

François Brémond

1.1 Address

Work Address:

INRIA Sophia Antipolis Méditerranée, Project STARS

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Research Domains: video interpretation, scene understanding, multi-sensor fusion, spatio-temporal reasoning, event recognition, uncertainty management, machine learning and knowledge representation.

1.2 Professional History

- January 2018 - Inria Research Director **DR1** at INRIA Sophia-Antipolis Méditerranée in the STARS team.
- January 2013 - **Head of the STARS team** (INRIA project team) at Institut National de Recherche en Informatique et en Automatique Sophia-Antipolis Méditerranée.
- January 2012 - **Co-founder of the COBTEK team** at University of Nice with P. Robert from Nice Hospital.
- September 2010 - Inria Research Director **DR2** at INRIA Sophia-Antipolis Méditerranée in the STARS team.
- September 2009 - **Head of the PULSAR team** (INRIA project team) at INRIA Sophia-Antipolis Méditerranée
- 2nd July 2007 - **HDR**, (diploma to supervise researcher) from the University of Nice – Sophia Antipolis on Scene Understanding: perception, multi-sensor fusion, spatio-temporal reasoning and activity recognition.
- 1st January 2002 - Confirmed Researcher at INRIA (**CR1**).
- 1st February 2000 - **Permanent research position** at INRIA (CR2) in the ORION INRIA project team.

1997- 2000: **Post-Doctorate** at the University of Southern California (U.S.C.) in Los Angeles (U.S.A.), at the Institute for Robotics and Intelligent Systems (I.R.I.S.), directed by the Professors Ramakant Nevatia and Gérard Médioni.

1.3 Education

1994 - 1997: **Doctorate** in Computer Science from the University of Nice - Sophia Antipolis at I.N.R.I.A in the ORION project team, « Environnement de résolution de problèmes pour l'interprétation de séquences d'images », obtained with great honor under the direction of Monique Thonnat.

1989 -1992: **Master** in Computer Science from the École Normale Supérieure de Lyon et de l'Université Claude Bernard (Lyon I) specialty in vision and artificial intelligence.

1989 Graduate from the École Normale Supérieure in Lyon, in Computer Science.

1986 - 1989: Classes Préparatoires at Descartes College in Tours.

1.4 Teaching

Teaching of **video interpretation techniques** since 6 years at the master and doctorate level and teaching in computer science for 14 years.

2008 - 2017: **Thematic School** as a speaker:

- Dagstuhl Seminar, Wadern, Germany on February 24-29, 2008
- VISIONTRAIN School, Les Houches, France on March 10-14, 2008
- Ecole thématique Intelligence Ambiante ETIA, Lille, July 2011
- VANAHEIM, Sophia-Antipolis, Oct 2012
- School on Surveillance in Modena Italy - May 7-9 2013
- Dem@Care School on Ambient Assisted Living (DemAAL 2013), Chania, Crete, Greece (16-20 September 2013)
- VideoSense Summer School on Privacy respecting video analytics in Eurecom premises in Sophia Antipolis on 17 April 2014

- Dagstuhl Seminar "Robots Learning from Experiences", Germany, 17-21 February 2014
- Tutorial at Leuven University at the 1st iV&L Net Training School, 3 June 2015

2003 - 2011:	Teaching at EURECOM Master at Sophia Antipolis, 3hours class on video understanding techniques
2007:	Teaching at DUIE (professional training) of the Nice University - Sophia Antipolis for gerontologist assistants – 16 th February 2007, 1h30 class on video interpretation techniques.
2000 - 2004:	Teaching at Nice University for the Master in Astronomy, 3h class on methods for statistical and Bayesian classification.
1994 - 1997:	Teaching at Nice University for post graduated students on programming languages (64 hours per year).

1.5 Supervision of Research Activities

Head of the group on Video Understanding in the PULSAR team since 2000. More precisely supervisor : **23 doctorate students, many post-doctorate students, master students and research engineers**. More details available at:

<http://www-sop.inria.fr/members/Francois.Bremond/topicsText/supervision.html>

Supervisor/Co-supervisor for 5 ongoing PhDs

- **Srijan Das**: from December 2017 till December 2020. Action recognition using Deep Learning. 100% supervisor (Fellowship University Nice Cote-d'Azur).
- **Ujjwal Ujjwal**: from September 2016 till August 2019. Pedestrian Detection to dynamically populate the map of a crossroad. 80% supervisor (Fellowship VEDECOM).
- **Farhood Negin**: from January 2015 till January 2018. People detection and Activity Recognition using RGBD sensors. 100% supervisor (Fellowship Inria PAL).
- **Thi Lan Anh Nguyen**: from December 2014 till December 2017. People tracking in camera network. 100% supervisor (Fellowship Region, Aroma therapeutics).
- **Guillaume Sacco** (MD, Chef de Clinique Assistant at Nice Hospital): from November 2013 till November 2017. Utilisation de l'outil vidéo dans l'analyse des troubles du comportement chez les patients atteints de la maladie d'Alzheimer. 20% supervisor with 0. Guerin (Nice Hospital University)

Supervisor/Co-supervisor for 18 defended PhDs

- **Auriane Gros** (Speech therapist - Orthophoniste - at Nice Hospital): from September 2014 till September 2017. Utilisation de la reconnaissance automatique d'activité dans l'évaluation et la prise en charge spécifique des troubles de nature émotionnelle chez les patients atteints de la Maladie d'Alzheimer. 50% supervisor with Renaud David (Nice Hospital University). PhD jury: C. Arbus, AS.Rigaud, J. Benois-Pineau, R. David and F. Bremond.
- **Michal Koperski**: from April 2014 till April 2017. Action recognition using RGBD sensors. In collaboration with Toyota. 100% supervisor. PhD jury: F. Precioso, M. Cord, L. Sigal, JM. Odobez and F. Bremond.
- **Minh Khue Phan Tran**: from 29 November 2013 till 28 December 2016. Man-machine interaction for older adults with dementia - Interaction Homme-Machine pour les personnes âgées atteintes de démence. 60% supervisor (Fellowship CIFRE), with Philippe Valle and Rafik Goulamhousen (Genious), Philippe Robert (CoBTek - CHU Nice).
- **Julien Badie**: from October 2011 till September 2014. People tracking and Video Understanding. 100% supervisor (Fellowship Region, Interactive 4D).
- **Piotr Bilinski**: from January 2010 till December 2014. Action recognition for human activity understanding. 100% supervision.
- **Malik Souded**: from December 2009 till December 2013. Tracking people through a video camera network. 100% supervision with the participation of Laurent Giulieri from Keeneo.
- **Rim Romdhame**: from March 2009 till September 2013. Event Recognition in Video Scenes with Uncertain Knowledge. 50% co-supervision with M. Thonnat and P. Robert (Nice Hospital).
- **Slawomir Bak**: from February 2009 till July 2012. People detection in temporal video sequences by defining a generic visual signature of individuals. 100% supervision.
- **Guido-Tomas Pusiol**: from October 2008 till May 2012. Event Learning based on Trajectory Clustering. 100% supervision.
- **Duc Phu Chau**: from December 2008 till March 2012. Optimizing tracking algorithms for scene understanding. 80% co-supervision with M. Thonnat.
- **Nadia Zouba**: from November 2006 to January 2010. Multisensor Fusion for Monitoring Elderly Activities at Home. 75% co-supervision with M. Thonnat.
- **Anh Tuan Nghiem**: from November 2006 till November 2009. People detection and algorithm parameter tuning. 80% co-supervision with M. Thonnat.
- **Mohamed Becha Kaaniche**: from April 2006 till November 2009. Gesture recognition for human activity interpretation. 100% supervision.
- **Marcos Zuniga**: from January 2005 till November 2008. Primitive Event Learning and Recognition in Video. 75% co-supervision with M. Thonnat.
- **Bernard Boulay**: from October 2003 till December 2006. Posture recognition for human activity interpretation. 75% co-supervision with M. Thonnat.
- **Benoît Georis**: from September 2002 till January 2006. Program Supervision Techniques for Easy Configuration of Video Understanding Systems. PhD of

Catholic University of Louvain la Neuve (UCL) Belgium. 60% co-supervision with M. Thonnat and B. Macq.

- **Thinh Van Vu:** from October 2001 till October 2004. Temporal Scenario for Automatic Video Interpretation. Defended in October 2004. 60% co-supervision with M. Thonnat.
- **Somboon Hongeng:** from January 1998 till January 2004. A Unified Bayesian and Logical Approach for Video-Based Event Recognition. PhD of the University of Southern California. Defended in May 2003. 40% co-supervision with R. Nevatia.

Post-doctorate Researchers and Visiting Doctorate Students before 2010

- **Tanvi Banerjee:** May 2010 to August 2010. Doctorate Researcher from the University of Missouri working in Gait Analysis from homecare videos.
- **Hector Gomez:** April 2010 to July 2010. Doctorate Researcher from the Universidad Tecnica Particular de Loja (Ecuador) and from Universidad de Almeria (Spain) working in performance evaluation for video processing.
- **Pau Baiget:** November 2009. Post-doctorate Researcher from the Computer Vision Center at the Autonomous University of Barcelona, Spain.
- **Gal Lavee:** August 2008 till October 2008. Doctorate Researcher from Computer Science Department, Technion (Israel Institute of Technology), Technion City, Israel, in Understanding Video Events.
- **Suresh Sundaram:** August 2007 till August 2008. Post-doctorate Researcher from IIT-Delhi, India, in machine learning and on-line learning system for visual tracking.
- **Tomi Raty:** February 2007 till February 2008. Doctorate Researcher from VTT Technical Research Centre of Finland, in Scalable Video Transmission for Surveillance Systems.

1.6 Collaboration and research projects

Member of the **steering committee** and **work package leader** of: 14 European projects, 16 French projects, 10 industrial projects, 1 Asian project and 1 U.S. project (corresponding to 29 research projects). More details available at: <http://www-sop.inria.fr/members/Francois.Bremond/topicsText/researchProjects.html>
The main projects are:

- **[2016 - 2019] ReMinAry:** This project is a FUI project started in September 2016 and will end in September 2019 (36 months). This project is based on the use of motor imagery (MI), a cognitive process consisting of the mental representation of an action without concomitant movement production. This technique consists

in imagining a movement without realizing it, which entails an activation of the brain circuits identical to those activated during the real movement. By starting rehabilitation before the end of immobilization, a patient operated on after a trauma will gain rehabilitation time and function after immobilization is over. The project therefore consists in designing therapeutic video games to encourage the patient to re-educate in a playful, autonomous and active way in a phase where the patient is usually passive. The objective will be to measure the usability and the efficiency of the reeducative approach, through clinical trials centered on two pathologies with immobilization: post-traumatic (surgery of the shoulder) and neurodegenerative (amyotrophic lateral sclerosis).

- **[2016 - 2018] StoreConnect:** This French project from industry minister aims at designing a platform to analyze customer behavior in stores. StoreConnect is a FUI project started in Sept 2016 and that will end in Sept 2018 (24 months). The goal is to improve the shopping experience for customers inside supermarkets by adding new sensors such as cameras, beacons and RFID. By gathering data from all the sensors and combining them, it is possible to improve the way to communicate between stores and customers in a personalized way. StoreConnect acts as a middleware platform between the sensors and the stores to process the data and extract interesting knowledge (meta-data) organized via ontologies.
- **[2015 - 2018] VISIONUM:** This French project from industry minister aims at designing a platform to re-educate at home people with visual impairment. This project has started on the 1st of January 2015 and will last 36 months. INRIA Grant is 242 Keuros. The prime partner is the Groupe Genious and other partners are: INRIA Sophia-Antipolis, Streetlab, Hopital des Quinze-Vingts, Fondation Ophthalmologique Rothschild, Fondation Hospitaliere Sainte-Marie.
- **[2013 - 2017] MOVEMENT - AutoMatic BiOmetric Verification and PersonnEl Tracking for SeaMless Airport ArEas Security MaNagement** MOVEMENT is a ANR CSOSG 2013 French project, in the Axis 2 "Protection of citizens and infrastructures" and more precisely in the sub-theme 2.2.2 "Protect infrastructures and networks". This project runs from January 1st 2014 to 2017 (3 years and half) on investigating technologies for improving security in airport areas. MOVEMENT is focusing on the management of security zones in the non-public airport areas. These areas, with a restricted access, are dedicated to service activities such as maintenance, aircraft ground handling, airfreight activities, etc. In these areas, personnel movements tracking and traceability have to be improved in order to facilitate their passage through the different areas, while insuring a high level of security to prevent any unauthorized access. Movement aims at proposing a new concept for the airport's non-public security zones (e.g.customs control rooms or luggage loading/unloading areas) management along with the development of an innovative supervision system prototype. The prime partner is Morpho and other partners are: Sagem, INRIA Sophia-Antipolis, EGIDIUM, EVITECH and CERAPS.
- **[2013 - 2017] SafEE Project - Safe & Easy Environment for Alzheimer Disease** and related disorders. SafEE (Safe Easy Environment) is a ANR TECSAN French project from Dec 1st 2013 to 2017 (3 years and half) on investigating technologies for stimulation and intervention for Alzheimer patients. French

partners of the project include clinicians (CoBTeK, Nice Hospital and Nice University), computational research centers (INRIA) and industrials (Aromatherapeutics, SolarGames). Taiwan partners also include clinicians (Taichung Veterans General Hospital TVGH, NCKU Hospital), computational research laboratory (SMILE Lab at National Cheng Kung University NCKU) and industrials (BDE). INRIA Grant is 180 Keuros out of 625 Keuros for the whole project. The SafEE project aims at improving the safety, autonomy and quality of life of older people at risk or suffering from Alzheimer's disease and related disorders. More specifically the SafEE project : 1) focuses on specific clinical targets in three domains: behavior, motricity and cognition 2) merges assessment and non pharmacological help/intervention and 3) proposes easy ICT device solutions for the end users. In this project, experimental studies will be conducted both in France (at Hospital and Nursery Home) and in Taiwan.

- **[2015 - 2016] EIT ICT Labs: Brick & Mortar Cookies:** We are involved in the EIT ICT Labs - Smart cities, from January to December 2016 with Inria, Neosensys, Bosch, Fraunhofer (up to end of 2015) and Universidad Politécnica de Madrid (starting beginning of 2016). The goal is to develop and market a camera-based system combining intelligent video-surveillance improving profitability and customers' behavioral analysis enhancing shopping experience. Today, retailers have difficulties to execute a proper multi-channel strategy as there is a major difference in the metrics available to him to measure customer behaviour and satisfaction between on line & "Brick & mortar" stores. Physical stores are threatened by the ability customers now have to use on line shopping. This activity proposes to both protect physical stores profitability and develop fully efficient multi-channel strategies by finalizing, validating & launching a new video system dedicated to "Brick & Mortar" stores. This system will dramatically enhance (i) the consumer shopping experience, (ii) the store resources allocation and (iii) the store financial performance. The system will be based on a network of "smart" video cameras mutualized for both video-surveillance and consumer behaviour analytic. This will allow the system to be quickly amortized and therefore increase the speed of market penetration.
- **[2011 - 2015] Dem@Care Project - Dementia Ambient Care: Multi-Sensing Monitoring for Intelligent Remote Management and Decision Support.** Dem@Care is a FP7-ICT-2011.5.1 IP European project (Personal Health Systems) which has started on November 1st 2011 and will end in 2015 (48 months). This project addresses Challenge 5: Digital ICT for Health, Ageing Well, Inclusion and Governance. The objective of Dem@ is the development of a complete system providing personal health services to persons with dementia, as well as medical professionals, by using a multitude of sensors, for context-aware, multiparametric monitoring of lifestyle, ambient environment, and health parameters. Multisensor data analysis, combined with intelligent decision making mechanisms, will allow an accurate representation of the person's current status and will provide the appropriate feedback, both to the person and the associated medical professionals. Multi-parametric monitoring of daily activities, lifestyle, behaviour, in combination with medical data, can provide clinicians with a comprehensive image of the person's condition and its progression, without their being physically present, allowing remote care of their condition. There will be several pilots in France, Ireland and Sweden. The prime partner is the Centre for Research and

Technology Hellas (G) and other partners are: INRIA Sophia-Antipolis, University de Bordeaux 1, Cassidian, Nice Hospital, LinkCareServices (FR), Lulea Tekniska Universitet (SE), Dublin City University (IE), IBM Israel (IL), Philips (NL) and Vistek ISRA Vision (TR).

- **[2010 - 2014] SUPPORT Project - Autonomous Monitoring for Securing European Ports** (Security UPgrade for PORTs) is a FP7-SEC-2009-1 IP European project (48 months). The prime partner is BMT Group (UK) and other partners are: INRIA Sophia-Antipolis (France), Swedish Defence Research Agency (SE), Securitas (SE), Technical Research Centre of Finland (FI), MARLO (NO), INLECOM Systems (UK)... SUPPORT is addressing potential threats on passenger life and the potential for crippling economic damage arising from intentional unlawful attacks on port facilities, by engaging representative stakeholders to guide the development of next generation solutions for upgraded preventive and remedial security capabilities in European ports. INRIA goal is to study the benefit of a Video-Surveillance system integrated in a global security infrastructure to address potential threats in European ports.
- **[2010 - 2013] VANAHEIM Project - Autonomous Monitoring Of Underground Transportation Environment** (Video/Audio Networked surveillance system enhancement through Human-centered adaptive Monitoring) is a FP7-ICT-2009-4 Cognitive Systems and Robotics IP European project (42 months). The aim of this proposal is to study innovative surveillance components for autonomous monitoring of multi-sensory and networked infrastructure such as underground transportation environment. The prime partner is Multitel (Belgium) and other partners are: INRIA Sophia-Antipolis (France), Thales Communications (France), IDIAP (Switzerland), Torino GTT (Italy) and RATP (France), Ludwig Boltzmann Institute for Urban Ethology (Austria) and Thales Communications (Italy).
- **[2009 - 2012] ViCoMo Project - Visual Context Modelling** - is an ITEA 2 European Project (36 months). This project concerns advanced video-interpretation algorithms on video data that are typically acquired with multiple cameras. ViCoMo is focusing on the construction of realistic context models to improve the decision making of complex vision systems and to produce a faithful and meaningful behaviour. Participating countries are France, Spain, Finland, Turkey, Belgium, and Netherlands.
- **[2009 - 2012] SWEET-HOME Project - monitoring Alzheimer patients at Nice Hospital** - is an ANR TECSAN French project (3 years) on long-term monitoring of elderly people at Hospital with Nice City Hospital, Actis Ingenierie, MICA Center (CNRS unit) in Hanoi, Vietnam, SMILE Lab at National Cheng Kung University, Taiwan and National Cheng Kung University Hospital. The SWEET-HOME project focuses on two aspects related to Alzheimer disease: (1) to assess the initiative ability of patient and whether the patient is involved in goal directed behaviours (2) to assess walking disorders and potential risk of falls. In this focus, the goal is to collect and combine multi-sensor (audio-video) information to detect activities and assess behavioural trends to provide user services at different levels. In this project experimental rooms are used in Nice-Cimiez Hospital for monitoring Alzheimer patients.

- [2008 – 2011] **CIU-Santé** is a DGE French project (30 months) on long-term monitoring of **elderly people at home** with CSTB, the Nice City Hospital, Pôle SCS, Actis Ingenierie, Movea, CEA and UNSA. In this project two experimental rooms are built in Nice-Cimiez Hospital for setting up an evaluation platform to assess technological solutions.
- [2008 – 2011] **VIDEO-ID** is a French ANR Security project (36 months) on intelligent **video surveillance and people biometry**. The involved partners are: Thales-TSS, EURECOM, TELECOM and Management SudParis, UIC, RATP, DGA, STSI.
- [2008 – 2011] **COFRIEND**: the European ICT-FP7 project Cofriend (36 months) aims at conceiving cognitive vision system for automatic monitoring of human activities. Cofriend project follows up the Avitrack project. The project studies all activities occurring around **aircraft parked on aprons** at Toulouse airport. Most specifically the system has to adapt itself to lighting condition changes, weather changes, to new airport configurations, to the arrival of new servicing vehicles and new aircraft types. The performance of the system to recognize correctly the actions of interest and its capability to adapt itself to unexpected situations are a key point of this project. Six teams are involved in Cofriend: INRIA Sophia-Antipolis, Silogic, Toulouse airport (France), University of Reading and of Leeds (UK), University of Hamburg (Germany).
- [2008 – 2009] **MONITORE**: Real-time Monitoring of **TORE Plasma** is an INRIA Exploratory Action (24 months) for the real-time monitoring of imaging diagnostics to detect thermal events in **tore plasma**. This work is a preparation for the design of the future ITER nuclear reactor and is done in partnership with the Imaging and Diagnostics Group of the CEA Cadarache, France.
- [2006 – 2010] **SYSTEM@TIC** project **SIC**. The SIC project (42 months) from the French "pole de compétitivité" **SYSTEM@TIC** is a strategic initiative from the Paris region in **perimeter security** for sensitive buildings. The partners include Thales, EADS, Alcatel, BULL, SAGEM, Bertin, Trusted Logic, CEA, Sodern, Axalto, GET/INT, Paris Sud and RATP. The solutions proposed by SIC project will be validated through two demonstrators, RATP subway station and Bobigny administrative building.

1.7 Software realization and dissemination

Several experiences in technological **transfer** towards **industrials** have permitted to exploit research result:

- **Keeneo: Co-founder** of a company in intelligent video surveillance in 2005 and member of scientific counsel. 18 people, awarded in the Tremplin exam Entreprise-Sénat and awarded in the national exam for spin-off creation in innovative technology in 2005. Bought by Digital Barrier in August 2011.
- **Spin off:** NeoSensys is a spin-off of the Stars team which aims at commercializing video surveillance solutions for the retail domain. This company has been created on the 1st of September 2014.
- **Spin off:** Ekinnox is a spin-off project of the Stars team which aims at improving the rehabilitation process for caregivers and patients. Thanks to a computer vision based system (camera combined with algorithms detecting human motion), Ekinnox provides a simple and efficient tool to quantify and visualize the performance of patients (e.g. gait parameters computation such as side-by-side video comparison, automatic sequencing of video or 3D display) during their rehabilitation process. This company was created on the beginning of 2017.
- **Consultant** for companies in intelligent video surveillance: Ivisiotech in 2006-2007 and Keeneo from 2005 to 2010.
- **Patent and Software:** co-inventor of two large software (VSIP and PFC); one of which VSIP was registered at APP (French software administration) in 2005.
- **Technological Transfer:** co-inventor of the **VSIP** platform on intelligent video surveillance for 10 European projects R&D and 6 industrial contracts (in particular Akka, Bull and Vigitec).
- **Co-inventor** of the real-time 4D software called **PFC** for counting and classifying people traveling in the subway. This software has been transferred to a SME in video processing (Timeat) in Rennes and to RATP.
- **Transfer** to Toyota, action recognition software in 2013 - 2016;

1.8 Dissemination of scientific knowledge

Several articles have been disseminated towards **large news media** and have enabled to make known this scene interpretation work to a wide population:

L'Ordinateur individuel (March 1999), *Sciences et Avenir* (January 2000), *Industries et Techniques* (juillet 2000), *Transert* (June 2001), *Le Monde* (August 2001), *De Morgen* (Belgique August 2001) ; *La Meuse* (Belgique August 2001) *Les Echos* (September 2001), *l'Espresso* (Italie, September 2001), *Ercim News* (Europe, October 2001), *Byte.com* (Royaume-Uni, 7 April 2003), *Faits marquants de la recherche et*

développement à la RATP (2004), *Stratégies et veille technologique*, Crédit Agricole (n° 7, December 2004), *Enjeux les Echos* (n° 209, January 2005), *Ca m'intéresse* (October 2005), *Webzine du CSTB* (December 2005), *Journal des Electriciens* (n° 838, April 2006), *Nice Matin* (2 October 2006), *Frost & Sullivan* (10 Jan 2008), le journal Domotique News no224 Jun 2008, *La Recherche* (March 2009), French Press Agency (A.F.P. - April 2009), *Santé - France Soir* (24 April 2009), interview B.B.C. World (May 2009), Fête de la science octobre 2009, *Science-et-vie* avril 2010, French Press interview on Assisted Living in February 2012 with *Le Monde*, *Le Figaro*, *Les Echos*, *Notre Temps*, *Le Quotidien du Médecin*, RFI, France Culture, *La Croix*, France Inter, article in *Le Monde* on the 10th of March on "Vidéosurveillance : Trop de caméras pas assez d'yeux ?", Interview on Assisted Living on the 21st of March 2012 with France Inter, Interview on CobTek for the ITV Inria Web Site (by TEchnoscope company) in April 2012; Conférence des métiers at International Lycée (CIV) in Sophia, January 2014-16; *Nice matin* on CoBTeK and Alzheimer issues, Opening of ICP, 10 March 2014; Monaco TV on MONAA and Autism issues, 12 March 2014; ERCIM News 98 -Special theme: Smart Cities, July, 2014; Aditel, Bank Forum, La Baule, Palais des congrès 1 October 2015; *Industry Magazine*, 1 October 2015; Nice University Conference, *La Santé du Futur*, 5 November 2015; Workshop Innovation Alzheimer, 12 November, 2015; *Nice Matin* Dec 2017;

1.9 Collaboration, Visits

Thematic mobility through 7 scientific domains (related to cognitive systems) and **geographic mobility** including 4 laboratories in France and in US:

2006 - 2016	Unsupervised learning of scenario models in Sophia-Antipolis.
2003 - 2006	Control and evaluation of programs for scene interpretation in Sophia-Antipolis.
2000 - 2003	Recognition of scenarios using temporal constraint networks in Sophia-Antipolis.
1997- 2000	Recognition of scenarios using Bayesian networks and Hidden Markov Models (HMM) at USC in Los Angeles at R. Nevatia laboratory (U.S.A.).
1994 - 1997	Modeling of the video interpretation process at INRIA in Sophia-Antipolis .
1992	Spatio-temporal reasoning for knowledge based systems at INPG in Grenoble (F. Rechenmann laboratory).
1991	Classification using neural networks at Providence - Rhodes Island (U.S.A.).

1.10 Scientific responsibilities

Participations, invitations and responsibilities for several scientific conferences:

- **Organizer of**
 - a SOOS day of the SFO «Concepts Avancés De Réseaux De Caméras Optiques Pour La Surveillance Automatisée», 15 October Paris
 - a GdR-ISIS day (Intelligent Video Surveillance), Paris, 17 December 2008
 - the ETISEO seminars on performance evaluation for video interpretation from January 2005 to December 2006
 - the Human Activity and Vision Summer School 2012 (HAVSS) organized in Sophia Antipolis, France, on 1-5/10/2012
 - SPHERE workshop on Ambient Assisted Living, at Inria Sophia Antipolis, 9-10 October 2013
 - PANORAMA special session, part of VISAPP Lisbon, Portugal, 5-8 January 2014
 - PANORAMA special session, part of SPIE Electronic Imaging (EI) event San Francisco, 8-12 February 2015
 - ISG, 10th World Conference of Gerontechnology, Nice, 28th to 30th September 2016
 - Crowd Understanding workshop, part of ECCV, Amsterdam, October 2016.

- **Session chair** and chairman of discussion panels of conferences
 - ICDP'05,
 - WMVC 2007 IEEE Workshop on Motion and Video Computing - Austin Texas - USA, February 23-24, 2007,
 - AVSS'10, AVSS'12-17.
 - WACV'16, '17

- **Area chair of**
 - IEEE International Conference on Advanced Video and Signal Based Surveillance, AVSS'09, Genoa, Italy, September 2-4, 2009.
 - IEEE International Conference on Advanced Video and Signal Based Surveillance, AVSS'13, Krakow, Poland on August 27-30, 2013
 - IEEE AVSS'14, Seoul
 - IEEE AVSS'16, Colorado Springs, USA
 - ACM Multimedia 2016 Area Chair for "Multimedia and Vision", Amsterdam October 2016
 - AVSS - 14th IEEE International Conference on Advanced Video and Signal-Based Surveillance - Area and Session Chair, Lecce, Italy, August 29th - September 1st, 2017.

- ICIAP - 19th International Conference on Image Analysis and Processing; Area Chair; in Catania, Italy, September 11-15, 2017.

- **Publication Chair**, IEEE AVSS'15, Karlsruhe, Germany

- **Handling editor** of
 - the international journal "Computing and Informatics" from September 2006-2012,
 - the international journal "Machine Vision and Application" since 2012.
- **Editor** of a special issue of Journal of Electronic Imaging Letters (JEL): Ultra-Wide Context and Content Aware Imaging, 2015.

- **Scientific Board member** of Fondation Médéric Alzheimer: European Dementia Biomedical Outlook, April and October 2012, 2014 and 2016
- **Experts of the French ANR** (research agency) in 2007-11 for the call "Concepts Systèmes et Outils pour la Sécurité Globale" (CSOSG).
- Member of the **Scientific Committee** of CSOSG 2009 and WISG 10-13 of the French ANR
- **EC INFISO Expert** in the framework of Ambient Assisted Living European FP7 (HERMES and VitalMind projects) 2007-2011 and for the CALL7 - Objectives 5.4 & 5.5 in 2011.
- **Expert** for the Computer Science Discovery Grant application for the Natural Sciences and Engineering Research Council of Canada (NSERC), 2015
- **Expert** for the Proposal KIC Healthy Ageing (Innolife) Group1: Independent living in 2015
- **Expert** for EU European Reference Network for Critical Infrastructure Protection (ERNICIP) - Video Analytics and surveillance Group, at European Commission's Joint Research Centre, 2013-14
- **Expert for** reviewing research projects
 - for France Alzheimer Association (25th May 2013), (October 2015), (11 December 2015), (16 September 2016)
 - for NTU Singapore (19th August 2013)
 - for INSA de Lyon (4th November 2013)
 - for reviewing tutorial proposals for ICIP'14
- **Member of the advisory Boards** of the "Éthique, technologie et maladie d'Alzheimer ou apparentée" EREMA, April 2011 and 2012.

- **Network member** of
 - 2nd European Network for the Advancement of Artificial Cognitive Systems, Interaction and Robotics (EUCogII network).
 - [2014 - 2016] Video Surveillance for Security of Critical Infrastructure - Goal of this European Network on Video Analytics: Academia and

industry have been investing time and money in relevant technology innovations, but there is a lack of standardization, testing and accreditation in Europe that would help users to ensure that video surveillance products are fit for their purposes.

- [2014 - 2018] iV&L Network -: Combining Computer Vision and Language Processing For Advanced Search, Retrieval, Annotation and Description of Visual Data, is designed to bring together two previously unconnected research communities, Computer Vision (CV) and Natural Language Processing (NLP). COST Action IC1307 in 2014-17
- **Reviewer for the journals:** AIJ Artificial Intelligence Journal, IET Computer Vision, CVIU Computer Vision and Image Understanding, IJHCS International Journal of Human-Computer Studies, IJPRAI International Journal of Pattern Recognition and Artificial Intelligence, IMAVIS Image and Vision Computing, IVCJ Image and Vision Computing Journal, JPRR Journal of Pattern Recognition Research, MEP Medical Engineering and Physics, MVA Machine Vision and Applications Journal, The Open Cybernetics and Systemics Journal, PAAJ, PR Pattern Recognition Letters, IEEE Intelligent Systems Pattern Recognition Letters, EURASIP-JASP, EURASIP-JIVP Journal on Image and Video Processing, PAMI Transactions on Pattern Analysis and Machine Intelligence, Transactions on Systems Man and Cybernetics Sensors journal, IEEE Transactions on Multimedia, TKDE Transactions on Knowledge and Data Engineering, IEEE Transactions on Neural Networks.
- **Program committee** member of the conferences and workshops: WAMOP IEEE ICNSC'06 (International Conference on Networking and Sensing Control), IEEE ECCV'06 (European Conference on Computer Vision), IEE International Conference on Imaging for Crime Detection and Prevention ICDP 2005-2006'09, VIE 2006-2007 Visual Information Engineering, CVPR 2007 Computer Vision and Pattern Recognition, M2SFA2 2008 ECCV Workshop on Multi-camera and Multi-modal Sensor Fusion, ICVS 2008-2011 International Conference on Computer Vision Systems, VNBA 2008 ACM International Workshop on Vision Networks for Behavior Analysis, AVSS 2006-2013 IEEE Conference on Advanced Video and Signal based Surveillance, Workshop on Performance Evaluation of Tracking and Surveillance PETS, VS-Pets2005, VS 2005-2013 IEEE International Workshop on Visual Surveillance, IWINAC 2009 3rd International Work Conference on the Interplay between Natural and Artificial Computation, BMVC 2008 British Machine Vision Conference, ACM Multimedia 2009 Workshop Multimedia in Forensics, Tracking Humans for the Evaluation of their Motion in Image Sequences (THEMIS 2009), Pattern Recognition and Artificial Intelligence for Human Behaviour Analysis (PRAI4HBA 2009), workshop Visage (part of RFIA 2010-12), Workshop Interdisciplinaire sur la Sécurité Globale (WISG 2010-13), ACM/IEEE International Conference on Distributed Smart Cameras (ICDSC 2010), IEEE Workshop on Applications of Computer Vision (WACV 2013), ECCV 2012 workshops, International Workshop on Re-Identification (Re-Id 2012) and ARTEMIS 2012, the CVPR 3rd Intl. Workshop on Socially Intelligent Surveillance and Monitoring (SISM 2012-13).

- **Reviewer for the conferences** and workshops RFIA'03'10, BMVC'04'06-09'15-17, ECAI'04, WAMOP, ACIVS'05'09, IJCAI'05, ICVS'06-15, VIE'06-07, VS-PETS'05-16, VS'05-09, ICDP'05-18, ICNSC'06, CDPR'06, WMVC08, IEEE IWINAC 2008, INDIN 2008, ICPR'12, ICRA'13, WACV'13'14'15'16'17'18, AVSS'05'06'07'08'09'10'11'12'13'14'15'16'17, ECCV'06'08'10'12'14'16, ICCV'05'07'09'11'13'15'17, CVPR'04-05'07'08'09'10'11'12'13'14'15'16'17'18.
- **Collaboration** with several international teams such as Multitel in Belgium, the University of Southern California, U.S., the National Cheng Kung University in Taiwan and University of Kingston upon Thames UK.
- Member of **steering committee** and **work-package leader of**: 14 European projects, 16 French projects, 12 industrial projects and 1 U.S. project (corresponding to 43 research projects).
- **Reviewer of PhD theses:**
 - Christophe Le Gal de l'Institut National Polytechnique de Grenoble in 2003,
 - Mr. Maxime Cottret at LAAS in Toulouse, October 2007,
 - Claudio Piciarelli of University of Udine, Italy, February 2008,
 - Fida EL BAF from the Université de La Rochelle, France, June 2009,
 - Pau Baiget from Computer Vision Center at the Autonomous University of Barcelona, Spain, July 2009,
 - Baptiste Hemery from ENSICAEN - GREYC, Caen, France, December 2009,
 - Ahmed Ziani from Laboratoire LASL, Université du Littoral Côte d'Opale, Calais, France, 2010.
 - Alexander Kläser, from the University of Grenoble, 31 July 2010.
 - Omar HAMDOUN, Ecole Nationale Supérieure des Mines de Paris, 16 December 2010.
 - Dora Luz Almanza, Université de Toulouse III Paul Sabatier, January 7, 2011
 - Cédric ROSE, Université de Henri Poincaré - Nancy 1, mai 27, 2011
 - Nadeem Salamat, Université de la Rochelle, October 7, 2011
 - Juan Carlos San Miguel Avedillo, Universidad Autonoma de Madrid, October 27, 2011
 - Anna-Louise Ellis, Reading University, November 7, 2011
 - Vladislavs Dovgalecs, Université Bordeaux 1, December 5, 2011
 - Cyrille Migniot, GIPSA Lab, Univ. P. Mendes-France, Grenoble, 17 January 2012
 - Carmelo Velardo, EURECOM, 23rd April 2012
 - Sun Lin, Université Pierre & Marie Curie (UPMC) - TELECOM SudParis, 12th Dec 2012
 - Boris Meden, Lab Vision and Content Engineering, CEA Saclay – nano innov, January 2013
 - Lyazid Sabri, Université Paris Est Créteil (UPEC), 2013
 - Hajer Fradi, EURECOM, 28th January 2014.

- Martin Hirzer, Graz University of Technology, Graz, Austria , March 2014;
 - Usman Niaz, EURECOM, Sophia Antipolis, 8 July 2014;
 - Geoffroy Cormier, Rennes University, ECAM Rennes Louis de Broglie, NeoTec-Vision, 10 Novembre 2014
 - Dana Codreanu, Toulouse University, 21 May 2015.
 - Matthieu Rogez, Lyon University, LIRIS, Foxstream, 9 June 2015.
 - Cédric Le Barz, Pierre and Marie Curie University, Thales, 30 June 2015.
 - Owais Mehmood, School of centrale de Lille, IFSTTAR, 28th September 2015.
 - Thi Khanh Hong Nguyen, Nice University - LEAT, 18 November 2015.
 - Cyrille Beaudry, La Rochelle University, MIA, 26 November 2015.
 - Arsène Fansi Tchango, Lorraine University, 4 December 2015.
 - Andrei Stoian, CNAM, Paris, 15 January 2016
 - Romain Endelin, University of Montpellier, 2nd June 2016;
 - Jean-Charles Bricola, CMM, Mines ParisTech, Fontainebleau, 19 October 2016
 - Salma Moujtahid, LIRIS -Equipe IMAGINE- INSA Lyon, 3 November 2016;
 - Marion Chevalier, Laboratoire d'Informatique de Paris 6, Thales Optronique S.A.S., Paris, 2 December 2016 ;
 - Naouel Aayri, Université Paris Est Créteil - UPEC, 15 décembre 2016
 - Andrews Sobral, Université La Rochelle, 11 mai 2017
 - Athira Muraleedharan Nambiar, Electrical and Computer Engineering, Instituto Superior Técnico, Institute for Systems and Robotics, Lisboa, Portugal, 1st September 2017
 - Enjie Ghorbel, Université de Rouen Normandie, 12 octobre 2017
 - Bassem HadjKacem, École Nationale d'Ingénieurs de Sfax, Tunisie, 5 novembre 2017
 - Nabila Mansouri, Université de Sfax et l'Université de Valenciennes, 20 novembre 2017
- **Reviewer, 11 PhD thesis at mid-term:**
 - Usman Farrokh Niaz, EURECOM, 2nd May 2012
 - Claudiu Tanase, EURECOM, 2nd May 2012
 - Alban Meffre, Télécom Physique Strasbourg (ex ENSPS) - LSIIT CNRS, June 5 2012
 - Hajer Fradi, EURECOM, 29th October 2012
 - Effrosyni Doutsis, Nice University - I3S, 23 June 2014;
 - Antoine Basset, Institut Curie, Paris, 8 July 2014;
 - Yiqiang Chen, LIRIS, Lyon, 3 November 2016
 - Reviewer for 4 PhDs - UNED Doctoral Consortium, Mr. Artaso, Mr. Timón, Mr. Pérez, and Mr. Navares, Facultad de Informática, UNED, Madrid, 12 June 2017

- **Expert for :**
 - Sonia GARCIA, pour le dossier d'appellation de Professeur, Télécom SudParis, 8 Juin 2011
 - Farah Arab, pour l'obtention du prix de thèse de la fondation Médéric Alzheimer, August 20, 2011.
 - HDR of Christian Wolf, University of Lyon, INSA-Lyon, LIRIS CNRS, Team Imagine and M2Disco, 10th December 2012
 - the committee selection for the tenure track, Mines School - ParisTech, June 2014
 - HDR of Thierry BOUWMANS, November 2014
 - Reviewer Consolidator Grant proposal for European Research Council (ERC) June 2015
 - Tenure Track Selection: committee member for permanent position, Mines School - ParisTech, September 2017

- **Invited Talks**
 - Workshop M.I.T. invited by A. Bobick - Massachusetts, May 1997.
 - Seminar by M. Ghallab at L.A.A.S. - Toulouse, March 1997.
 - Seminar by G. Medioni at the University of Southern California, L.A. (U.S.A.), February 1997.
 - Seminar for the workshop Connaissance et Documents Temporels (AFIA 2005), Nice, France.
 - Seminar by J. Ferryman at the conference PETS 2007 (Performance Evaluation of Tracking and Surveillance) during ICCV 2007, Rio de Janeiro Brazil.
 - Seminar at the Journée Mondiale de l'Utilisabilité, Sophia-Antipolis, November 2007.
 - Talks at AViRS 2008 (Analyse Video pour le Renseignement et la Sécurité, Paris, April 2008),
 - Talk at THEMIS 2008 (Tracking Humans for the Evaluation of their Motion in Image Sequences, part of BMVC 2008, Leeds, Sept. 2008) and
 - Talk at VS 2008 (Visual Surveillance workshop, part of ECCV 2008, Marseille, Oct. 2008),
 - Seminar at the Workshop YES, French embassy at Washington DC, July 2009.
 - Talk at the « états généraux de la personne âgée », Marseille, France, October 2009.
 - Talk, invited by Rita Cucchiara, at the SafeCity@Euromed Summit on the 21st May 2011 in Genoa.

- Invitation for summer school by Florence SEDES : Ambiance Intelligence, Lille, 4-10 July 2011.
- Talks, invited by Viorel Negru: as Short-Term Visiting Scientist on scene understanding, at West University Timisoara, Romania, July 27, 2011.
- Demonstration at the Rencontre Inria-Industries Santé à domicile et de l'autonomie in Paris on October 20th 2011
- Talk at the RivieraDEV, conference on software design, at INRIA Sophia-Antipolis on October 21th 2011
- Demonstration, invited by Emmanuel HIRSCH, Éthique, technologie et maladie d'Alzheimer ou apparentée EREMA, December 2-3 2011.
- Talks, invited by Eric Castelli on video understanding, at International Research Center MICA, Hanoi University of Science and Technology, October 12, 2011.
- Talk, invited by Jenny Benois-Pineau, LABRI Université Bordeaux, December 5, 2011.
- The Gerontological Workshop organized by Universitas Tarumanagara in Jakarta on the 28-29 September 2012.
- French American Biotech Symposium FABS 2012, invited by EUROBIOMED and French Embassy in US, Nice on the 25-26 October 2012,
- IA (Innovation Alzheimer) Workshop 2012: Intersection between ICT& Health – defining guidelines on October 30th in Monaco, France.
- International Workshop on Human Behavior Understanding (HBU'2012) held in conjunction with IROS'2012 in Algarve, Portugal, October 2012.
- Colloquium Fondation Médéric Alzheimer: European Dementia Biomedical Outlook, April and October 2012.
- Symposium of World Congress of Gerontology and Geriatrics (IAGG) 2013, 23-27 June, Coex, Seoul, Korea: Title of the Symposium: "ICT in Dementia: from assessment to stimulation."
- the Conference "Les Echos sur la dépendance, quelles réponses pour faire reculer la dépendance ? " in March 2013
- the IX Journée de la Fédération CMRR in Nice on the 29 March 2013
- the Journée pédo psychiatrie, Nice on the 11th October 2013 (invited by F. Azkenazy);
- University of Central Florida, 14-15 October 2013 (invited by M. Shah)
- SMILE Lab on Activity recognition, Tainan, Taiwan, May 2014
- PETS on Tracking and surveillance, Seoul Korea, August 2014
- SAME, "Enabling the Cloud of THINGS", Sophia Antipolis, 2 October 2014
- Talk, invited by Professor Ian Craddock and Dima Damen at Bristol University, SPHERE Seminar, 25 June 2015
- Talk, invited by Prof. Ram Nevatia, on research initiatives and new directions in Video Understanding, USC, LA, USA 17 August 2016
- Talk, invited by Prof. Jonathan Ventura, on People detection, at the SLDP 2016 workshop of AVSS, Colorado Springs, USA, 23 August 2016
- Talk, invited by Prof. William Robson Schwartz, Department of Computer Science, Federal University of Minas Gerais, on Video Analytic, at Video Surveillance workshop in Belo Horizonte - Brazil, 03 October 2016
- Talk, invited by Prof. William Robson Schwartz, on People Tracking, at SIBGRAPI 2016, Sao Paulo - Brazil, 05 October 2016

- Talk, invited by Prof. Cosimo Distanto, Consiglio Nazionale delle Ricerche, on Activity Recognition, at ACIVS 2016, Lecce, Italy, 26 October 2016
- Talk, invited by Sebastien Ambellouis (IFSTTAR), on Activity Monitoring, at IEEE IPAS 2016, Hammamet, Tunisia, 5-7 November 2016
- Talk, invited by Luis Manuel Sarra from Facultad de Informática, UNED, on Activity Recognition, Madrid, 12 June 2017
- Talk, invited by Alexandre Bernardino, Instituto Superior Técnico, Institute for Systems and Robotics, on People Monitoring, Lisbon, Portugal, 11 September 2017
- Talk, invited by Huawei Research, within Video Intelligence Event, on People Re-ID, Dublin, 21st November 2017