

## Elise Arnaud

30 years old

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### Actual situation (since 2006)

Assistant professor at University Joseph Fourier, Grenoble, France

Member of Perception team at INRIA Rhône-Alpes, and of Laboratory Jean Kuntzmann of Grenoble.

- **Research area:** development of statistical approaches for the analysis of image and image sequences
- **Key words :** motion analysis, tracking, stereovision, spatio-temporal analysis, audio-visual analysis, Bayesian models, Markov models, statistical inference

### Profile

- **june 2005 - august 2006 :** Post Doctoral position at University of Genova, Italy
- **march-may 2005 :** Post Doctoral position at University of de Buenos Aires, Argentina
- **nov. 2004 :** Ph. D. in Signal processing, University of Rennes 1, France - obtained with honours
- **sept. 2001 :** Master degree in Computer vision, University of Rouen, France - obtained with honours
- **juil. 2001 :** Engineering degree from the National Institute of Applied Sciences, department of applied Mathematics, Rouen, France

### Publications

*The majority of my publications are available on my Web page or on HAL [<http://hal.archives-ouvertes.fr/>].*

#### International journals

- R. Sosa, E. Arnaud, E. Mémin, G. Artana, Study of flow induces by a sliding discharge - IEEE Trans. On Dielectrics and Electrical Insulation, 16(2), 2009
- E. Arnaud, E. Mémin - *Partial Linear Gaussian Models for Tracking in Image Sequences Using Sequential Monte Carlo Methods* - Int. Jour. of Computer Vision, 74(1), 2007
- E. Arnaud, E. Mémin, B. Cernuschi-Frias - *Conditional filters for image sequencebased tracking - Application to point tracking* - IEEE Trans. on Image Processing, 14(1), 2005.

#### Refereed international conferences

- E. Arnaud, F. Le Gland - *SMC with adaptive resampling: large sample asymptotics* - IEEE workshop on Statistical Signal Processing, sept 2009
- M. Tournier, X. Wu, N. Courty, E. Arnaud, L. Reveret - *Motion compression using principal geodesics analysis* - Eurographics, april 2009 - [Selected as best third paper.](#)
- V. Khalidov, F. Forbes, M. Hansard, E. Arnaud, R. Horaud - *Detection and localization of 3D audio-visual objects using unsupervised clustering* - ACM/IEEE International Conference on Multimodal Interfaces (ICMI), oct. 2008

- E. Arnaud, H. Christensen, Y.-C. Lu, J. Barker, V. Khalidov, M. Hansard, B. Holveck, H. Mathieu, R. Narasimha, E. Taillant, F. Forbes, R. Horaud, *The CAVA corpus: synchronised stereoscopic and binaural datasets with head movements*, ACM/IEEE International Conference on Multimodal Interfaces (ICMI) - Oct. 2008
- R. Narasimha, E. Arnaud, F. Forbes, R. Horaud - *Cooperative disparity and object boundary estimation* - Int. Conf. on Image Processing (ICIP) , Oct. 2008.
- V. Khalidov, F. Forbes, M. Hansard, E. Arnaud, R. Horaud - *Audio-Visual Clustering for Multiple Speaker Localization* - International Workshop on Machine Learning for Multimodal Interaction (MLMI) - Sept. 2008
- N. Courty, E. Arnaud - *Inverse Kinematics using Sequential Monte Carlo Methods* - Conf. on Articulated Motion and Deformable Object (AMDO), July 2008. [Selected as best paper.](#)
- A. Fossati, E. Arnaud, R. Horaud, P. Fua - *Tracking Articulated Bodies using Generalized Expectation Maximization* - NORDIA (workshop CVPR), June 2008.
- R. Sosa, E. Arnaud, E. Mémin, G. Artana - *Schlieren Image Velocimetry applied to EHD flow* - International Symposium on Electrohydrodynamics, Dec. 2006.
- R. Sosa, E. Arnaud, G. Artana - *Study of the flow induced by a sliding discharge* - International Symposium on Electrohydrodynamics, Dec. 2006.
- P. Paul, A. Quere, E. Arnaud, X. Morandi, P. Jannin - *A surface registration approach for video-based analysis of intraoperative brain surface deformations* - Workshop on Augmented Environments for Medical Imaging and Computer-Aided Surgery, Oct. 2006.
- E. Delponte, E. Arnaud, F. Odone, A. Verri - *Analysis on a local approach to 3D object recognition* - DAGM, Sept. 2006.
- E. Arnaud, E. Delponte, F. Odone, A. Verri - *Trains of keypoints for 3D object recognition* - Int. Conf. on Pattern Recognition (ICIP), Aug. 2006.
- E. Arnaud, E. Mémin, R. Sosa, G. Artana - *A fluid motion estimator for Schlieren image velocimetry* - Eur. Conf Computer Vision (ECCV), May 2006
- E. Arnaud, E. Mémin - *An efficient Rao-Blackwellized particle filter for object tracking* - IEEE Int. Conf. on Image Processing (ICIP), Sept. 2005.
- E. Arnaud, B. Fauvet, E. Mémin, P. Bouthemy - *A robust and automatic face tracker dedicated to broadcast videos* - IEEE Int. Conf. on Image Processing (ICIP), Sept. 2005.
- E. Arnaud, E. Mémin - *Optimal importance sampling for tracking in image sequence: application to point tracking* - IEEE European Conf. on Computer Vision (ICCV), May 2004.
- E. Arnaud, E. Mémin, B. Cernuschi-Frias - *A robust stochastic filter for point tracking in image sequences* - IEEE Asian Conf. on Computer Vision (ACCV), Jan. 2004.

#### Refereed national conferences

- E. Arnaud, E. Mémin, B. Cernuschi-Frias - *Filtrage conditionnel pour la trajectographie dans des séquences d'images - Application au suivi de points* - RFIA, Jan. 2004.
- E. Arnaud, E. Mémin, B. Cernuschi-Frias - *Filtrage conditionnel pour le suivi de points dans des séquences d'images* - ORASIS, May 2003.

#### Research reports

- M. Tournier, X. Wu, N. Courty, E. Arnaud, L. Reveret - *Motion Compression using Principal Geodesics Analysis* - research report INRIA 6648, Sept. 2008
- N. Courty, E. Arnaud - *Sequential Monte Carlo Inverse Kinematics* - research report INRIA 6426, Dec. 2007.

#### Dissertation

- E. Arnaud - *Méthodes de filtrage pour du suivi dans des séquences d'images - Application au suivi de points caractéristiques* - PhD Thesis, University of Rennes 1, France, Nov. 2004

### Other scientific production

- **DataBase CAVA** (Computational Audio-Visual Analysis) - 2008  
[http://perception.inrialpes.fr/CAVA\\_Dataset/Site/](http://perception.inrialpes.fr/CAVA_Dataset/Site/)

E. Arnaud, H. Christensen, Y.-C. Lu, J. Barker, V. Khalidov, M. Hansard, B. Holveck, H. Mathieu, R. Narasimha, E. Taillant, F. Forbes, R. Horaud -- *The CAVA corpus: synchronised stereoscopic and binaural datasets with head movements* -- ACM/IEEE International Conference on Multimodal Interfaces (ICMI'08) - Octobre 2008

### Teaching

#### **2006 - : Assistant professor, University Joseph Fourier, France**

- Initiation to applied math, BSc first year (2008- )
- Programming and multimedia, BSc first year (2006- )
- Statistics for biologists, BSc second year, (2007- )
- Mathematical tools, MSc first year (2007- )
- Computer Vision and Robotics, MSc first year (2008 - )
- Image and Signal Processing, MSc first year (2008- )
- Advising students on apprenticeship, MSc second year (2008- )
- Image processing and indexing, MSc second year (2006-2008)
- Bayesian networks and inference, MSc second year (2007- )
- Bayesian filtering, MSc second year (2008- )

#### **2001 - 2004: PhD student, University de Rennes 1**

- Computational treatment of biologic data - BSc First and second years
- Computer Science (1st and 2nd part, multidisciplinary project) - BSc First and second years
- Programming - BSc First and second years
- Computer Vision - Engineering degree in Computer Sciences and Communication (MSc), 3rd year

### Students advising

- Ramya Narasihma - PhD (2006- )
- Regis Perrier - PhD (2007- )
- Rodrigo Andrade de Bem - Internship (2007)

### Contrats, projets, action nationales et europeennes

- **Participation to the european project POP** (Perception On Purpose), 2006-2008  
<http://perception.inrialpes.fr/POP/>  
Budget : 300 000 euros  
Partners: University of Osnabruck (Germany), University Hospital Hamburg-Eppendorf (Germany), University of Coimbra (Portugal), and University of Sheffield (UK), INRIA (France)
- **Participation to the project ARC Fantastik** (Filtering for statistical animation), 2007-2008  
<http://perception.inrialpes.fr/~Arnaud/wwwFantastik/>  
Budget : 30 000 euros  
partners: INRIA Rhône-Alpes, University de Bretagne Sud, ENS Cachan (all in France).
- **Participation to the project SOCLE3**: PIRVE 2009, "Soutenabilite, Organisation Collective Locale, Environnement, Economie, Energie: Vers des espaces urbains et peri-urbains durables". Submitted  
Budget: 20 000 euros  
Partners: LEPII, LGGE, OSUG, PACTE, INRIA (all in France).

### Reviewer for international journals and conferences

- Eurasip Signal Processing
- Image and Vision Computing Journal
- Machine Vision and Applications Journal
- International Journal of Computer Vision
  
- IEEE International Conference in Image Procession (ICIP'07 ; ICIP'08)
- Conference on Computer Vision and Pattern Recognition (CVPR'09)

### Other professional activities

- Member of the local organisation team of ECCV'08 (<http://eccv2008.inrialpes.fr/>)

### Language skills

- French: native language
- English: fluent
- Italian: intermediate level
- Spanish: basic knowledge
- German: basic knowledge