

François Fleuret

Born January 10th 1972 in Versailles, France. Married, one child.

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Research interests

Machine learning, pattern recognition, statistical modeling, computer vision.

Positions

Since August 2007

Senior researcher at the Idiap Research Institute, Switzerland.

January 2004 - July 2007

Senior researcher at the EPFL, CVLab research group, Switzerland.

October 2001 - December 2003

Researcher at the INRIA, IMEDIA research group, France (permanent position *Chargé de Recherche*).

July 2001 - September 2001

Post-doctoral position at the EPFL, LCN research group, Switzerland.

September 2000 - June 2001

Post-doctoral position at the University of Chicago, Department of Computer Science, USA.

Education

Habilitation degree in Applied Mathematics from the University of Paris XIII on “Generative Models and Algorithmic Efficiency for Prediction”, 2006.

PhD in Probability, from the University of Paris VI on “Coarse-to-fine Face Detection” under the supervision of Prof. Donald Geman. Special honor *Mention très honorable avec les félicitations du Jury*, 2000.

Master’s degree in Probability (*Diplôme d’Études Approfondies*) from the University of Paris VI, **Master’s degree in Applied Mathematics** (*Magistère de Mathématiques Fondamentales et Appliquées et d’Informatique*) from the École Normale Supérieure de Paris and the University of Paris VI, 1995.

Publications

Peer-reviewed Journal Articles

1. **F. Fleuret**, “Multi-Layer Boosting for Pattern Recognition”, *Pattern Recognition Letters (PRL)*, 30, 237–241, 2009.
2. A. Shahrokni, T. Drummond, **F. Fleuret** and P. Fua, “Classification-based Probabilistic Modeling of Texture Transition for Fast Line Search Tracking and Delineation”, *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*, 570–576, 2009.
3. **F. Fleuret** and D. Geman, “Stationary Features and Cat Detection”, *Journal of Machine Learning Research (JMLR)*, 9, 2549–2578, 2008.
4. **F. Fleuret**, J. Berclaz, R. Lengagne and P. Fua, “Multi-Camera People Tracking with a Probabilistic Occupancy Map”, *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*, 30(2), 267–282, 2008, (7 citations in ISI Web of Science, 44 citations in Google Scholar).
5. **F. Fleuret**, “Fast Binary Feature Selection with Conditional Mutual Information”, *Journal of Machine Learning Research (JMLR)*, 5, 1531–1555, 2004, (56 citations in ISI Web of Science, 114 citations in Google Scholar).
6. **F. Fleuret** and D. Geman, “Coarse-to-fine Face Detection”, *International Journal of Computer Vision (IJCV)*, 41, 85–107, 2001, (70 citations in ISI Web of Science, 119 citations in Google Scholar).
7. **F. Fleuret** and E. Brunet, “DEA : An architecture for Goal Planning and Classification”, *Neural Computation*, 12, 1987–2008, 2000.

Peer-reviewed International Conference Proceedings

1. K. Ali, **F. Fleuret**, D. Hasler and P. Fua, “Joint Learning of Pose Estimators and Features for Object Detection”, *proceedings of the IEEE International Conference on Computer Vision (ICCV)*, 2009, to appear.
2. G. Gonzalez, F. Aguet, **F. Fleuret**, M. Unser and P. Fua, “Steerable Features for Statistical 3D Dendrite Detection”, *proceedings of the International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, 2009, to appear.
3. G. Gonzalez, **F. Fleuret** and P. Fua, “Learning Rotational Features for Filament Detection”, *proceedings of the IEEE international conference on Computer Vision and Pattern Recognition (CVPR)*, 2009, to appear, (acceptance rate 26.2%).
4. J. Berclaz, **F. Fleuret** and P. Fua, “Multi-Camera Tracking and Atypical Motion Detection with Behavioral Maps”, *proceedings of the European Conference on Computer Vision (ECCV)*, 112–125, 2008, (acceptance rate 27.9%).

5. G. Gonzalez, **F. Fleuret** and P. Fua, “Automated Delineation of Dendritic Networks in Noisy Image Stacks”, *proceedings of the European Conference on Computer Vision (ECCV)*, 214–227, 2008, (acceptance rate 27.9%).
6. J. Berclaz, **F. Fleuret** and P. Fua “Principled Detection-by-Classification from Multiple Views”, *proceedings of the International Conference on Computer Vision Theory and Applications (VISAPP)*, 2, 375–382, 2008.
7. G. Blanchard and **F. Fleuret** “Occam’s Hammer”, *proceedings of the Conference on Learning Theory (COLT)*, 112–126, 2007.
8. A. Lanza, L. Di Stefano, J. Berclaz, **F. Fleuret** and P. Fua “Robust Multi-View Change Detection”, *proceedings of the British Machine Vision Conference (BMVC)*, 2007.
9. J. Berclaz, **F. Fleuret** and P. Fua “Robust People Tracking with Global Trajectory Optimization”, *proceedings of the IEEE international conference on Computer Vision and Pattern Recognition (CVPR)*, 1, 744–750, 2006, (acceptance rate 22.8%).
10. M. Özuysal, V. Lepetit, **F. Fleuret** and P. Fua “Feature Harvesting for Tracking-by-Detection”, *proceedings of the European Conference on Computer Vision (ECCV)*, 3953, 592–605, 2006, (acceptance rate for oral 4.4%).
11. **F. Fleuret** and G. Blanchard “Pattern Recognition from One Example by Chopping”, *proceedings of the Neural Information Processing System conference (NIPS)*, 371–378, 2005, (acceptance rate for oral 7.1%).
12. **F. Fleuret**, R. Lengagne and P. Fua “Fixed Point Probability Field for Complex Occlusion Handling”, *proceedings of the IEEE International Conference on Computer Vision (ICCV)*, 1, 694–700, 2005, (acceptance rate 20.3%).
13. **F. Fleuret** and W. Gerstner “A Bayesian Kernel for the Prediction of Neuron Properties from Binary Gene Profiles”, *proceedings of the IEEE International Conference on Machine Learning and Applications, special session Applications of Machine Learning in Medicine and Biology (ICMLA)*, 129–134, 2005.
14. A. Shahrokhni, **F. Fleuret** and P. Fua “Classifier-based Contour Tracking for Rigid and Deformable Objects”, *proceedings of the British Machine Vision Conference (BMVC)*, 2, 699–708, 2005, (acceptance rate 36%).
15. S. Boughorbel, J.P. Tarel, **F. Fleuret** and N. Boujemaa “The GCS Kernel For SVM Based Image Recognition”, *proceedings of International Conference on Artificial Neural Networks (ICANN)*, 2, 595–600, 2005.
16. N. Boujemaa, **F. Fleuret**, V. Gouet and H. Sahbi, “Visual Content Extraction for Automatic Semantic Annotation of Video News”, *proceedings of the conference of the International Society for Optical Engineering (SPIE)*, 329–339, 2004.
17. **F. Fleuret** and H. Sahbi, “Scale Invariance of Support Vector Machines based on the Triangular Kernel”, *proceedings of the workshop on Statistical and Computational Theories of Vision of the IEEE International Conference on Computer Vision (ICCV/SCTV)*, online, 2003.

18. **F. Fleuret** and D. Geman, “Fast Face Detection with Precise Pose Estimation”, *proceedings of the IEEE International Conference on Pattern Recognition (ICPR)*, 1, 235–238, 2002.
19. F. Rossi, B. Conan-Guez and **F. Fleuret**, “Functional Data Analysis With Multi Layer Perceptrons”, *proceedings of the IEEE International Joint Conference on Neural Networks (IJCNN)*, 3, 2843–2848, 2002.
20. F. Rossi, B. Conan-Guez and **F. Fleuret**, “Theoretical Properties of Functional Multi Layer Perceptrons”, *proceedings of the European Symposium on Artificial Neural Networks (ESANN)*, 7–12, 2002.
21. N. Boujemaa, J. Fauqueur, M. Ferecatu, **F. Fleuret**, V. Gouet, B. Le Saux and H. Sahbi, “Interactive Specific and Generic Image Retrieval”, *proceedings of the international workshop on Multi-Media Content Based Indexing and Retrieval (MMCBIR)*, online, 2001.
22. **F. Fleuret** and D. Geman, “Graded learning for object detection”, *proceedings of the workshop on Statistical and Computational Theories of Vision of the IEEE international conference on Computer Vision and Pattern Recognition (CVPR/SCTV)*, online, 1999.

Peer-reviewed National Conference Proceedings

1. **F. Fleuret** and J. M. Vézien, “Détection de visages dans des séquences vidéo à l’aide d’arbres de décision”, *proceedings of the French conference on Pattern Recognition and Artificial Intelligence (RFIA)*, 1, 17–25, 2000.
2. **F. Fleuret** and D. Geman, “Apprentissage hiérarchique pour la détection de visages”, *proceedings of the French conference on Pattern Recognition and Artificial Intelligence (RFIA)*, 2, 349–357, 2000.
3. L. Oisel, **F. Fleuret**, P. Horain, L. Morin, J. M. Vézien, F. Prêteux, A. Gagalowicz, C. Labit et P. Leray “Analyse de séquences non calibrées pour la reconstruction 3D de scènes”, *proceedings of the French conference on Pattern Recognition and Artificial Intelligence (RFIA)*, 1, 189–198, 1998.
4. B. Jedynak and **F. Fleuret**, “Reconnaissance d’objets 3D à l’aide d’arbres de classification”, *proceedings of the French Conference on Image and Communication (IM-AGECOM)*, 1996.

Miscellaneous

1. **F. Fleuret** “Modèles Génératifs et Efficacité Algorithmique pour la Prédiction”, *Habilitation dissertation, University of Paris XIII*, 2006.
2. **F. Fleuret** “Détection hiérarchique de visages par apprentissage statistique”, *PhD dissertation, University of Paris VI*, 2000.
3. **F. Fleuret** and H. Sahbi “Coarse-to-fine object detection”, *ERCIM, Special Theme on Machine Perception*, 55, 18–19, 2003.

Teaching

SPRING 2010

Doctoral course in Machine Learning in collaboration with Prof. A. Billard (22h, 35+ students), EPFL.

2007 - 2008

Doctoral course in Machine Learning in collaboration with Prof. A. Billard and Prof. W. Gerstner (12h, 20+ students), EPFL.

2006 - 2007

Master's courses on foundations of image science in collaboration with J. Pilet (28h, 30+ students), **guest lecture, master's course in Machine Learning** (4h, 30+ students), EPFL.

2004 - 2006

Undergraduate C++ programming class and exercise sessions for Life-Sciences (4h per week for 14 weeks each year, 80+ students), EPFL.

2000 - 2001

Graduate lectures in artificial vision in collaboration with Prof. Y. Amit (15h, 20+ students) and **undergraduate C++ programming class** (3h per week for 10 weeks, 50+ students), University of Chicago.

1997 - 2000

Undergraduate exercise sessions in statistics (1h per week for 28 weeks each year, 30+ students) and in **computer programming** (2h per week for 28 weeks each year, 30+ students), University of Paris Dauphine.

1992 - 1994

Undergraduate Pascal programming class, 2h per week for 25 weeks each year, 20+ students), *Classe Préparatoire*, Lycée Buffon, Paris.

Student supervisions

Phd, finished

- Jérôme Berclaz, **PhD co-supervision** with Prof. Pascal Fua on multi-camera people tracking (EPFL), 2010.
- Ali Shahrokni, **PhD co-supervision** with Prof. Pascal Fua on texture segmentation (EPFL), 2005.

Phd, ongoing

- Leonidas Lefakis, **PhD supervision** on goal-planing with very large feature sets, (IDIAP).
- Charles Dubout, **PhD supervision** on object detection with very large feature sets, (IDIAP).
- Hugo Penedones, **PhD supervision** on Playground Learning for object detection, (IDIAP).
- Nicolae Suditu, **PhD supervision** on information retrieval applied to multi-modal data collections, (IDIAP).
- Karim Ali, **PhD co-supervision** with Prof. Pascal Fua on hand detection in industrial environment, (EPFL/CSEM).
- German Gonzalez Serrano, **PhD co-supervision** with Prof. Pascal Fua on filament reconstruction (EPFL).

Master's thesis, finished

- Elia Palme, **Master's thesis supervision** on adding stereo vision to a salamander robot (EPFL), 2007.
- Yariv Levy, **Master's thesis co-supervision** on the analysis of high dimensional dynamical activity in the cortex (EPFL), 2004.
- Sandro Saitta, **Master's thesis supervision** on forecasting airborne pollen concentrations (EPFL), 2004.
- Moez Tarzi, **Master's thesis supervision** on face detection and video stream compression (INRIA), 2002.
- François Tonnin, **Master's thesis supervision** on color distribution distances (INRIA), 2000.

Miscellaneous

- Fanny Gilliéron, **undergraduate project supervision** on auto camera calibration (EPFL), 2007.
- Benoît Rat, **undergraduate project supervision** on adding vision algorithms to a salamander robot (EPFL), 2006.
- Jérémy Jakubowicz, **undergraduate project supervision** on neural network performances and input signal complexity (INRIA), 2002.

Invitations

- Invited speaker at the Workshop in Honor of Donald Geman 65th birthday, 2008.
- Two one-month visits as a *Visiting Associate* at the Vision Lab, Caltech (Pasadena, USA), 2006, 2007.
- Invited at the workshop on Visual Learning and Recognition organized by the American Institute for the Mathematics and Applications (Minneapolis, USA), 2006.

Grants

- **Principal investigator** of the FP7 European project “MASH: Massive Sets of Heuristics for Machine Learning” (2.3M€), 2010.
- **Co-investigator** of the Swiss National Science Foundation research grant “Understanding Brain Morphogenesis” (950K€), 2009.
- **Principal investigator** of the Swiss National Science Foundation research grant “VELASH: Very Large Sets of Heuristics for Scene Interpretation” (100K€), 2009.
- **Co-investigator** of the Swiss National Science Foundation research grant “MULTI: Multimodal Interaction and Multimedia Data Mining” (75K€), 2008.
- **Co-investigator** of the Swiss National Science Foundation research grant “Training Embedded Visions Systems” (120K€), 2007.
- **Co-investigator** of the Swiss National Science Foundation research grant “View Sets for 3-D Object Detection and Recognition” (115K€), 2007.

Services

- Expert for the Austrian Science Fund, 2009.
- Expert for the Research Council of the Academy of Finland, panel for Computer Science, 2009.
- Idiap site manager for the PASCAL 2 Network of Excellence, 2008, 2009, 2010.
- Co-organizer of the NIPS Workshop on Efficient Machine Learning, 2007.
- Member of the INRIA post-doctoral grant commission, 2002, 2003.
- Reviewer for / member of the program committees:
 - IEEE Transactions on Pattern Analysis and Machine Intelligence
 - IEEE Transactions on Signal Processing
 - IEEE Transactions on Neural Networks

- IEEE Transactions on Image Processing
- Journal of Machine Learning Research
- International Journal of Computer Vision
- Machine Learning Journal
- Neural Information Processing Systems Conference (NIPS)
- International Conference on Machine Learning (ICML)
- IEEE international conference on Computer Vision and Pattern Recognition (CVPR)
- IEEE International Conference on Computer Vision (ICCV)
- European Conference on Computer Vision (ECCV)
- International Conference on Advances in Pattern Recognition (ICAPR)

Software

- Author of the **Folded Hierarchy of Classifiers**, distributed under the GNU General Public Licence.
- Author of the **Probabilistic Occupancy Map** distributed under the GNU General Public Licence.
- Author of the **Conditional Mutual Information Maximization** feature selection algorithm, distributed under the GNU General Public Licence.
- Author of a **fast face detector**, registered at the French Agency for Software Protection (APP) under the reference `IDDN.FR.001.200015.000.S.P.2002.000.-21000`.
- Co-author of the **image indexing platform “Maestro”**, registered under the references `IDDN.FR.001.510012.000.S.P.2002.000.21000` (server) and `IDDN.FR.001.510009.000.S.P.2002.000.21000` (client).