

# François Brémont

## 1.1 Address

### Work Address:

Centre Inria d'Université Côte d'Azur, Project STARS

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**Research Domains:** video interpretation, scene understanding, multi-sensor fusion, computer vision, event recognition, deep learning, machine learning and knowledge representation.

## 1.2 Professional History

- September 2019 - AI Chair of the 3IA Côte d'Azur
- 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 Prof. 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
- 2<sup>nd</sup> 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 2012 at the master and doctorate level and teaching in computer science since 2003.

2019 – 2025 Organized and lectured **AI courses** on Computer Vision & Deep Learning for the Data Science and AI - MSc program at Université Côte d'Azur: 30h class

2023 Lecture an AI course on Computer Vision & Environment at the Third Inria-DFKI European Summer School on AI (IDESSAI 2023), in coordination with 3IA Côte d'Azur, Sophia, September.

2023 Lecture an AI course on Computer Vision at the Inria Academy: "journée IA pour MINARME", CampusCyber, Paris, September 2023.

2008 - 2017: Main **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 <b>Master</b> 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 <sup>th</sup> February 2007, 1h30 class on video interpretation techniques.
2000 - 2004:	Teaching at Nice University for the <b>Master</b> 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 STARS team since 2000. More precisely supervisor : **32 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

- Tanay Agrawal : from 1st January 2024 till 30st December 2026. Feature Extraction for Video Understanding in Group Interaction Scenario using Transformer based Architectures. 80% supervision with Antitza (Fellowship Gain).
- Tomasz Stanczyk : from 1st February 2023 till 31st January 2026. Deep Learning for Multiple Object Tracking . 100% (Fellowship 3IA: AI for Smart City).
- Snehashis Majhi : from 1st January 2023 till 31st December 2025. Skeleton-Based Human Action Recognition in Real-World Videos. 70% supervision with Gianpiero Francesca (TME) (Fellowship Toyota).

- Valeriya Strizhkova : from 1st October 2021 till 31st September 2024. Emotion Detection using Deep Learning. 70% supervision with Antitza Dantcheva (Fellowship 3IA: AI for Integrative Computational Medicine).
- Abid Ali : from 1st November 2020 till 30st April 2024. ACt4Autism: Action detection for improving the diagnosis of autism. 70% supervision with Susanne Thummler (BoostUrCareer CoFund Ph.D Programme in e-health - Université Côte d'Azur).

## Supervisor/Co-supervisor for 27 defended PhDs

- **Mohammed Guermal** : from 1st December 2020 till 28th May 2024. Video activity understanding to improve collaboration between humans and robots. 100% supervision (Fellowship liChIE) PhD jury: E. Malis, T. Chateau, B. Luvison, and F. Bremond.
- **Di Yang** : from 1st November 2020 till 1st February 2024. Skeleton-Based Human Action Recognition in Real-World Videos. 100% supervision with Gianpiero Francesca (TME) (Fellowship Toyota). PhD jury: M. Cord, K. Alahari, J. Gall, W. Ouyang, G. Francesca and F. Bremond.
- **Rui Dai** : from 1st September 2019 till 13th September 2022. Action Detection for Untrimmed Videos based on Deep Neural Networks. 100% Fellowship UCA. Defense on the 13th September 2022. PhD jury: Y. Laptev, K. Alahari, D. Damen, M.H Yang and F. Bremond.
- **Hao Chen** : from 1st Mai 2019 till 12 April 2022. People Re-identification using Deep Learning methods. 90% supervision with Benoit Lagadec (Fellowship CIFRE - ESI starting on the 15th April 2019). Defense on the 12th of May 2022. PhD jury: F. Jurie, V. Murino, S. Zhang, R. Munos, F. Bremond and B. Lagadec.
- **Yaohui Wang** : from 1st December 2017 till April 2021. Computer Vision for Automated Holistic Analysis of Humans. 40% supervision with Antitza Dantcheva (Fellowship ANR ENVISION). Defense on the 30th of September 2021. PhD jury: G. Drettakis, I. Laptev, E. Ricci, S. Tulyakov, M. Georgiou, S. Shan, F. Bremond and A. Dantcheva.
- **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 O. Guerin (Nice Hospital University)
- **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 Goulamhoussen (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: 20 European projects, 24 French projects, 15 industrial projects, 1 Asian project and 1 U.S. project (corresponding to **60 research projects**). More details available at: <http://www-sop.inria.fr/members/Francois.Bremont/topicsText/researchProjects.html>  
The main projects are:

- **[2024 - 2028] ANR COMSEMA - Communications Sémantiques pour les futurs réseaux - Semantic Communications for future networks**  
The ANR-24-IAS1-0002-03\_ACT COMSEMA project, part of Thématiques Spécifiques en Intelligence Artificielle (TSIA), from 6 Nov 2024 up to 30 Oct 2028 (48 months) aims to improve future networks incorporating video interpretation applications. Wireless networks are currently witnessing a radical shift from a purely data-oriented architecture to service and intelligent-based architectures, allowing hence the support of a diverse set of verticals. Thanks to the development of AI, future networks are expected to incorporate an even larger set of applications and services such as ReID applications and human activity recognition, interactive hologram, e-health, intelligent humanoid robot, etc. In this project, we consider video interpretation applications and propose a fundamental semantics-approach to redesign the entire process of information generation and transmission over the network. In particular, novel AI-based interference management that focuses on the task achievement, rather than the bit rate improvement over the air interface, will be investigated. Inria is in charge of customizing video interpretation applications to improve data transmission over the network.
- **[2022 - 2025] GAIN Project - Georgian Artificial Intelligence Networking and Twinning Initiative.**  
GAIN takes a strategic step towards integrating Georgia, one of the Widening countries, into the system of European efforts aimed at ensuring the Europe's leadership in one of the most transformative technologies of today and tomorrow - Artificial Intelligence (AI). It is achieved by research profile linking the central Georgian ICT research institute - Muskhelishvili Institute of Computational Mathematics (MICM), to the European AI

research and innovation community. Two absolutely leading European research organizations (DFKI and INRIA) supported by the high-tech company EXOLAUNCH support MICM in this endeavour. Jointly, the partners are advancing in capacity building and networking within the area of AI Methods and Tools for Human Activities Recognition and Evaluation, which also contribute to strengthening core competences in such fundamental technologies as e.g. Machine (Deep) Learning.

- **[2022 - 2025] ANR PROGRESS FSHD - Remote assessment and artificial intelligence analysis to validate new outcome measures, biomarkers and therapeutic targets for FacioScapuloHumeral Muscular Dystrophy (type of myopathy)**  
 The ANR-21-PMRB-0008 PROGRESS FSHD project (21 June 2022 - 20 May 2025) aims to identify new Clinical outcomes Assessments (CoAs), digital and inflammatory biomarkers of disease severity and progression, and increase the knowledge of the key role of inflammation in facioscapulohumeral muscular dystrophy (FSHD) pathophysiology. This project will extend the already existing CTRN FSHD France database by implementing at the Nice hospital full-body motion video capturing of validated functional scores and at-home patient remote assessment, including digitalized score and full-body motion video capturing (PROGRESS FSHD app). Clinical and remotely collected data will be analyzed using classical multivariate statistical approaches, while full-body motion video will be analyzed with Deep Learning methods. An interconnection between patient data collected at the hospital and at home will be ensured, along with interconnection and interoperability with France Cohortes and RaDiCo.
- **[2020 - 2023] MePheSTO Project - Digital Phenotyping 4 Psychiatric Disorders from Social Interaction**  
 MePheSTO is an interdisciplinary research project that envisions a scientifically sound methodology based on artificial intelligence methods for the identification and classification of objective, and thus measurable, digital phenotypes of psychiatric disorders. MePheSTO has a solid foundation of clinically motivated scenarios and use-cases synthesized jointly with clinical partners. Important to MePheSTO is the creation of a multimodal corpus including speech, video, and biosensors of social patient-clinician interactions, which serves as the basis for deriving methods, models and knowledge. Important project outcomes include technical tools and organizational methods for the management of medical data that implement both ELSI and GDPR requirements, demonstration scenarios covering patients journeys including early detection, diagnosis support, relapse prediction, therapy support, an annotated corpus, Ph.D. theses, and publications. MePheSTO builds on a joint DFKI-Inria workforce for the foundation of future R&D and innovation projects.
- **[2020 - 2023] ACTIVIS - Video-based analysis of autism behavior**  
 The ACTIVIS project is an ANR project (CES19: Technologies pour la santé) started in January 2020 and will end on the 30th of June 2025 (69 months). This project is based on an objective quantification of the atypical behaviors on which the diagnosis of autism is based, with medical (diagnostic assistance and evaluation of therapeutic programs) and computer scientific (by allowing a more objective description of atypical behaviors in autism) objectives. This quantification requires video analysis of the behavior of people with autism. In particular, we propose to explore the issues related to the analysis of ocular movement, gestures and posture to characterize the behavior of a child with autism
- **[2021 - 2021] MASCOT - Machine-learning et analyse des mouvements collectifs chez les trichogrammes**

MASCOT is a IDEX UCA project. The smallest insects in the world (below 0,5mm), barely visible by eye, are sometimes qualified as “intelligent dust”. This diverse group of insects mostly contains egg parasitoids, i.e. parasitic species that lay their eggs inside the eggs of other insect species. They complete development inside the host egg, causing its death. They thus have great applied interest in agriculture: many are biocontrol agents (BCAs), that are released to protect crops from pest attacks. They also have high scientific interest, qualifying as the smallest insects in the world, featuring extreme morphological and neurological miniaturization. One of the best-known examples is insects in genus *Trichogramma*, produced and used at industrial scale as an alternative to chemicals in different cropping systems, from maize fields to tomato-producing greenhouses. Institut Sophia Agrobiotech has a long expertise in the study of BCAs in general and *Trichogramma* in particular. In recent years, the experimental study of behavior and movement of insects in the laboratory has greatly benefited from the development of video-analysis and automated video-tracking techniques, in particular Multi-Object Tracking (MOT). This opens new perspectives for the quantitative phenotypic characterization of biocontrol agents. The Unit is presently setting-up a new facility and an experimental platform dedicated to these approaches. This project consists in using Artificial Intelligence to improve the performance of more classical tracking technologies. A major shortcoming of current tracking methods is to correctly identify individuals while they are interacting in a group (identity preservation), even without the use of marking techniques. This lack prevents the study of individual differences and personalities in realistic group contexts. AI methods enable us to lift this shortcoming, however no tool is yet available to the biological community that would allow experimenters to benefit from these technologies. To make this happen, we have initiated this year a new collaboration to automatically analyse video scenes of *Trichogramma*.

- **[2019 - 2020] Solitaria - Multi-sensor activity monitoring**

Solitaria is a UCA project, which performs a multi-sensor activity analysis for monitoring and safety of older and isolated people. With the increase of the ageing population in Europe and in the rest of the world, keeping elderly people at home, in their usual environment, as long as possible, becomes a priority and a challenge of modern society. A system for monitoring activities and alerting in case of danger, in permanent connection with a device (an application on a phone, a surveillance system ...) to warn relatives (family, neighbours, friends ...) of isolated people still living in their natural environment could save lives and avoid incidents that cause or worsen the loss of autonomy. In this R\&D project, we propose to study a solution allowing the use of a set of innovative heterogeneous sensors in order to: 1) detect emergencies (falls, crises, etc.) and call relatives (neighbours, family, etc.); 2) detect, over short or longer predefined periods, behavioural changes in the elderly through an intelligent analysis of data from sensors.

- **[2016 - 2019] Vedecom - Pedestrian detection for self-driving cars**

Vedecom is interested in developing algorithms for people detection for self-driving cars. Among many challenges in pedestrian detection, the ones of interest are a) Scale- handling, b) Occlusion-handling and c) Cross-dataset generalization. Each of the aforementioned challenges is critical to enable modern applications like self-driving vehicles become safe enough for active deployment. To improve the performance of contemporary pedestrian detectors, one of our first major idea is to use multiple layers of a CNN simultaneously. Towards this, we proposed a new pedestrian detection system called Multiple-RPN. Another work is adding pseudo-segmentation information to pedestrian detection. The proposed features of our system perform close to the best performing detectors today.



- **[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 Genius and other partners are: INRIA Sophia-Antipolis, Streetlab, Hopital des Quinze-Vingts, Fondation Ophtalmologique Rothschild, Fondation Hospitaliere Sainte-Marie.
- **[2013 - 2017] MOVEMENT - AutoMatic BiOmetric Verification and PersonnEl Tracking for SeaMless Airport ArEas Security MaNagementT** 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 - 2024; transfer of 8 patents

## 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 21<sup>st</sup> 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; radio show on « vidéosurveillance algorithmique » at *France Culture*, "Le Temps du débat" on the 24th March 2023; CNIL workshop to evaluate video-surveillance algorithms related to

the 2024 Olympic and Paralympic Games bill, on the 24th of April 2023; Radio show on "privacy and video-surveillance" at France Culture / La science, CQFD on the 29th November 2023; Workshop on "Video Action Recognition for Human Behavior Analysis" at conseil de l'âge on the 8th of November 2023; Interview on "Automated video surveillance" by Journalist Ariane Lavrilleux from Collectif Presse-Papiers Marseille in November 2023; Interview on "Automated video surveillance" by Journalist Thomas Allard from "Magazine Science et Vie" Journal in September 2023.

## 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 <b>USC in Los Angeles</b> at R. Nevatia laboratory (U.S.A.).
1994 - 1997	Modeling of the video interpretation process at <b>INRIA in Sophia-Antipolis</b> .
1992	Spatio-temporal reasoning for knowledge based systems at <b>INPG in Grenoble</b> (F. Rechenmann laboratory).
1991	Classification using neural networks at <b>Providence</b> - 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 Optroniques 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.
  - workshop on “Artificial Intelligence for Automated Human Health-care and Monitoring” in conjunction with the 17th IEEE Conference on Automatic Face and Gesture Recognition, FG 2023.
- **General chair, scientific chair**
    - François Brémond was general chair at IPAS 2020, 2022, 2025 (<https://ipas.ieee.tn/>), IEEE International Conference on Image Processing, Applications and Systems, Genova, Italy, December 5-7, 2022; Lyon, Jan 2025.
- **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.
    - ICIAP’21 in Lecce organized by the Italian Association for Research in Computer Vision, Pattern Recognition and Machine Learning
    - AVSS 2022
- **Publication Chair,**
    - IEEE AVSS’15, Karlsruhe, Germany

- IEEE ECCV'24, Milan, Italy
- **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 the ANR Scientific Evaluation Committee - CES 23 "Artificial Intelligence and Data Science" on December 2023.
- **Scientific Board member** of the ANR WISG 2024 "Workshop interdisciplinaire sur la sécurité globale" on November 2023.
- **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'13-25, AVSS'05-17, ECCV'06-24, ICCV'05-25, CVPR'04-25.
- **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, 23<sup>rd</sup> 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
  - David Pagnon, University Grenoble, on 10th of March 2023.
  - Devashish Lohani, University Lyon, on 3rd of April 2023.
  - Gnana Praveen Rajasekhar, École de technologie supérieure, Université du Québec, Canada, on 22th May 2023.
  - Rupayan Mallick, University Bordeaux/LaBRI, on 20th of October 2023.
  - Tony Marteau University Lille, on 25th of November 2023.
- **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
  - HDR committee examiner: Bertrand Luvison, HDR, Sorbonne Université, on 4th of April 2023.
  - Professor committee member: Dr Suresh Sundaram, Department of Aerospace Engineering at the Indian Institute of Science, Bangalore, Karnakata, INDIA on 24th of August 2023.
- **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
- Talk (1h) at Idiap, Switzerland on Activity Detection for medical applications, on the 16th-17th of August, 2022.
- Lecturer (1h) Zebra seminar: Deep Learning for Activity Detection. Online on the 6th of July, 2022.
- Lecturer (1h30)- PhD seminar: Deep Learning for Activity Detection in HoChiMinh City at HCMOU (HoChiMinh Open University) on the 11th of October, 2022.
- Talk (1h) at the 5th International Conference on Multimedia Analysis and Pattern Recognition MAPR 2022 (<https://mapr.uit.edu.vn/>) at Phu Quoc Island, Vietnam, October 13-14, 2022.
- Talk (1h) at IPAS 2022 (<https://ipas.ieee.tn/>) IEEE International Conference on Image Processing, Applications and Systems, Genova, Italy, on December 5, 2022.
- Talk entitled "recent work involving infant video data" at WACV tutorial on privacy, Hawaii in January 2024

## 1.11 Publications

The complete list of publications, sorted by category (international journals, national journals, book chapters, international refereed conferences, national refereed conferences, other publications), is available at <http://www-sop.inria.fr/members/Francois.Bremond/topicsText/myPublications.html>

- Author and co-author of 300+ archived scientific publications
- Citations: 12342, h-index: 60: <https://scholar.google.com/citations?user=h-oGBzsAAAAJ&hl=fr>

Below is a summary presentation referring to the complete list:

- **theses:** PhD (1997) and HDR Habilitation à diriger des recherches (2007) from the University of Nice-Sophia Antipolis.
- **10 book chapters**, including 2 published by Kluwer Academic Publishers.
- **76 international journals**
  - including 40 in vision IEEE Trans. OCSVT, WSCG, EURASIP JASP, PR Letters, CV, BRM, MVA, PAMI, CVIU
  - 15 in artificial intelligence IJHCS, IJPRAI, NEUROCOMPUTING
  - 19 medical IJG, JNHA

- **240 international conferences, including**
  - 62 in cognitive vision, e.g. ICVS, MMM, CBMI, AVSS, WACV
  - 69 in computer vision, e.g. CVPR, ICCV, ICPR, ICIP, ECCV, BMVC
  - 20 in artificial intelligence, e.g. IJCAI, ECAI, KES, AJCAI
  - 8 in performance evaluation, e.g. PETS, IDSS, VIE, AVSS
  - 26 in learning, e.g. ICLR, NeurIPS, THEMIS, ICVS
  - 5 in software engineering, e.g. ICVS
  - 5 in an application area e.g. ITSC

## Recent Publications

1. Y. Wang, D. Yang, F. Bremond and A. Dantcheva. Latent Image Animator: Learning to animate image via latent space navigation or ICLR Pdf. In Proceedings of the Tenth International Conference on Learning Representations, ICLR 2022, Virtual, April 25-29, 2022.
2. R. Dai, S. Das, K. Kahatapitiya, M. Ryoo and F. Bremond. MS-TCT: Multi-Scale Temporal ConvTransformer for Action Detection. In Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition, CVPR 2022, New Orleans, Hybrid, June 19-23, 2022.
3. M. Guermal, R. Dai and F. Bremond. THORN: Temporal Human-Object Relation Network for Action Recognition. In Proceedings of the 26th International Conference on Pattern Recognition, ICPR 2022, with Suppl. material, Montreal, Quebec, Canada, August 26-27, 2022.
4. M. Balazia, P. Muller, A. Levente Tánzos, A. von Liechtenstein and F. Bremond. Bodily Behaviors in Social Interaction: Novel Annotations and State-of-the-Art Evaluation. In Proceedings of the 30th ACM International Conference on Multimedia, ACM-Multimedia 2022, Lisbon, 10-14 October, 2022.
5. D. Yang, Y. Wang, A. Dantcheva, L. Garattoni, G. Francesca and F. Bremond. Self-supervised Video Representation Learning via Latent Time Navigation. In Proceedings of the Thirty-Seventh AAAI Conference on Artificial Intelligence, AAAI-23, Washington DC, February 7-14, 2023.
6. D. Yang, Y. Wang, A. Dantcheva, Q. Kong, L. Garattoni, G. Francesca and F. Bremond. LAC - Latent Action Composition for Skeleton-based Action Segmentation. In Proceedings of the IEEE/CVF International Conference on Computer Vision, ICCV 2023, Paris, October 2-6, 2023.
7. P. Müller, M. Balazia, T. Baur, M. Dietz, A. Heimerl, D. Schiller, M. Guermal, D. Thomas, F. Brémond, J. Alexandersson, E. André and A. Bulling MultiMediate'23: Engagement Estimation and Bodily Behaviour Recognition in Social Interactions. In Proceedings of the MultiMediate Challenge: Multi-modal Group Behaviour Analysis for Artificial Mediation, part of the 30th ACM International Conference on Multimedia, ACM-Multimedia 2023, doi.acm.org?doi=3581783.36138513, Ottawa, 29 Oct - 2 Nov, 2023.
8. R. Dai, S. Das, M. Ryoo and F. Bremond. Attributes-Aware Network for Temporal Action Detection. In Proceedings of the 34th British Machine Vision Conference, BMVC 2023, Aberdeen, UK, 20th - 24th November 2023.

9. H. Chaptoukaev, V. Strizhkova, M. Panariello, B. Dalpaos, A. Reka, V. Manera, S. Thummler, E. Ismailova, N. Evans, F. Bremond, M. Todisco, M.A. Zuluaga, and L. Ferrari. StressID: a Multimodal Dataset for Stress Identification. In Proceedings of the NeurIPS 2023 Datasets and Benchmarks Track, part of the Thirty-seventh Conference on Neural Information Processing Systems, NeurIPS 2023, New Orleans, 11th - 14th December 2023.
10. Ali, A. Marisetty and F. Bremond. P-Age: Pexels Dataset for Robust Spatio-Temporal Apparent Age Classification, In Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision, WACV 2024, in Waikoloa, Hawaii, USA, Jan 4-8 2024.
11. Ali, M. Ali, C. Barbini, S. Dubuisson, JM. Odobez, S. Thummler and F. Bremond. Weakly Supervised Autism Severity Assessment in Long Videos, In Proceedings of the 21st International Conference on Content-based Multimedia Indexing, CBMI, Reykjavik, Iceland, Sept 18-20, 2024.
12. A. Ali, F. Negin, S. Thummler and F. Bremond. Video-based Behavior Understanding of Children for Objective Diagnosis of Autism. In Proceedings of the 17th International Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications, VISAPP 2022, Virtual, February 6-8, 2022.
13. S. Das, R. Dai, D. Yang and F. Bremond. VPN++: Rethinking Video-Pose embeddings for understanding Activities of Daily Living. Transactions on Pattern Analysis and Machine Intelligence, TPAMI-2021-05-0786.R1, ISSN: 0162-8828, DOI: 10.1109/TPAMI.2021.3127885, PAMI 2021.
14. R. Dai, S. Das, S. Sharma, L. Minciullo, L. Garattoni, F. Bremond and G. Francesca. Toyota Smarthome Untrimmed: Real-World Untrimmed Videos for Activity Detection. Transactions on Pattern Analysis and Machine Intelligence, TPAMI, ISSN: 0162-8828, DOI: 10.1109/TPAMI.2022.3169976, PAMI 2022.
15. H. Chen, Y. Wang, B. Lagadec, A. Dantcheva, and F. Bremond. Learning Invariance from Generated Variance for Unsupervised Person Re-identification. Transactions on Pattern Analysis and Machine Intelligence, TPAMI, ISSN: 0162-8828, TPAMI-2021-08-1421.R3, dec. PAMI 2022.
16. R. Dai, S. Das, K. Kahatapitiya, M. Ryoo and F. Bremond. MS-TCT: Multi-Scale Temporal ConvTransformer for Action Detection. In Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition, CVPR 2022, New Orleans, Hybrid, June 19-23, 2022.
17. Das, X. Niu, A. Dantcheva, S L Happy, H. Han, R. Zeghari, P.H. Robert, S. Shan, F. Bremond and X. Chen. A Spatio-temporal Approach for Apathy Classification. In the IEEE Transactions on Circuits and Systems for Video Technology, TCSVT-05407-2020.R1, 2021.
18. R. Zeghari, R. Guerchouche, M. Tran Duc, F. Bremond, M.P. Lemoine, V. Bultingaire, K. Lange, Z. De Groote, F. Kuhn, E. Martin, P.H. Robert and A. König. Pilot Study to Assess the Feasibility of a Mobile Unit for Remote Cognitive Screening of Isolated Elderly in Rural Areas, International Journal of Environmental Research and Public Health - MDPI : Int. J. Environ. Res. Public Health 2021, 18, 6108 , Special Issue "Assistive Technology: New Design and Low Cost. A Challenge to the Future" - <https://doi.org/10.3390/ijerph18116108>; June 2021.
19. König, R. Zeghari, R. Guerchouche, M. Tran Duc, F. Bremond, N. Linz, H. Lindsay, K. Langel, I. Ramakers, P. Lemoine, V. Bultingaire and P.H. Robert. Remote cognitive



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20. R. Zeghari, R. Guerchouche, M. Tran-Duc, F. Bremond, K. Langel, I. Ramakers, N. Amiel, M-P. Lemoine, V. Bultingaire, V. Manera, P. Robert and A. König. Feasibility Study of an Internet-Based Platform for Tele-Neuropsychological Assessment of Elderly in Remote Areas, *Diagnostics* April 2022, <https://doi.org/10.3390/diagnostics12040925>
  21. König, P. Müller, J. Troger, H. Lindsay, J. Alexandersson, J. Hinze, M. Riemenschneider, D. Postine, E. Ettore, A. Lecomte, M. Musiol, M. Amblard, F. Bremond, M. Balazia and R. Hurlmann. Multimodal phenotyping of psychiatric disorders from social interaction: Protocol of a clinical multicenter prospective study, *Personalized Medicine in Psychiatry*, Elsevier, 33-34 (2022) 100094; 26 May 2022.
  22. V. Thamizharasan, A. Das, D. Battaglino, F. Bremond, and A. Dantcheva. Face Attribute Analysis from Structured Light: An End-to-End Approach. In *Multimedia Tools and Applications*, 82.7, pp. 10471-10490, March 2023.
  23. D, Yang, Y. Wang, A. Dantcheva, L. Garattoni, G. Francesca, and F. Bremond. View-invariant Skeleton Action Representation Learning via Motion Retargeting. *International Journal of Computer Vision*, VISI, ISSN: 0162-8828, VISI-D-23-00139R1, Jan. 2024.
  24. I, Joshi, M. Grimmer, C. Rathgeb, C. Busch, F. Bremond, and A. Dantcheva. Synthetic Data in Human Analysis: A Survey. *Transactions on Pattern Analysis and Machine Intelligence*, TPAMI, DOI: 10.1109/TPAMI.2024.3362821, Jan. 2024.
  25. S. Majhi, R. Dai, Q. Kong, L. Garattoni, G. Francesca, and F. Bremond. Human-Scene Network: A Novel Baseline with Self-rectifying Loss for Weakly Supervised Video Anomaly Detection. *Computer Vision and Image Understanding*, CVIU, CVIU-23-450R1, Feb. 2024.