



## Renaud Keriven

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Web: <http://acute3d.com>

### Current Position

- President and CTO, [Acute3D](#) company.
- Assistant Professor, [École Polytechnique](#).
- Ingénieur en Chef des Ponts des Eaux et des Forêts, [French Ecology Department](#)

### Previous Positions

- 2004-2010: Head of the [IMAGINE](#) group.
- 2000-2010: Professor, École des Ponts ParisTech.
- 2002-2007: École Normale Supérieure (ENS Paris), [Computer Science department](#).
- 2002-2007: Assistant director at ENS Paris and ENPC of the INRIA [Odyssee team](#).

### Education

- 2006: “Habilitation à Diriger les Recherches”, Université Paris-Est , France.
- 1997: Ph.D., École des Ponts ParisTech, awarded with highest honors and special prize. Title: Partial Differential Equations, Curves and Surface Evolutions and Scale-Spaces in Computer Vision. Advisor: O.Faugeras.
- 1991: Master, Artificial Intelligence and Pattern Matching.
- 1991: École des Ponts ParisTech degree.
- 1988: École Polytechnique degree.

- 1985: Successful candidate in the exams of École Polytechnique and École Normale Supérieure.

### Research Interests

- Multi-view Stereovision, 3D photography
- Shapes and Shape priors in Computer Vision
- Discrete and continuous optimization in Computer Vision
- Generic Programming on Graphics Processing Units

### Awards:

- 1999, French nominee, Cor Baayen award (most promising junior researchers in Computer Science and Applied Mathematics in European Community).
- 1998, Best paper award at the European Conference on Computer Vision (Olympus-Prize “Science for Life”). (Other best paper award at International Workshop on Content-Based Multimedia Indexing 2008)
- 1997, Special prize, best PhD thesis award, École des Ponts ParisTech

### Publications (follow [ ] links to download)

- H-index: 24, most cited paper: 490 citations.
- Books, dissertations : [1, 2, 3, 4]
- Book chapters : [5, 6, 7, 8]
- Journals : [9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27]
- Rank A International Conferences (CVPR, ICCV, ECCV, IPMI, MICCAI) : [28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56] (Best paper awards: [56] at ECCV98).
- Other International Conferences with reviewing committee : [57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106] (Best paper awards: [72] at CBMI08).
- Research reports : [107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139]

### Teaching

- École des Ponts ParisTech
  - Computer Vision and Image Processing (since 1997)
  - Computer Science Main Chair (2003-2009)


- École Polytechnique
  - Numerical Image Processing (INF441b) (since 2009)
  - Computer Vision (INF552) (since 2008)
  - Foundations of Computer Science (INF431) (2007-2009)
- Master Mathématiques Vision et Apprentissage (ENS Cachan, P5 Univ., Dauphine Univ., X, ENST, ECP, ENPC, EGIM)
  - 3D computer vision (since 2004)
- Master Parisien de Recherche en Informatique (P7 Univ., X, ENS, ENS Cachan)
  - 3D computer vision (since 2001)
- Master Image (Telecom ParisTech)
  - 3D computer vision (since 2006)
- Master Systèmes d'Information (Paris-Est Univ.)
  - Computer Vision (since 2000)

### **Academic and industrial projects**

- European academic projects since 2000
  - 2008: Gunzo. 3D church modeling
  - 2005: VisioTrain. Computational and Cognitive Vision Systems.
  - 2005: Facets. Fast Analog Computing with Emergent Transiant States.
  - 2001: Cogvisys. Cognitive vision systems.
  - 2000: Mapawamo. Magnetic resonance data processing.
- French academic projects since 2004
  - 2009: Urban 3D modeling (EADS Foundation)
  - 2009: Numerical cities (French Ecology Department)
  - 2007: Dynamic scenes modeling (French National Research Agency)
  - 2007: GPU for image processing and Special Effects (French National Research Agency) (Industrial parters: RealViZ, Mikros Image)
  - 2007: GPU for mathematical finance (French National Research Agency) (Industrial parters:BNP Paribas, CALYON, EDF, IXIS, MISYS, Pricing partners)
  - 2006: Discrete surface optimization (French National Research Agency)
  - 2005: Brain modeling (French National Research Agency)
  - 2004: Special Effects (French National Research Agency) (Industrial Parters: RealViz, Duboi)
- Recent industrial projects
  - 2008: 3D relief modeling (French Petroleum Institute)

## Scientific service

- Funding Organizations reviewer for:
  - Engineering and Physical Sciences Research Council (EPSRC), UK: 2007
  - Evaluation Orientation de la Coopération Scientifique (ECOS): 2007
  - Agence Nationale de la Recherche (ANR): since 2006
  - Research Grants Council of Hong Kong: 2006
  - Université Paris 13 founding department: 2008
- Member of the scientific committee of Ecole Supérieure d'Ingenieurs en Electronique et Electrotechnique (ESIIEE).
- Member of PhD thesis and HDR committees as reviewer or examiner.
- Journal reviewer for:
  - International Journal of Computer Vision
  - IEEE Transactions on Pattern Matching and Analysis
  - IEEE Transactions on Industrial Electronics
  - IEEE Transactions on Image Processing
  - IEEE Transactions on Medical Imaging
  - IEEE Transactions on Visualization and Computer Graphics
  - Journal of Mathematical Imaging and Vision
  - Journal of Computer Science and Technology
  - Medical Image Analysis
  - Image and Vision Computing
  - Journal of Visual Communication and Image Processing
  - Pattern Recognition Letters
- General Chair for:
  - Discrete optimization and Computer Vision, GDR MSPC, 2005 (Paris)
- Area Chair for:
  - ECCV: European Conference on Computer Vision 2010 (Heraklion)
  - International Conference on Research, Innovation and Vision for the Future, 2007 (Hanoi)
- Local Chair for:
  - 3DPVT: 5th International Symposium on 3D Data Processing, Visualization and Transmission 2010 (Paris)
- Program Committee member for:
  - CVGPU: Computer Vision on GPUs, 2010 (Heraklion)
  - PCV: Photogrammetry Computer Vision and Image Analysis, 2010 (Paris).
  - CVPR: IEEE CS Conference on Vision and Pattern Recognition 2010 (San Francisco), 2009 (Miami), 2007 (Minneapolis), 2006 (New York), 2005 (San Diego), 2004 (Washington).

- 3DPVT: International Symposium on 3D Data Processing, Visualization and Transmission 2010 (Paris), 2008 (Atlanta), 2006 (Chapel Hill).
  - Annual Conference of the European Association for Computer Graphics 2010 (Norrköping, external reviewer)
  - ICCV: International Conference on Computer Vision 2009 (Kyoto), 2005 (Beijing), 2003 (Nice)
  - Mirage, Computer Vision / Computer Graphics Collaboration Techniques and Applications 2009 (Paris)
  - ECCV: European Conference on Computer Vision 2008 (Marseille), 2006 (Graz)
  - ICPR: International Conference on Pattern Recognition 2010 (Istanbul), 2006 (Hong Kong)
  - MICCAI: International Conference on Medical Image Computing and Computer Assisted Intervention 2007 (Brisbane)
  - Eurographics 2007 (Prague)
  - SIGGRAPH: International Conference and Exhibition on Computer Graphics and Interactive Techniques 2007 (San Diego, external reviewer).
  - Brazilian Symposium on Computer Graphics and Image Processing 2007 (Belo Horizonte)
  - SSVM: Scale Space and Variational Methods 2007 (Italy).
  - VLSM: IEEE Workshop on Variational, Geometric and Level Set Methods in Computer Vision 2005 (Beijing)
  - International Conference on Scale-Space 2005 (Hofgeismar)
  - ICIP: IEEE International Conference on Image Processing 2006 (Atlanta), 2004 (Singapore)
  - Conference on Modeling and Simulation for Computer-aided Medicine and Surgery 2002 (Paris)
- Invited talks and courses
    - Journées Images et Modélisations Mathématiques, IRISA/ISMAR, Rennes (2006)
    - Jean Ponce Group Seminar [  ], Ecole Normale Supérieure (2005)
    - Graph cuts tutorial [  ], Ecole Normale Supérieure (2005)
    - Polytechnicum Marne la Vallée, (2003)
    - Institut Gaspard Monge seminar, UMLV (2003)
    - Computer Vision seminar, INRIA Rhône-Alpes (2002)
    - Scientific Computing seminar, ENPC (2002)
    - MIM seminar, Ecole Normale Supérieure de Lyon (2000)
    - PDE team seminar, Institut Elie Cartan Nancy (2000)
    - DMA seminar, UT Compiègne (2000)
    - CIMPA School on PDE and Computer Vision, Beijing (1999)
  - PhD Students
    - Alumni:
      - Fabien Le Jeune (now with Ineo)

- Geoffray Adde (now with EDF)
- Jean-Philippe Pons (now with CSTB)
- Olivier Juan (now with EDF)
- Romain Dupont (now with CEA)
- Gheorghe Postelnicu (now with Google)
- Guillaume Charpiat (now with INRIA)
- Patrick Etyngier (now with Philips)
- Pierre Maurel (now with ENS Cachan)
- Alexandre Chariot (now with CEA)
- Cédric Allène (now with Kodak)
- Patrick Labatut (now with Nokia)
- Mikhaël Péchaud (now with Education Nationale)
- Nicolas Thorstensen (now with Fraunhofer Berlin)
- Ehsan Aganj (now with a start-up company)
- Anne-Marie Tousch (now with a start-up company)
- Jérôme Courchay
- Graduating: Anne-Laure Jachiet, Vu Hoang Hiep, David Ok, Pierre Moulon















## Miscellaneous

- “Popularization”:
  - “Machine Learning”, École des Ponts ParisTech, Jun. 2008 [ [📄](#) ] .
  - “Image Based Modeling”, École des Ponts ParisTech, Jun. 2007 [ [📄](#) ] .
  - “Augmented reality and urban planing”, La Recherche, Aug. 2006 [ [📄](#) ] .
  - PhD work on stereovision with PDEs has been reported on TV (FR3 Paca), in the newspapers (Nice Matin [ [📄](#) ] ) in an article in the French magazine “La Recherche” (march 1999 [ [📄](#) ] ) and at the 1999’ Exhibition “La Science et nous” [ [📄](#) ] .
- Software development:
  - 2006-: [Imagine++](#), a set of libraries for C++ teaching, graphics and scientific programming (2D/3D graphics, Image Processing, Linear Algebra, Level Sets, GPU programming, Stereovision, ...) (ENPC).
  - 2003-: [OpenMEEG](#), C++ package for forward/inverse problems of EEG/MEG (INRIA/ENPC).
  - 2001-2006: [WinLib](#), Graphics C++ library (ENPC).
  - 2001: [Stitcher](#) (RealViZ/AutoDesk).
  - 1990: High Quality Image Browsing for Museums (ESI).
  - 1989: French Administration Road Traffic Management Distributed System (SYTADIN/SIRIUS).
  - 1987: Image Synthesis and Object Modeling Environment (Ecole Polytechnique).
  - 1984: Medical Laboratory management (Free Lance).
- Patents:














- 2000: Codimension-2 Geodesic Active Contours (BWH/MIT/INRIA/ENPC) (#WO 00/79481)
- Extra-work involvement:
  - Jazz freak. Actively supporting the [Moutin Reunion Quartet](#).














## References

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- [3] R. Keriven. *Formes et Optimisation en Vision par Ordinateur. Méthodes et Applications*. Habilitation à Diriger les Recherches UMLV, Jun 2006. [[B](#)].
- [4] R. Keriven. *Corrigés de l'épreuve d'Informatique de l'Ecole Polytechnique*. Ellipses, 1986.
- [5] J.-P. Pons, R. Keriven, and O. Faugeras. *Mathematical Models in Computer Vision: The Handbook*. N. Paragios, Y. Chen and O. Faugeras Eds, Springer, chapter Modelling non-rigid dynamic scenes from multi-view image sequences. 2006. [[B](#)].
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- [8] R. Keriven. *Equations aux Dérivées Partielles, Evolutions de Courbes et de Surfaces et Espaces d'Echelle: Applications à la Vision par Ordinateur*, chapter 3D curve geometric flows. Dec 1997. [[B](#)].
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