. tenth European Conference on Computer Vision (ECCV'08)*, Marseille, France, October 12-18, 2008.
- [171] Gabriel Peyré and Sébastien Bougleux and Laurent D. Cohen. Non-local Regularization of Inverse Problems. In *Proc. tenth European Conference on Computer Vision (ECCV'08)*, Marseille, France, October 12-18, 2008.
- [172] Oudom Somphone and Benoit Mory and Sherif Makram-Ebeid and Laurent D. Cohen. Prior-based Piecewise-smooth Segmentation by Template Competitive Deformation using Partitions of Unity. In *Proc. tenth European Conference on Computer Vision (ECCV'08)*, Marseille, France, October 12-18, 2008.
- [173] Julien Mille and Romuald Boné and Laurent D. Cohen. Region-based 2D deformable generalized cylinder for narrow structures segmentation. In *Proc. tenth European Conference on Computer Vision (ECCV'08)*, Marseille, France, October 12-18, 2008.
- [174] Youssef Rouchdy and Laurent D. Cohen. Image Segmentation by Geodesic Voting. Application to the Extraction of Tree Structures from Confocal Microscope Images. In *Proceedings of 19th IAPR/IEEE International Conference on Pattern Recognition ICPR 2008*, Tampa, Florida, USA, December 8-11, 2008.
- [175] Fethallah Benmansour and Laurent Cohen and E. Davilla and P.C. Douek and M. Orkisz and M.A. Zuluaga. New interactive methods for tubular structure segmentation of medical images In *Proc. 12th Israeli Symposium on Computer-Aided Surgery, Medical Robotics, and Medical Imaging (ISRACAS'09)*, Tel Aviv, Israel, May 7th, 2009.
- [176] Julien Mille and Laurent D. Cohen. Geodesically linked active contours: evolution strategy based on minimal paths. In *Proc. of 2nd Second International Conference on Scale Space Methods and Variational Methods in Computer Vision (SSVM'09)*, Voss, Norway, June 1 - June 5, 2009, Springer LNCS.
- [177] Nikos Gabrielides and Laurent D. Cohen. An Implicit Method for Interpolating two Digital Curves on Parallel Planes. In *Proc. of 2nd Second International Conference on Scale Space Methods and Variational Methods in Computer Vision (SSVM'09)*, Voss, Norway, June 1 - June 5, 2009, Springer LNCS.
- [178] Fethallah Benmansour and Laurent D. Cohen. Tubular anisotropy for 3D vessels segmentation. In *Proc. of 2nd Second International Conference on Scale Space Methods and Variational Methods in Computer Vision (SSVM'09)*, Voss, Norway, June 1 - June 5, 2009, Springer LNCS.
- [179] Fethallah Benmansour and Laurent D. Cohen. From a single point to a surface patch by growing minimal paths. In *Proc. of 2nd Second International Conference on Scale Space Methods and Variational Methods in Computer Vision (SSVM'09)*, Voss, Norway, June 1 - June 5, 2009, Springer LNCS.
- [180] Fethallah Benmansour and Laurent D. Cohen. Tubular Anisotropy Segmentation. In *Proc. ORASIS'09, Congrès des jeunes chercheurs en vision par ordinateur*, Trégastel, 8-12 juin 2009.
- [181] Adrien Auclair and Laurent D. Cohen and Nicole Vincent. Hachage de descripteurs locaux pour la recherche d'images similaires In *Proc. ORASIS'09, Congrès des jeunes chercheurs en vision par ordinateur*, Trégastel, 8-12 juin 2009.
- [182] Youssef Rouchdy and Laurent Cohen. The shading zone problem in geodesic voting and its solutions for the segmentation of tree structures. Application to the segmentation of Microglia extensions. In *Proc. MMBIA 2009: IEEE Computer Society Workshop on Mathematical Methods in Biomedical Image Analysis*, in conjunction with CVPR'09, Miami, Florida, USA, June 20-25, 2009.
- [183] Julien Mille and Laurent Cohen. Deformable tree models for 2D and 3D branching structures extraction. In *Proc. MMBIA 2009: IEEE Computer Society Workshop on Mathematical Methods in Biomedical Image Analysis*, in conjunction with CVPR'09, Miami, Florida, USA, June 20-25, 2009.
- [184] Fethallah Benmansour and Laurent Cohen and Max Law and Albert Chung. Tubular anisotropy for 2D vessels segmentation. In *Proc. IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR'09)*, Miami, Florida, USA, June 20-25, 2009.

- [185] Fethallah Benmansour and Laurent Cohen. A New interactive method for coronary arteries segmentation based on tubular anisotropy. In *Proc. Sixth IEEE International Symposium on Biomedical Imaging (ISBI'09)*, Boston, Massachusetts, USA, June 28 - July 1, 2009.
- [186] Julien Mille and Laurent Cohen. A local normal-based region term for active contours. In *Proc. 7th International Conference on Energy Minimization Methods in Computer Vision and Pattern Recognition, EMMCVPR'09*, Bonn, Germany, August 24-27, 2009
- [187] Sébastien Bougleux and Gabriel Peyré and Laurent Cohen. Compression d'images par triangulations géodésiques anisotropes. In *Proc. GRETSI*, Dijon, France, September 8-11, 2009
- [188] Julien Mille and Laurent Cohen. Reconstruction de structures arborescentes par chemins minimaux et bande déformable. In *Proc. GRETSI*, Dijon, France, September 8-11, 2009
- [189] Hua Li and Anthony Yezzi and Laurent Cohen. 3D Multi-branch Tubular Surface and Centerline Extraction with 4D Iterative Key Points. To appear in *Proc. 12th International Conference on Medical Image Computing and Computer Assisted Intervention, MICCAI'09*, Imperial College, London, UK, September 21-24, 2009.
- [190] Sébastien Bougleux and Gabriel Peyré and Laurent Cohen. Image Compression with Anisotropic Geodesic Triangulations. In *Proc. Twelfth IEEE International Conference on Computer Vision (ICCV'09)*, Kyoto, Japan, September 29th-October 2nd, 2009

Colloques avec comité de lecture sans actes et divers

- [191] Laurent D. Cohen. Chemins Minimaux et Modèles Déformables Élastiques en Analyse d'images. In *Lettres des Départements scientifiques du CNRS*, SPM, N. 42, Décembre 2003.
- [192] Gabriel Peyre and Laurent D. Cohen. Calculs géodésiques pour le remaillage adaptatif. In *2ème Congrès National de Mathématiques Appliquées et Industrielles SMAI 2005*, Evian, 23-27 mai 2005.
- [193] Roberto Ardon and Laurent D. Cohen. Segmentation implicite de surfaces à partir d'un ensemble de plus de deux courbes. In *2ème Congrès National de Mathématiques Appliquées et Industrielles SMAI 2005*, Evian, 23-27 mai 2005.
- [194] Roberto Ardon and Laurent D. Cohen and Anthony Yezzi. A Level Set Method for Constrained Object Segmentation. In *2006 SIAM Conference on Imaging Science. Minisymposium on Minimal Paths and Fast Marching Methods in Image Analysis*, Minneapolis, Minnesota, USA, 15-17 may 2006.
- [195] Laurent D. Cohen. Fast Marching and Deformable Models in Image Analysis. In *2006 SIAM Conference on Imaging Science. Minisymposium on Minimal Paths and Fast Marching Methods in Image Analysis*, Minneapolis, Minnesota, USA, 15-17 may 2006.
- [196] Gabriel Peyre and Laurent D. Cohen. Geodesic Surface Processing. In *Introduction to numerical methods for moving boundaries.*, Ensta, Paris, 12-14 Nov. 2007.
- [197] Ron Kimmel and Nir Sochen and Laurent D. Cohen and Fethalla Benmansour. Using deformable surface registration for vessel segmentation on computed tomography angiography. In *French-Israeli Cooperation Seminar on Medical and Biological Imaging*, Ministry of Science, Culture and Sport, Jerusalem, Israel, December 18-19, 2007.
- [198] Laurent D. Cohen and Ron Kimmel. Using deformable surface registration for vessel segmentation on computed tomography angiography. In *Israel-France Seminar on Medical and Biological Imaging*, Haut Conseil pour la Recherche et la Coopération Scientifique et Technologique, Ministère de l'Enseignement Supérieur et de la Recherche, Paris, 17-18 novembre 2008.

Videos.

- [199] Laurent D. Cohen and A. Witkin. Recursive book. Film, 1985. SCHLUMBERGER Palo Alto Research. présenté à Stanford University.
- [200] Isaac Cohen, Laurent D. Cohen, and Nicholas Ayache. Using deformable surface to segment 3-D images and infer differential structures. In *Proc. Second European Conference on Computer Vision (ECCV'92)*, Santa Margherita Ligure, Italy, May 1992. Videoproceedings.
- [201] N. Ayache, E. Bardinnet, S. Benayoun, I. Cohen, L.D. Cohen, H. Delingette, J. Feldmar, C. Nastar, G. Subsol, and J.-P. Thirion. Non Rigid Motion (Tracking, Analysis and Simulation). Video, INRIA, 1994. Produced by INRIA audiovisuel.

- [202] E. Bardinet, Laurent D. Cohen, and N. Ayache. Tracking medical 3D data with a deformable parametric model. In *Proc. Fourth European Conference on Computer Vision (ECCV'96)*, Cambridge, U. K., April 1996. Videoproceedings.
- [203] E. Bardinet, Laurent D. Cohen, and N. Ayache. Tracking and motion analysis of the left ventricle with deformable superquadrics. *MEDIA, Medical Image Analysis, an international journal of Computer Vision, Visualisation and Image Guided Intervention in Medicine*, 1(2), November 1996. Video in the CD version of the journal.
- [204] T. Deschamps, L.D. Cohen. Minimal paths in 3D images and application to virtual endoscopy. *Medical Image Analysis*, 2001. video in the web version of the journal.
- [205] Gabriel Peyre and Laurent D. Cohen. Geodesic Computation for Adaptive Remeshing in *Proc. IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR'05)* Volume 2, 20-26, p.1193. San Diego, USA, June 2005. Video Proceedings. <http://www.cmap.polytechnique.fr/~peyre/download/PeyreCohenCVPR05.zip>

Brevets

- [206] Centered Path construction in 3D images, avec T. Deschamps et S. Makram-Ebeid au LEP. 1999, étendu à l'international en 2000. (Image Processing Method, System and Apparatus for Processing an Image representing a tubular structure and for constructing a path related to said structure, March 1999 International Publication Number: WO 00/41134)
- [207] Outils de traitement d'images en Photogrammetrie, n° BD 1276 "Procédé de mesurage d'un objet tridimensionnel ou d'un ensemble d'objets". avec M. Viala, S. Naudet et R. Maroy au CEA, 1999, étendu à l'international en 2001.
- [208] Station d'imagerie médicale à segmentation rapide d'images, avec T. Deschamps à Philips Recherche France. Octobre 2001, étendu à l'international en 2002. (02.05.2003 Ref #FR2831306, #EP1306803)
- [209] Fast surface interpolation, avec R. Ardon et J.-M. Lagrange à Philips Recherche France, 2003.
- [210] Vessel Centerline Determination, avec I. Milstein et S. Ackerman, Brevet international, 2005.

Principaux Rapports Industriels (Confidentiels pour la plupart)

- [211] Laurent D. Cohen. Méthodes de moindres carrés pour l'équation de burgers. Technical report, Avions Marcel Dassault-Bréguet Aviation, 1984.
- [212] Laurent D. Cohen. Quantification vectorielle appliquée à la détection de textures. Technical report, SCHLUMBERGER Palo Alto Research, Californie, USA, 1985.
- [213] Laurent D. Cohen. Plusieurs rapports internes de synthèse "SCHLUMBERGER Montrouge Recherche (SMR)" en cryptographie, sécurité informatique, compression des données texte et image, restauration d'images. Technical report, Schlumberger Montrouge Recherche, 1986-87.
- [214] Laurent D. Cohen. Des, data encryption standard. *Scientific Magazine of Research*, (diffusion et vulgarisation de la recherche dans le groupe Schlumberger), SMR-1, January 1987.
- [215] Laurent D. Cohen. Quantization and image data compression (1ère partie). *Scientific Magazine of Research*, (diffusion et vulgarisation de la recherche dans le groupe Schlumberger), SMR-2, 1987.
- [216] Laurent D. Cohen. Quantization and image data compression (2ème partie). *Scientific Magazine of Research*, (diffusion et vulgarisation de la recherche dans le groupe Schlumberger), SMR-3, January 1988.

Rapports d'activités de conseil et collaboration (Confidentiels)

- [217] Laurent D. Cohen. Déconvolution et amélioration d'image. Technical report, Schlumberger Montrouge Recherche, Octobre 1988.
- [218] Laurent D. Cohen. Filtrés adaptatifs et contours. Technical report, Schlumberger Montrouge Recherche, Octobre 1989.
- [219] Laurent D. Cohen. Extraction de contours. reconnaissance des formes. Technical report, Schlumberger Montrouge Recherche, Octobre 1990.
- [220] Laurent D. Cohen. Détection de contours et segmentation par minimisation d'énergie. Technical report, Schlumberger Montrouge Recherche, Octobre 1991.
- [221] Laurent D. Cohen. Fusion stéréo avec discontinuités. Technical report, Matra MS2I, 1992.

- [222] Laurent D. Cohen. Mise en correspondance de signaux par minimisation d'énergie. Technical report, Etudes et Productions Schlumberger, EPS Clamart, 1993.
- [223] Laurent D. Cohen. Problèmes de restauration d'images, de segmentation et fusion de données par minimisation d'énergie. Technical report, EuropScan Schlumberger, 1994.
- [224] Laurent D. Cohen. Optimisation d'algorithmes pour la segmentation et fusion de données par minimisation d'énergie. Technical report, EuropScan Schlumberger, 1995 et 1996.
- [225] Laurent D. Cohen. Etat de l'art sur l'indexation par le contenu de séquences vidéo. Technical report, Alcatel Alsthom Recherche, 1996-1997.
- [226] Laurent D. Cohen. Méthode numérique de résolution des contours actifs dans le système d'aide à la détection d'objets dans des images de tuyauterie industrielle. Technical report, CEA, 1998.
- [227] Laurent D. Cohen. Reconstruction de surfaces par méthodes variationnelles pour des applications en imagerie sismique 3d. Technical report, Elf Aquitaine, 1998.
- [228] Laurent D. Cohen. Etude de la reconstruction de surfaces à partir d'une paire d'images stéréo. Technical report, EuropScan, Février 1999.
- [229] Laurent D. Cohen. Filtres adaptatifs et restauration d'images. Technical report, Heymann Systems, Mars 2000.
- [230] Laurent D. Cohen. On vessel segmentation, central line and bone removal. Technical report, Algotec, Mars 2003.