CERTIS

mathématiques – informatique

CERTIS

Centre d'Enseignement et de Recherche en Technologies de l'Information et Systèmes

Université Paris-Est

École des Ponts ParisTech laboratory

CERTIS
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Director: Renaud Keriven

Staff (25)

5 research scientists
3 post-doctoral fellows
13 PhD students
1 visiting student
2 graduate student interns
1 administrative assistant

Message for the director

The CERTIS is the Center for Education and Research in Computer Science of École des Ponts ParisTech. Created in 2004, the CERTIS is essentially working on:

- Three-dimensional reconstruction from images, with a particular effort on the case of accurate models with applications to sustainable development;
- Machine learning and learning theory with applications to computer vision and image understanding.

2008 has been a year for changes! We retired from common projects with top rank institutes, INRIA and ENS, and created a new group, where everyone works in the same direction.
The opportunity is now given for being recognized as a whole, pushing forward exciting theoretical and applied developments. Associations with both local groups and actors from our Ministry are also on their way. Finally, this transition is being completed on the educational side by a new École des Ponts ParisTech program on machine vision and learning.

Renaud KERIVEN
Director of CERTIS

QUALITATIVE RESULTS

Key facts

After four years of growth through common projects with INRIA and ENS, the CERTIS redefined in 2008 its objectives. Retiring from these common projects, the CERTIS members formed a unique research group, working on three-dimensional vision and machine learning. Simultaneously, Pascal Monasse, from Cognitech Pasadena, and Arnak Dalalyan from University Paris VI, joined the team. With its members working in the same direction, the group has now the possibility of being internationally recognized as a whole, no more as individuals. This organization offers also the opportunity for: (i) being locally well established through close links with University Paris-Est, and (ii) launching partnerships with other actors of the French Ministry of Ecology, Energy, Sustainable Development and Regional planning (MEEDDAT).

On the educational side, 2008 was devoted to defining a new educational program on computer vision and machine learning, jointly with the MVA master at ENS Cachan. Designed for École des Ponts ParisTech students, this program offers a personalized version for "FCI students" from École Polytechnique, prolonging the newly created program on Computational Photography.

Publications

Although in transitional period, the CERTIS has sustained in 2008 its level of scientific production with 11 journal papers or equivalent[1], 11 communications in reviewed conferences with proceedings and 3 PhD defences. CERTIS research was awarded by the best paper award at the Sixth International Workshop on Content-Based Multimedia Indexing, London.

Teaching

As a Center for Education, the CERTIS is deeply involved in the École des Ponts ParisTech educational programs as well as in other graduating courses. The CERTIS members are in charge of the first year Computer Science course, but also of half of the second year CS courses. They teach in the third year CS master programs attended by École des Ponts ParisTech students. In addition, they are in charge of second year mathematics courses, including the statistics course.
The CERTIS members are also involved in teaching in different schools and universities such as École Polytechnique, École Normale Supérieure Cachan, Télécom ParisTech, University Paris-Est Marne-la-Vallée, University Paris VI, University Paris VII and École Centrale Paris.

International collaborations

The CERTIS is involved in international collaborations with the following places: MPI Tübingen (Germany), WIAS Berlin (Germany), University of Alberta (Canada), Massachusetts General Hospital (Boston), LIAMA Beijing (China), CalTech Pasadena (California), University of Minnesota (Minneapolis).

Research projects

CERTIS research projects can be classified into four categories:

1. Three-dimensional vision

2. Machine learning

3. Computer Vision

4. Biomedical engineering

1. Three-dimensional vision

1.1 Multiview stereovision

Towards high-resolution large-scale multi-view stereo. A multi-view stereo pipeline able to deal at the same time with very large scenes while still producing highly detailed reconstructions within very reasonable time.
Compact piecewise-planar models. A novel algorithm which automatically outputs a simplified piecewise-planar model of a scene from a set of calibrated input images, capturing its essential geometric features.
3D reconstruction of large-scale city models as a support to sustainable development. 3D models can be combined with simulations in order to address sustainable urban development issues.
Minimizing the multi-view stereo reprojection error for triangular surface meshes. A variational multi-view stereo vision method based on meshes for recovering 3D scenes (shape and radiance) from images.

1.2 Acquisition Process

GPU-boosted online image matching. How to use the power of GPUs to obtain image matching in typically 20 ms and make interactive applications possible?

1.3 Texturing

Seamless image-based texture atlases using multi-band blending. A method for creating a high-quality texture atlas from a 3D model and a set of calibrated images.
Spatio-Temporal Image-Based Texture Atlases. A method for creating a high-quality spatio-temporal texture atlas from a dynamic 3D model and a set of calibrated video sequences.

1.4 Deformable models

From segmented images to good quality meshes using Delaunay refinement. Delaunay-based meshing techniques for curved objects, and their application in medical imaging and in computer vision to the extraction of geometric models from segmented images.

1 A specificity of the Computer Vision domain should be taken into account. The main Computer Vision conferences have a very low acceptance rate. Their impact factor is comparable to the ones of the journals of the domain. Communications in these particular conferences are thus considered equivalent to, or even better than a journal publication.

1.5 Image matching

Context-Dependent Kernel Design for Object Matching and Recognition. A new type of kernel referred to as "context-dependent", with applications to point matching.

2. Machine learning

2.1 Exploration *vs* exploitation

Algorithms for infinitely many-armed bandits. Multi-armed bandit problems where the number of arms is larger than the possible number of experiments.

Empirical Bernstein stopping. Sampling being a popular way of scaling up machine learning algorithms to large datasets, the question is how many samples are needed.
Exploration-exploitation trade-off using variance estimates in multi-armed bandits. An algorithm for the stochastic, multi-armed bandit problem that takes into account the empirical variance of the different arms.

2.2 Image Retrieval

Semantic Lattices for Multiple Annotations of Images. Addressing the problem of describing precisely an object present in an image, a semantic lattice defines all possible coherent object descriptions through inheritance and exclusion relations.
Object Recognition and Retrieval by Context Dependent Similarity Kernels. Object recognition using a new type of kernel referred to as "context-dependent".
Manifold Learning using Robust Graph Laplacian for Interactive Image Retrieval. Relevance feedback being the process which helps a user refining his query and finding difficult target categories, an original approach based on Graph Laplacian.

2.3 Manifold learning and denoising

Normalization and Preimage Problem in Gaussian Kernel PCA. A geometric interpretation of the normalization process for Gaussian kernels with applications to image denoising.

2.4 Kernel Methods

Robust Matching and Recognition using Context-Dependent Kernels. Theoretical results for a new type of kernels referred to as "context-dependent".

2.5 Statistical learning

Fast learning rates in statistical inference through aggregation. Minimax convergence rate for the general learning task consisting in predicting as well as the best function in a fixed set.

2.6 Image Segmentation

Segmentation by transduction. Image segmentation as a statistical transductive inference, in which some pixels are already associated with given zones and the remaining ones need to be classified.

2.7 Sparse recovery

Aggregation by exponential weighting, sharp oracle inequalities and sparsity. The problem of aggregation under the squared loss in the model of regression with deterministic design, and applications to sparsity oracle inequalities.

2.8 Manifold learning

A new algorithm for estimating the effective dimension-reduction subspace. Considering the statistical problem of estimating the effective dimension-reduction (EDR) subspace in the multi-index regression model with deterministic design and additive noise, a new procedure for recovering the directions of the EDR subspace.

3. Computer vision

3.1 GPU Programming

Generic programming of Graphic Units in Computer Vision. How to program graphic devices for generic tasks and applications to computer vision?

3.2 Extended shape gradients, Landmarks, Statistics

3D model fitting for facial expression analysis under uncontrolled imaging conditions. Recovering of 3D pose and animation of the human face in a monocular single image under uncontrolled imaging conditions. Application to epilepsy diagnosis.

3.3 Shape Manifolds

Pre-image as karcher mean using diffusion maps. Shape and image modeling by manifold learning and application to denoising.
Statistical Learning, Shape Manifolds, Applications to Image Segmentation. Shape and image modeling by manifold learning and application to segmentation with priors.

4. Biomedical engineering

4.1 Brain anatomy and function

SIFT-based Sequence Registration and Flow-based Cortical Vessel Segmentation applied to High Resolution Optical Imaging Data. Efficiently and accurate registration of optical imaging videos. Extract blood vessels position and diameters extraction based on blood-flow information using a fast marching algorithm. Extraction of Centerlines Networks over an Orientation Domain. A method to extract tubular structures from bi-dimensional images, through the computation of geodesic curves over a four-dimensional space.
Our research is axed on a spatially-continuous description of cortical neural networks, and its applications to computational neurosciences.
This description is done within the Neural Masses Equations (NME) formalism. More specifically, we are interested in the following fields: dynamical properties of the NME, modelling of corticals areas related to motion analysis, biologically inspired motion analysis, neural illusions computation.

CERTIS members

Research scientists (5)

AUDIBERT Jean-Yves	École des Ponts ParisTech
DALALYAN Arnak	École des Ponts ParisTech
KERIVEN Renaud	École des Ponts ParisTech
MONASSE Pascal	École des Ponts ParisTech
PONS Jean-Philippe	École des Ponts ParisTech / CSTB

Post-Doctoral fellows (3)

JANKO Zsolt	École des Ponts ParisTech
KONG Hui	École Normale Supérieure
LAFARGE Florent	École des Ponts ParisTech

PhD Students (13)

AGANJ Ehsan	École Polytechnique
ALLENE Cédric	École des Ponts ParisTech
CHARIOT Alexandre	École des Ponts ParisTech
COURCHAY Jérôme	École des Ponts ParisTech
JACHIET Anne-Laure	École Normale Supérieure Cachan
LABATUT Patrick	École Normale Supérieure
MAUREL Pierre	École Normale Supérieure
PECHAUD Mickaël	École Normale Supérieure
RABARISOA Jaonary*	École des Ponts ParisTech
THORSTENSEN Nicolas	École des Ponts ParisTech
TOUSCH Anne-Marie	ONERA
VELTZ Romain	École des Ponts / INRIA Sophia
VU Hoang Hiep	ENSAM Cluny

Visiting student (1)

AGANJ Iman	University of Minneasota

Graduate students interns (2)

ABBAS TURKI Abdelmounaim	École des Ponts ParisTech
VU Hoang Hiep	École Polytechnique

Administrative assistant (1)

MONDOU Brigitte	École des Ponts ParisTech

* out of the laboratory 12/31/08

QUANTITATIVE RESULTS

Knowledge production

PUBLICATIONS[1]

Articles referenced by the Web of Sciences

ALLÈNE Cédric, PONS Jean-Philippe, KERIVEN Renaud
Seamless image-based texture atlases using multi-band blending. In: *19th International Conference on Pattern Recognition,* December 2008, Tampa (USA)

AUDIBERT Jean-Yves
"Fast learning rates in statistical inference through aggregation". *Annals of Statistics,* June

AUDIBERT Jean-Yves, MUNOS Rémi, SZEPESVÁRI Csaba
"Exploration-exploitation trade-off using variance estimates in multi-armed bandits. *Theoretical Computer Science*

BOISSONNAT Jean-Daniel, PONS Jean-Philippe, YVINEC Mariette
From segmented images to good quality meshes using Delaunay refinement. In: *Emerging Trends in Visual Computing,* November 2008, Paris (France)

CHARIOT Alexandre, KERIVEN Renaud
GPU-boosted online image matching. In: *19th International Conference on Pattern Recognition*, December 2008, Tampa (USA)

DALALYAN Arnak, TSYBAKOV Alexandre
"Aggregation by exponential weighting, sharp oracle inequalities and sparsity". *Machine Learning*, vol. 72, pp. 39-61

DALALYAN Arnak, JUDITSKY Anatoly, SPOKOINY Vladimir
"A new algorithm for estimating the effective dimension-reduction subspace". *Journal of Machine Learning Research*, vol. 9, pp. 1 647-1 678

DELAUNOY Amaël, PRADOS Emmanuel, GARGALLO Pau, PONS Jean-Philippe, STURM Peter
Minimizing the multi-view stereo reprojection error for triangular surface meshes. In: *British Machine Vision Conference*, September 2008, Leeds (UK)

DUCHENNE Olivier, AUDIBERT Jean-Yves, KERIVEN Renaud, PONCE Jean, SÉGONNE Florent
"Segmentation by transduction". *Conference on Computer Vision and Pattern Recognition (CVPR)*, Anchorage (Alaska), June
DOI: 10.1109/CVPR.2008.4587419

MAUREL Pierre, McGONIGAL Aileen, CHAUVEL Patrick, KERIVEN Renaud
3D model fitting for facial expression analysis under uncontrolled imaging conditions, December 2008, Tampa (USA). In: *19th International Conference on Pattern Recognition*
DOI: 10.1109/ISBI.2008.4541097

MNIH Volodymyr, SZEPESVARI Csaba, AUDIBERT Jean-Yves
"Empirical Bernstein stopping". *International Conference on Machine Learning (ICML),* July, Helsinki (Finlande)
DOI: 10.1145/1390156.1390241

PÉCHAUD Mickaël, VANZETTA Ivo, DENEUX Thomas, KERIVEN Renaud
SIFT-based Sequence Registration and Flow-based Cortical Vessel Segmentation applied to High Resolution Optical Imaging Data, May 2008, Paris (France) Proceedings of ISBI 2008
DOI: 10.1109/ISBI.2008.4541097

SAHBI Hichem, AUDIBERT Jean-Yves, RABARISOA Jaonary, KERIVEN Renaud
"Context-Dependent Kernel Design for Object Matching and Recognition". *Conference on Computer Vision and Pattern Recognition (CVPR),* June, Anchorage (Alaska)
DOI: 10.1109/CVPR.2008.4587607

SAHBI Hichem, AUDIBERT Jean-Yves, RABARISOA Jaonary, KERIVEN Renaud
Object Recognition and Retrieval by Context Dependent Similarity Kernels. In: *Sixth International Workshop on Content-Based Multimedia Indexing*, June 2008, London (UK)

SAHBI Hichem, ETYNGIER Patrick, AUDIBERT Jean-Yves, KERIVEN Renaud
"Manifold Learning using Robust Graph Laplacian for Interactive Image Retrieval". *Conference on Computer Vision and Pattern Recognition (CVPR),* June, Anchorage (Alaska)
DOI: 10.1109/ICASSP.2008.4517735

SAHBI Hichem, AUDIBERT Jean-Yves, RABARISOA Jaonary, KERIVEN Renaud
"Robust Matching and Recognition using Context-Dependent Kernels".
25th *International Conference on Machine Learning (ICML),* Helsinki (Finlande), July
DOI: 10.1145/1390156.1390264

SAHBI Hichem, ETYNGIER Patrick, AUDIBERT Jean-Yves, KERIVEN Renaud
Interactive Image Retrieval, April 2008, Las Vegas. In: *The 33rd International Conference on Acoustics, Speech, and Signal Processing*

THORSTENSEN Nicolas, SÉGONNE Florent, KERIVEN Renaud
Normalization and Preimage Problem in Gaussian Kernel PCA. In: IEEE International Conference on Image Processing, October 2008, San Diego (USA)
DOI: 10.1109/ICIP.2008.4711861

TOUSCH Anne-Marie, HERBIN Stéphane, AUDIBERT Jean-Yves
Semantic Lattices for Multiple Annotations of Images. In: *ACM International Conference on Multimedia Information Retrieval (MIR),* October 2008, Vancouver (Canada)
DOI: 10.1145/1460096.1460152

WANG Yizao, AUDIBERT Jean-Yves, MUNOS Rémi
"Algorithms for Infinitely Many-Armed Bandits". *Advances in Neural Information Processing Systems*, December, Vancouver (Canada)

[1] Les articles en ligne référencés sur le système DOI (Digital Object Identifier) sont connectables au préalable sur http://dx.doi.org

PhD thesis

ETYNGIER Patrick
Statistical Learning, Shape Manifolds, Applications to Image Segmentation
École des Pont ParisTech, January

MAUREL Pierre
Statistiques de formes, expressions Faciales et épilepsie
École Normale Supérieure, December

CHARIOT Alexandre
Quelques applications de la programmation des processus graphiques à la simulation neuronale et à la vision par ordinateur
École des Ponts ParisTech, December

Research reports

THORSTENSEN Nicolas, SÉGONNE Florent, KERIVEN Renaud
Pre-image as karcher mean using diffusion maps
Nº 08-37
CERTIS research report, 2008

PECHAUD Mickaël, PEYRÉ Gabriel, KERIVEN Renaud
Extraction of Centerlines Networks over an Orientation Domain
Nº 08-38
CERTIS research report, 2008

JANKO Zsolt, PONS Jean-Philippe
Spatio-Temporal Image-based Texture Atlases
Nº 08-39
CERTIS research report, 2008

LABATUT Patrick, PONS Jean-Philippe, KERIVEN Renaud
Compact piecewise-planar models
Nº 08-40
CERTIS research report, 2008

VU Hoang Hiep, KERIVEN Renaud, LABATUT Patrick, PONS Jean-Philippe
Towards high-resolution large-scale multiview stereo
Nº 08-41
CERTIS research report, 2008

KONG Hui, AUDIBERT Jean-Yves, PONCE Jean
Vanishing point detection for road detection
Nº 08-42
CERTIS research report, 2008

Written conference communications

DUCHENNE Olivier, AUDIBERT Jean-Yves, KERIVEN Renaud, PONCE Jean, SÉGONNE Florent
"Segmentation by transduction". *Conference on Computer Vision and Pattern Recognition (CVPR)*, June, Anchorage (Alaska)
DOI: 10.1109/CVPR.2008.4587419

MAUREL Pierre, McGONIGAL Aileen, CHAUVEL Patrick, KERIVEN Renaud
3D model fitting for facial expression analysis under uncontrolled imaging conditions, December 2008, Tampa (USA). In: *19th International Conference on Pattern Recognition*
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MNIH Volodymyr, SZEPESVARI CSaba, AUDIBERT Jean-Yves
"Empirical Bernstein stopping". *International Conference on Machine Learning (ICML)*, July, Helsinki (Finlande)
DOI: 10.1145/1390156.1390241

PÉCHAUD Mickaël, VANZETTA Ivo, DENEUX Thomas, KERIVEN Renaud
SIFT-based Sequence Registration and Flow-based Cortical Vessel Segmentation applied to High Resolution Optical Imaging Data, May 2008, Paris (France) Proceedings of ISBI 2008
DOI: 10.1109/ISBI.2008.4541097

PONS Jean-Philippe, SOUBRA Souheil
3D reconstruction of large-scale city models as a support to sustainable development, September 2008, Mallorca (Spain). Cooperative Design, Visualization and Engineering, pp.172-175
DOI: 0.1007/978-3-540-88011-0_22

SAHBI Hichem, AUDIBERT Jean-Yves, RABARISOA Jaonary, KERIVEN Renaud
"Context-Dependent Kernel Design for Object Matching and Recognition". In: *Conference on Computer Vision and Pattern Recognition (CVPR)*, June, Anchorage (Alaska)
DOI: 10.1109/CVPR.2008.4587607

SAHBI Hichem, AUDIBERT Jean-Yves, RABARISOA Jaonary, KERIVEN Renaud
Object Recognition and Retrieval by Context Dependent Similarity Kernels. In: *Sixth International Workshop on Content-Based Multimedia Indexing*, June 2008, London (UK)

SAHBI Hichem, ETYNGIER Patrick, AUDIBERT Jean-Yves, KERIVEN Renaud
"Manifold Learning using Robust Graph Laplacian for Interactive Image Retrieval". *Conference on Computer Vision and Pattern Recognition (CVPR)*, June, Anchorage (Alaska)
DOI: 10.1109/ICASSP.2008.4517735

SAHBI Hichem, AUDIBERT Jean-Yves, RABARISOA Jaonary, KERIVEN Renaud
"Robust Matching and Recognition using Context-Dependent Kernels". In: 25th *International Conference on Machine Learning (ICML)*, July, Helsinki (Finlande)
DOI: 10.1145/1390156.1390264

SAHBI Hichem, ETYNGIER Patrick, AUDIBERT Jean-Yves, KERIVEN Renaud
Interactive Image Retrieval, April 2008, Las Vegas. In: *The 33rd International Conference on Acoustics, Speech, and Signal Processing*

THORSTENSEN Nicolas, SÉGONNE Florent, KERIVEN Renaud
Normalization and Preimage Problem in Gaussian Kernel PCA. In: IEEE International Conference on Image Processing, October 2008, San Diego (USA)
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TOUSCH Anne-Marie, HERBIN Stéphane, AUDIBERT Jean-Yves
Semantic Lattices for Multiple Annotations of Images. In: *ACM International Conference on Multimedia Information Retrieval (MIR)*, October 2008, Vancouver (Canada)
DOI: 10.1145/1460096.1460152

VELTZ Romain, FAUGERAS Olivier
Bifurcations in neural masses. In : *Neurocomp conference*, October 2008, Marseille (France)

WANG Yizao, AUDIBERT Jean-Yves, MUNOS Rémi
"Algorithms for Infinitely Many-Armed Bandits". *Advances in Neural Information Processing Systems*, December, Vancouver (Canada)

Contracts/grants for academic research

ANR SURF

KERIVEN Renaud, SHABI Hichem
Discrete and continuous optimization in computer vision
ANR Grant
Academic partners: ESIEE, University Paris Dauphine

ANR WIRED SMART

KERIVEN Renaud, CHARIOT Alexandre, ALLENE Cédric
Fast computer vision on GPU
ANR grant
Industrial partners: RealVIZ, Mikros Image. Academic partners: ENS, University Sophia Antipolis

ANR FLAMENCO

MONASSE Pascal, KERIVEN Renaud, COURCHAY Jérôme, AGANJ Ehsan
Spatio-temporal photo-based reconstruction
ANR Grant
Academic partner: INRIA

ANR MGA

AUDIBERT Jean-Yves
Graphical models and applications. ANR Grant
Academic partners: ENS, INRIA, CNRS, Mines ParisTech, Télécom ParisTech

ENSAM CLUNY

KERIVEN Renaud, VU Hoang Hiep
Acquisition de modèle 3D de grande échelle à partir d'un grand nombre d'images de très haute résolution

ANR EXPLORA

AUDIBERT Jean-Yves
Exploration, exploitation pour l'allocation efficace de ressources
Academic partners : INRIA, HEC, University Paris V, University Paris VIII

AWARDS / GRANTS

SHABI Hichem, AUDIBERT Jean-YVES, RABARISOA Jaonary, KERIVEN Renaud
Best paper award at the Sixth International Workshop on Content-Based Multimedia Indexing, London

SHABI Hichem, AUDIBERT Jean-YVES, RABARISOA Jaonary, KERIVEN Renaud
CRS Industrial Prize and the 19th British Machine Vision Conference, Leeds (joint work with INRIA

CONFERENCES – SEMINARS

Conferences organization

AUDIBERT Jean-Yves
Neural Information and Processing Systems.

AUDIBERT Jean-Yves
Conference on Learning Theory

AUDIBERT Jean-Yves
Conférence francophone sur l'apprentissage automatique

AUDIBERT Jean-Yves
Member of PASCAL 2, European Network of Excellence

KERIVEN Renaud
Conference on Vision and Pattern Recognition

KERIVEN Renaud
European Conference on Computer Vision

KERIVEN Renaud
International Conference on Medical Image Computing and Computer Assisted Intervention

KERIVEN Renaud
European Conference on Computer Vision, Eurographics

KERIVEN Renaud
International Conference on Scale Spaces and Variational Methods

PONS Jean-Philippe
Conference on Vision and Pattern Recognition

PONS Jean-Philippe
European Conference on Computer Vision

PONS Jean-Philippe
International Conference on Medical Image Computing and Computer Assisted Intervention

Invited presentations

AUDIBERT Jean-Yves
Transductive Learning and Computer Vision. In : *NIPS Workshop, New challenges in theoretical machine learning: learning with data-dependent concept spaces*, December 2008, Whistler (Canada)

AUDIBERT Jean-Yves
Aggregation to compete with the best prediction function in a fixed set. In: *Swiss Probability Seminar,* November 2008, Bern (Switzerland)

AUDIBERT Jean-Yves
Aggregation to compete with the best prediction function in a fixed set. In: *INRIA Sequel seminar*, November 2008, Lille (France)

AUDIBERT Jean-Yves
Supervised Machine Learning. Machine Learning Tutorial. *In: European Conference on Computer Vision*, October 2008, Marseille (France)

AUDIBERT Jean-Yves
Graph Laplacian for transductive learning: application to image segmentation and interactive image search. In: *Rencontre Modélisation Statistique des Images*, May 2008, Luminy (France)

PONS Jean-Philippe
3D/4D Image-Based Modeling Using the Delaunay Triangulation. In: *3rd CGAL User Workshop*, March 2008, Nancy (France)

PONS Jean-Philippe
Approximation, modélisation géométrique Et applications de la SMAI-AFA. In : *Société de Mathématiques Appliquées et* Industrielles, Novembre 2008, Luminy (France)

DALALYAN Arnak
Exponentially weighted aggregate and estimation under sparsity assumption. In *: Institute of Weierstrass*, November 2008, Berlin (Allemagne)

REVIEWING ACTIVITIES

AUDIBERT Jean-Yves
- Annals of Statistics
- Bernoulli journal
- Journal of Machine Learning
- Statistics and Computing

DALALYAN Arnak
- Annals of Statistics
- Bernoulli journal
- Electronic journal of statistics

MONASSE Pascal
- Transactions on Pattern Analysis and Machine Intelligence
- Transactions on Image Processing
- Journal of Mathematical Imaging and Vision
- International Journal of Computer Vision

PONS Jean-Philippe
International Journal of Computer Vision
Transactions on Pattern Analysis and Machine Intelligence

KERIVEN Renaud
- International Journal of Computer Vision
- Transactions on Pattern Matching and Analysis
- Transactions on Industrial Electronics
- Transactions on Image Processing
- Transactions on Medical Imaging
- 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

Education Activities

SUPERVISION ACTIVITIES

Ongoing thesis

AGANJ Ehsan
Dynamic Scene Reconstruction using Delaunay Deformation Models

ALLENE Cédric
Méthodes discrètes en vision par ordinateur

CHARIOT Alexandre
Graphical Processing Units in Computer Vision

COURCHAY Jérôme
Spatio temporal stereovision

JACHIET Anne-Laure
Machine learning and three-dimensional computer vision

LABATUT Patrick
Multiview stereovision

MAUREL Pierre
Statistiques de formes, expressions faciales et épilepsie

PECHAUD Mickaël
Discrete optimization in computer vision

RABARISOA Jaonary
Base de données image, reconnaissance de catégorie d'objet

THORSTENSEN Nicolas
Manifold learning and shapes

TOUSCH Anne-Marie
Exploitation de connaissances pour l'interprétation d'images fixes et vidéo : application à la détection et reconnaissance d'objets

VELTZ Romain
Cortical neural networks and to computational vision

VU Hoang Hiep
Acquisition de modèle 3D de grande échelle à partir d'un grand nombre d'images de très haute résolution

Defended thesis

CHARIOT Alexandre
Graphical Processing Units in Computer Vision
16th December 2008
École des Ponts ParisTech
KERIVEN Renaud

ETYNGIER Patrick
Shape manifolds and applications.
21st January 2008
École des Ponts ParisTech
KERIVEN Renaud

MAUREL Pierre
Statistiques de formes, expressions faciales et épilepsie
December 2008
École Normale Supérieure
FAUGERAS Olivier

TEACHING ACTIVITIES

Lectures

École des Ponts ParisTech

Introduction to Statistics, Machine Learning and Applications, 2e année
AUDIBERT Jean-Yves

Semaine d'ouverture « Métiers émergeants », 2e année
DALALYAN Arnak, KERIVEN Renaud

Image Processing and Computer Vision
KERIVEN Renaud (with PEYRE Gabriel, University Paris Dauphine)

Fundamentals in Computer Science, 1re année
KERIVEN Renaud, AGANJ Ehsan, MONASSE Pascal, THORSTENSEN Nicolas, TOUSCH Anne-Marie, COURCHAY Jérôme

Modelling, Implementation Simulation, 2e année
MONASSE Pascal, KERIVEN Renaud

Mesh processing
PONS Jean-Philippe (with PEYRE Gabriel, University Paris Dauphine and ALLIEZ Pierre, INRIA)

École Normale Supérieure Cachan

Machine learning, Mathématiques Vision Apprentissage, Master
AUDIBERT Jean-Yves

Three-dimensional Vision Mathématiques Vision Apprentissage, Master
KERIVEN Renaud, MONASSE Pascal

École centrale de Paris

Statistique, 2e année,
DALALYAN Arnak

École Polytechnique

Fundations of Computer Science
KERIVEN Renaud

Computer Vision
KERIVEN Renaud

Télécom ParisTech

Three-dimensional Vision image, Master
KERIVEN Renaud, MONASSE Pascal

Université Paris-Est Marne-la-Vallée

Calcul différentiel et intégral, 1re année
JACHIET Anne-Laure

Algèbre, 1re année
JACHIET Anne-Laure

Computer Vision, Master Systèmes Informatique
KERIVEN Renaud

Institut de statistique de l'université de Paris VI

Statistique non paramétrique, Institut de statistique de l'université de Paris VI, 3e année
DALALYAN Arnak

Université Paris VII

Three-dimensional Vision Parisien de Recherche en Informatique, Master
KERIVEN Renaud, MONASSE Pascal

Industrial partnerships

CONTRACTS

EADS
KERIVEN Renaud, LAFARGE, Florent
Modélisation tridimensionnelle précise et automatique de scènes urbaines à partir de photographies numériques

IFP
PONS Jean-Philippe
Modélisation tridimensionnelle précise

ONERA – PhD Works
TOUSCH Anne-Marie
Exploitation de connaissances pour l'interprétation d'images fixes et vidéo : application à la détection et reconnaissance d'objets

É-VITECH
DGA / ITISECURE
AUDIBERT Jean-Yves, KONG, Hui
Suspicious object detection

VALORISATION

Softwares

KERIVEN Renaud, PONS Jean-Philippe
A new set of libraries for C++ teaching, graphics and scientific programming (2D/3D graphics, Image Processing, Linear Algebra, Level Sets, GPU programming, Stereovision)

PONS Jean-Philippe
GEODESIC, Fast Marching Methods

KERIVEN Renaud
Open MEEG, MEG/EEG data processing for the forward and inverse problems

Debate and public expertise

PARTICIPATION TO PUBLIC EXPERTISE

Évaluateur pour l'Évaluation Orientation de la Coopération Scientifique
(ECOS)
KERIVEN Renaud

Évaluateur pour l'Agence Nationale de la Recherche
(ANR)
KERIVEN Renaud, AUDIBERT Jean-Yves

Reviewer for the Research Grants Council (RGC), Hong Kong
KERIVEN Renaud

Reviewer for the Engineering and Physical Sciences Research Council (EPSRC), UK
KERIVEN Renaud