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General Profile

I am a scientist specialized in information technology. My professional itinerary gravitates around two poles, research and engineering, both in academia and industry. I have worked successively on programming languages, software engineering, security of embedded systems, computational linguistics and, since 2009, computer vision, with an emphasis on deep learning and AI. Currently, I am both a Senior Researcher in a public university (École nationale des ponts et chaussées, ENPC) and a Principal Scientist in the industry (valeo.ai lab).

Education and Experience

1985 – 88 *Engineer diploma, École polytechnique, Palaiseau, France.*

1988 – 89 *MSc in software engineering, CERICS, Sophia Antipolis, France.*
MSc in computer science, University of Nice - Sophia Antipolis, France.

1990 – 94 *PhD in computer science, INRIA Sophia Antipolis, France.*

PhD thesis under the supervision of Gilles Kahn: *Towards a formalisation of partial evaluation* [39]. I formalised important issues and techniques of partial evaluation (a.k.a. program specialization) and made explicit some intrinsic limitations. I developed partial evaluator components. I studied partial evaluation algorithms, termination tests and conditions of correction of program transformations, with applications to logic programming. I also developed a popular mode for easily editing mathematical texts (using graphical symbols) with Emacs and LaTeX.

1993 – 94 *Research assistant (post-doc), LFCS (Laboratory for Foundation of Computer Science), University of Edinburgh, Scotland.*

I studied theoretical performance measures of computer programs and several notions of optimization. I worked on program optimization using recursive program schemes via equivalences with deterministic push-down automata. I was also involved in teaching.

1994 – 96 *Sofware engineer (94–95), then director of the computer science departement of the Simulog*[1] *branch in Toulouse, France.*

I specified and co-implemented the migration under Unix/XWindow of Zoom, a major software for computing precise orbits, developed by the French space agency (CNES) under NOS/VE. I designed and developed tools for the automatic redocumentation of software. I evaluated two technologies before their industrialization: AQUARELS, a tool for assessing and improving the numerical quality of software computing, and ODYSSÉE, a program transformation tool that performs automatic differentiation. I taught good programming practices, Fortran 90 and migration from Fortran 77, to professionals from Aérospatiale (now Airbus Group), CNES and EDF.

1996 – 00 *Expert software engineer (96–97), then permanent research assistant, Compose research group, IRISA / INRIA Rennes, France.*

Research on program specialization: program analysis precision [68]; incremental runtime specialization [47]; data specialization [17]; application to compiler generation [101], fast and

[1] Simulog is a company specialized in scientific computing and software engineering. It was created in 1984 as the first INRIA spin-off. It is now part of Astek.

flexible software architectures [49], domain-specific languages [102], operating systems and networks [21, 54, 69, 70, 71].

Research on software engineering: benefits of program specialization [20]; efficient implementation of software architectures [50]; declarative approaches for the design and development of adaptive components [5].

Research on domain-specific languages (DSLs): DSL development methodology [22]; application to device driver development, for any device [55, 56, 84] as well as specifically for video display adaptors [103]; application to robust operating systems [67].

Contributions to Tempo [40], a major software for the automatic specialization of C programs developed in the Compose research group: major contributions to the ideas, the design principles and the implementation; software development management ($\sim$ 70,000 lines of code, about 20 developers in 4 years); writing of the user's guide and reference manual (150 pp.); software distribution management ($\sim$ 40 licences in the world in March 2000).

Active participation to the research group organization; hiring of PhD student, post-docs and research engineers; participation to the applications and management of contracts with industrials as well as research projects funded by France and Europe; web administrator for the group.

2000 – 04 *Deputy CTO, Trusted Logic*[2]*, Versailles, France.*

Works (mainly confidential) regarding smart cards, mobile phones and point of sale terminals: program analysis and transformation for security, portability, performance and compression [48, 104]; development of smart card operating system components with major constraints on speed, size, security and robustness. Test methodologies and computer-aided testing; development of security test suites for smart card applications of major multinational financial services corporations. Publication of 8 patents (see below). Scientific coordination. Participation to several French and European research projects.

2005 – 09 *Research assistant, Signes research group, LaBRI / INRIA Bordeaux - Sud-Ouest, France. Habilitation (HDR) defended in 2007.*

Habilitation[3] thesis on program specialization (techniques, tools and applications) and domain-specific languages (development methodologies and applications), with both a scientific and industrial perspective [41]. A two-volume book on *program specialization engineering*, partly based on my habilitation manuscript, appeared in 2011, published by Hermes Lavoisier [44, 45]. It was later transmogrified into English and bundled into a single volume by ISTE-Wiley [46].

Formal and operational definition of a semantic analysis that incorporates a treatment of metonymy, based on the synchronization of a computational semantic analysis and a formalization of the compositional mechanisms of the Generative Lexicon [42].

Formalization of the meaning of semantic graphs, in particular those used in Meaning-Text Theory (MTT), using a simple translation into a formula of Minimal Recursion Semantics (MRS), covering multiple predictation on several entities, higher-order predication and modalities [43].

Design of a framework and semi-automatic process for the syntactic analysis of spoken languages, applied to spoken French [4]. Design of the orthographic and phonetic transcriptions of the Rhapsodie spoken French dataset [23].

Design and implementation of an open, grammar-based, syntax checker performing on deep parsing: after a shared-forest parsing where feature agreement constraints have been relaxed, the error detection process performs an efficient global search of corrections possibilities and automatically proposes alternatives sentences with minimal corrections [18, 19].

Other work on the unsupervised extraction of morphology from corpora (automatic lemmati-

[2]Trusted Logic is a company specialized in high security for small embedded systems such as smart cards, POS terminals, mobile phones, PDAs, home automation, etc. It was created in 1999 as a spin-off of Bull and INRIA, and has been bought by Gemalto in 2009.

[3]Habilitation: diploma required in France to officially supervise PhD theses.

zation), topological parsing, and syntax of French sign language (LSF).

12/2009 – ... *Senior researcher, École des Ponts ParisTech (ENPC), IMAGINE group, Marne-la-Vallée, France. Head of the IMAGINE group (6 permanent researchers, up to 20 PhD students) 2010-2019, and delegate director of the Laboratoire d'Informatique Gaspard Monge (LIGM) for ENPC.*

I am interested in the reconstruction of 3D models from images and range data, regarding both geometry and semantics, in particular with applications to building and city modeling.

In particular, I have been working on camera calibration issues (external), with a focus on accuracy and robustness, developing adaptive parameterless methods and global registration techniques [62, 63, 65, 64, 66], based on points matches as well as line segments [24, 87, 88]. This also involves robust feature detection [86, 85] and matching [74, 36, 37]. This allows photometric 3D reconstruction [15].

As for geometry processing, I have addressed speed and robustness issues for the treatment of point clouds [10], in particular for normal estimation [9, 11, 2], and I have proposed various methods for 3D surface reconstruction from points [6, 99, 12, 98, 100] possibly with semantics [34], from line segments [32], or directly from images [33]. I am also interested in vectorization [35].

Regarding semantics, I have worked on grammar-based approaches to semantically segment 2D and 3D data [73, 30, 31, 29], proposing not only top-down but also efficient bottom-up methods [7], relying not only on high-level handwritten grammars but also on grammars that are automatically learned [26]. I have also studied less-structured but more-accurate learning-based semantic segmentation with auto-contexts [25].

A newer line of work concerns robotic applications for civil engineering, with relative pose estimation without camera calibration [38], object viewpoint estimation [53, 108, 105, 72], possibly in a few-shot regime [107, 106], and occlusion detection [80].

06/2019 – ... *Principal Scientist, valeo.ai, Paris, France. Head of the 3D group (5 researchers).*

At valeo.ai, I have worked mainly on 3D aspects of automotive applications, including 3D scene flow [76], 3D backbones [13, 1, 77, 79], point cloud registration [16], self-supervision for 3D [95, 14, 92, 78, 97], 3D reconstruction [8, 12], diffusion-based lidar object generation [28] and scene completion [51, 52], active learning for 3D [91], instance segmentation [93, 94], unsupervised domain adaptation for 3D [58, 60, 59] and zero-shot learning (ZSL) for 3D [57].

Other work include object discovery [96, 75], more theoretical matter regarding layer normalization in deep learning [81, 82], human pose estimation [83].

More recently, I have worked on downstream tasks after or encompassing perception, including forecasting [109] and end-to-end driving [27]. I am also interested in world models [3] and open-vocabulary semantic segmentation in 2D [61] and 3D [90, 89] via Large Language Models (LLMs) [61], Vision-Language Models (VLMs) [90] or image generators (IGs) [89].

Publications (> 100 papers, > 7500 citations, h-index: 43 — last update on Google Scholar)

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on Lexis and Grammar (LGC), 2009.

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[98] R. Sulzer, L. Landrieu, A. Boulch, R. Marlet, and B. Vallet. Deep surface reconstruction from point clouds with visibility information. In *International Conference on Pattern Recognition (ICPR)*, 2022.

[99] R. Sulzer, L. Landrieu, R. Marlet, and B. Vallet. Scalable surface reconstruction with Delaunay-graph neural networks. In *Eurographics Symposium on Geometry Processing (SGP)*, 2021.

[100] R. Sulzer, R. Marlet, B. Vallet, and L. Landrieu. Survey and benchmark of automatic surface reconstruction from point clouds. *IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)*, 47(3), March 2025.

[101] S. Thibault, C. Consel, J. L. Lawall, R. Marlet, and G. Muller. Static and dynamic program compilation by interpreter specialization. *Higher-Order and Symbolic Computation (HOSC)*, 13(3):161–178, 2000.

[102] S. Thibault, R. Marlet, and C. Consel. A domain-specific language for video device drivers: from design to implementation. In *USENIX Conference on Domain-Specific Languages (DSL)*, 1997.

[103] S. Thibault, R. Marlet, and C. Consel. Domain-specific languages: from design to implementation, application to video device drivers generation. *IEEE Transactions on Software Engineering (TSE)*, 25(3):363–377, 1999.

[104] E. Vétillard and R. Marlet. Automated enforcement of portability and security policies. In *International e-Smart Conference (e-Smart)*, 2003.

[105] Y. Xiao, Y. Du, and R. Marlet. PoseContrast: Class-agnostic object viewpoint estimation in the wild with pose-aware contrastive learning. In *International Conference on 3D Vision (3DV)*, 2021. Oral.

[106] Y. Xiao, V. Lepetit, and R. Marlet. Few-shot object detection and viewpoint estimation for objects in the wild. *IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)*, 45(3), 2023.

[107] Y. Xiao and R. Marlet. Few-shot object detection and viewpoint estimation for objects in the wild. In *European Conference on Computer Vision (ECCV)*, 2020.

[108] Y. Xiao, X. Qiu, P.-A. Langlois, M. Aubry, and R. Marlet. Pose from shape: Deep pose estimation for arbitrary 3D objects. In *British Machine Vision Conference (BMVC)*, 2019.

[109] Y. Xu, Éloi Zablocki, A. Boulch, G. Puy, M. Chen, F. Bartoccioni, N. Samet, O. Siméoni, S. Gidaris, T.-H. Vu, A. Bursuc, E. Valle, R. Marlet, and M. Cord. Valeo4Cast: A modular approach to end-to-end forecasting. In *Workshop on Event Detection for Situation Awareness in Autonomous Driving (ROAD++) at ECCV 2024*, 2024. Winning solution of the Argoverse 2 "Unified Detection, Tracking, and Forecasting" challenge (a.k.a. "End-to-End Forecasting Challenge"), held at the CVPR 2024 Workshop on Autonomous Driving (WAD 2024).

Patents

- Method for compressing an interpreted code by semantic analysis, D. Le Métayer, R. Marlet, A. Frey, A. Venet; filed 07/26/2001; published (FR2827974), 02/06/2003 (WO 03/010666).
- Method for compression of object code interpreted by tree-structured expression factorization, D. Le Métayer, R. Marlet, A. Frey, A. Venet; filed 08/03/2001; published (FR2828296), 02/27/2003 (WO 03/017097).
- Program compaction method using dynamic code deletion, R. Marlet, P. Tignol; filed 12/18/2002; published (FR2849229), 07/22/2004 (WO 2004/061655).
- Method for determining operational characteristics of a program, E. Vétillard, R. Marlet; filed 12/30/2003 (FR0315544); published 07/01/2005 (FR2864654), 08/11/2005 (WO 2005/073860).
- Control of data access by dynamic verification of lawful references, X. Leroy, P. Hameau, N. Regnault, R. Marlet; filed 12/30/2003 (FR0315545); published 07/01/2005 (FR2864658), 08/11/2005 (WO 2005/073827).
- Method for controlling program execution integrity by verifying execution trace footprints, D. Bolignano, X. Leroy, R. Marlet; filed 12/31/2003 (FR0315633); published 07/01/2005 (FR2864655), 08/11/2005 (WO 2005/073859).
- Method for securing cryptographic processing by means of decoys, P. Hameau, C. Mesnil, R. Marlet; filed 09/22/2004 (FR0410010); published 03/24/2006 (FR2875657), 03/30/2006 (WO 2006/032746). EP1792435
- Method for evaluating operational characteristics of a program, E. Vétillard, R. Marlet; filed 12/22/2004 (FR0413768); published 06/23/2006 (FR2879775), 07/06/2006 (WO 2006/070113).

Awards, keynotes, invitations

- Best paper award, IEEE International Conference on Automated Software Engineering (ASE), 1997 [49].
- Invited paper at International Symposium on Programming Language Implementation and Logic Programming (PLILP) [22].
- Invited speaker at panel of ACM SIGPLAN Workshop on Dynamic and Adaptive Compilation and Optimization (DYNAMO), 2000 [40].
- Invited paper at Joint Urban Remote Sensing Event (JURSE), 2017 [2].
- Winning solution of the Argoverse 2 "Unified Detection, Tracking, and Forecasting" challenge (a.k.a. "End-to-End Forecasting Challenge"), held at the CVPR 2024 Workshop on Autonomous Driving (WAD 2024) [109].
- Outstanding reviewer awards at CVPR (2017, 2019, 2020, 2021, 2022), ECCV (2022), ICCV (2021,

2025). Among the top outstanding reviewers worldwide for top-tier computer vision vision conferences[4].

Participation to Program Committees[5]

- ASE (IEEE conference on Automated Software Engineering): PC member, 1998, 1999, 2000.
- ASE-DS (doctoral symposium of the ASE conference): co-program chair, 2000.
- DYNAMO (ACM workshop on dynamic and adaptive compilation and optimization): PC member, 2000.
- LACL (international conference on Logical Aspects of Computational Linguistics) student session: co-program chair, 2005.
- PEPM (ACM workshop on Partial Evaluation and semantics-based Program Manipulation): PC member, 1999.
- Workshop on high-level syntactic formalisms (satellite of the TALN 2007 conference): PC member.
- Area chair for CVPR (2025, 2026), ECCV (2024, 2026), BMVC (2020–2025), IV (2025).

I have been a regular reviewer for major international journals and conferences, such as CVPR since 2016, ICCV since 2011, ECCV since 2016, CVIU...

Organization of Events

- Tempo Workshop (Rennes, France, 1998): co-organization of a 3-day international seminar on program specialization with the Tempo specializer (24 participants from both academia and industry).
- Doctoral Symposium of the IEEE international conference on Automated Software Engineering (ASE), Grenoble, France, 2000: co-organizer.
- Student Session of the international conference on Logical Aspects of Computational Linguistics (LACL), Bordeaux, 2005: co-organizer.
- Workshop on high-level syntactic formalisms (satellite of the TALN 2007 conference): co-organizer.
- Scientific intermediary in Bordeaux for the public relations of INRIA Futurs (2005 – 2007). Co-organizer of monthly popularization meetings "Unithé ou café ?" (year 2007).
- European Summer School in Logic, Language and Information (ESSLLI), Bordeaux, 2009: co-organizer.
- INRIA meeting days for ARC[6], AEx[7], and ADT[9], Bordeaux, 2009: co-organizer.
- Joint conference "Reconnaissance des Formes, Image, Apprentissage et Perception" (RFIAP) and "Conférence Française de Photogrammétrie et Télédétection" (CFPT), Champs-sur-Marne, 2018: co-organizer.
- 19th CVF/IEEE International Conference on Computer Vision (ICCV), Paris, France, 2023: logistic chair.

Participation to Evaluation Committees

- Member of the Incentive Action Working Group (GTAI) of the Scientific and Technical Council (COST) of INRIA (2007–2010): selection and evaluation of Collaborative Research Actions (ARC)[6], Explorative Actions (AEx)[7], Software Development Operations (ODL)[8], and Technological Development Actions

[4] `https://sniklaus.com/revawards`

[5] *Other invitations I had to turn down when I left INRIA to join Trusted Logic in 2000: co-program chair of ASE 2001; PC member of FDDO-3 (3rd Workshop on Feedback-Directed and Dynamic Optimization, 2000).*

[6] Collaborative Research Actions (ARC): INRIA funding program to foster synergies between INRIA project-teams that have complementary competences, and to support multidisciplinary research.

[7] Explorative Actions (AEx): INRIA funding program to enable the emergence of new exploratory research that takes risks and breaks with traditional themes and approaches.

[8] Software Development Operations (ODL): INRIA funding program to durably strengthen quality software originating from the research of INRIA project-teams.

(ADT)[9].

- Member of the International Relation Working Group (GTRI) of the Scientific and Technical Council (COST) of INRIA (2007–2010): selection and evaluation of Associate Teams (EA)[10], of applications in bilateral or multilateral funding programs AYAME (with Japan), CONICyT/INRIA (with Chile), EuroMéditerranée 3+3 (with Algeria, Italy, Morocco, Spain, and Tunisia), SECyT/INRIA-CNRS (with Argentina), STIC-AmSud (With South America), STIC-Tunisie (with Tunisia), as well as ERCIM[11] post-doc applications.
- Member of the lecturer committee of INRIA Bordeaux - Sud-Ouest (2008–2009): evaluation of lecturer transfer and visiting professor applications.
- Member of recruitment committees for permanent research assistants and lecturers: INRIA Futurs (CR2, 2005), INRIA Lille (CR2, 2007), INRIA Bordeaux (CR2, 2007, 2008; CR2/CR1, 2009), École des Mines de Nantes (lecturer, 2008), ENSTA (assistant professor, 2024).
- Member of PhD examination committees:
  - Fabien Latry (Inria-University of Bordeaux 1, September 2007),
  - Nicolas Palix (Inria-University of Bordeaux 1, September 2008),
  - Julien Mercadal (Inria-University of Bordeaux 1, October 2011),
  - Sven Oesau (Inria-University of Nice Sophia Antipolis, June 2015),
  - Hao Fang (Inria-University of Nice Sophia Antipolis, January 2019),
  - Oussama Ennafii (IGN-University of Paris-Est, January 2020),
  - Muxingzi Li (Université Côte d'Azur, October 2021),
  - Ruddy Théodose (University Clermont Auvergne, December 2021),
  - Rémy Leroy (Université Paris-Saclay, ONERA, March 2023),
  - Romain Guesdon (Université Lumière - Lyon 2, February 2024),
  - Sandra Kara (Université Paris-Saclay, CEA, February 2025),
  - Adrien Lafage (ENSTA, IPP, November 2025),
  - Yasser Benigmim (Telecom-Paris, IPP, December 2025).
- Member of HdR examination committees (for the habilitation to supervise research): Bertrand Le Saux (University of Paris-Sud, December 2019), Bertrand Delezoide (University of Paris-Est, December 2020).

PhD Supervision

- Scott Thibault. *Domain-specific languages: conception, implementation, and application,* University of Rennes 1, October 1998. Co-supervised with C. Consel.
- Sandrine Chirokoff. *A uniform approach to program and data specialization,* University of Rennes 1, April 2000. Co-supervised with C. Consel.
- Laurent Réveillère. *A language approach to robust device driver development,* University of Rennes 1, December 2001. Best PhD thesis award in operating system (ACM SIGOPS France). Co-supervised with C. Consel and G. Muller (interrupted when I left INRIA to join Trusted Logic).
- Philippe Boinot. *A declarative approach to flexible software,* University of Rennes 1, June 2002. Co-supervised with C. Consel and G. Muller (interrupted when I left INRIA to join Trusted Logic).
- Émilie Voisin. *Parsing and formalization of utterances in French Sign Language*, University of Bordeaux 3, November 2008. Co-supervised with H. Portine.

[9] Technological Development Actions (ADT): INRIA funding program to support ambitious developments leading to technological breakthroughs, involving several INRIA research project-teams. Also supports standardization work.

[10] Associate Teams (EA): INRIA funding program to promote long-term international relationships between an INRIA project-team and a top-grade foreign research group (visits, student exchanges, workshops, etc.).

[11] ERCIM: European Research Consortium for Informatics and Mathematics.

- David Ok. *Robust feature matching and pattern detection forfacade analysis*, University of Paris-Est, March 2013.
- Pierre Moulon. *Robust and accurate calibration of camera networks*, University of Paris-Est, January 2014. Co-supervised with P. Monasse.
- Alexandre Boulch. *Automatic reconstruction of digital buildings*, University of Paris-Est, December 2014.
- Zhe Liu. *Robust, refined and selective matching for accurate camera pose estimation*, University of Paris-Est, April 2015. Co-supervised with P. Monasse.
- Mateusz Kozinski. *Segmentation of facade images with shape priors*, University of Paris-Est, June 2015.
- Francisco Massa. *Relating images and 3D models with convolutional neural networks*, University of Paris-Est, February 2017. Co-supervised with M. Aubry.
- Raghudeep Gadde. *Semantic segmentation of highly structured and weakly structured images*, University of Paris-Est, June 2017. Co-supervised with N. Paragios.
- Yohann Salaün. *Reconstruction 3D de scènes d'intérieur à partir de photographies*, University of Paris-Est, July 2017. Co-supervised with P. Monasse.
- Amine Bourki. *Towards scalable, multi-view urban modeling using structure priors*, University of Paris-Est, December 2017.
- Vianney Loing. *Stereotomy and computer vision for robotic construction of complex masonry structures*, University of Paris-Est, January 2019. Co-supervised with J.-F. Caron and M. Aubry.
- Xu Hu. *Towards efficient learning of graphical models and neural networks with variational techniques*, University of Paris-Est, December 2019. Supervision by G. Obozinski and N. Komodakis.
- Timothée Lacroix. *Tensor decompositions for knowledge base completion*, University of Paris-Est, July 2020. Supervision by with G. Obozinski.
- Thibault Groueix. *Learning 3D Generation and Matching*, University of Paris-Est, October 2020. Supervision by with M. Aubry.
- Xuchong Qiu. *2D and 3D Geometric Attributes Estimation in Images via deep learning*, University of Paris-Est, February 2021. Co-supervised with C. Wang.
- Othman Sbai. *Deep learning methods for creating and understanding visual content*, University of Paris-Est, October 2021. Supervision by M. Aubry and C. Couprie.
- Yang Xiao. *Object viewpoint estimation in the wild*, University of Paris-Est, October 2021.
- Pierre-Alain Langlois. *Geometric and semantic approach for the reconstruction of digital building models*, University of Paris-Est, December 2021. Co-supervised with A. Boulch.
- Raphael Sulzer. *Structured reconstruction of 3D city models from heterogeneous data*, University of Paris-Est, October 2022. Co-supervised with B. Vallet.
- Simon Roburin. *Regularized deep learning for extreme condition control; application to autonomous vehicles*, University of Paris-Est, November 2022. Co-supervised with M. Aubry and P. Pérez.
- Björn Michele. *3D domain Adaption*, University of Bretagne Sud, October 2025. Co-supervised with N. Courty, A. Boulch and G. Puy.
- Corentin Sautier. *3D self-supervision*, École des Ponts ParisTech (ENPC), October 2025. Co-supervised with V. Lepetit, G. Puy and A. Boulch.
- Tetiana Martyniuk. *Lidar Scene Completion*, Inria Paris, planned 2026. Co-supervised with R. de Charette, A. Boulch and G. Puy.
- Tom Ravaud. *Unsupervised object discovery*, École nationale des ponts et chaussées (ENPC), planned 2029. Co-supervised with V. Lepetit.
- Nicolas Sereyjol-Garros. *Training end-to-end navigation models under low supervision*, École nationale des ponts et chaussées (ENPC), planned 2029. Co-supervised with V. Lepetit, A. Boulch and N. Samet.

Teaching

1990	Logic language TYPOL (lectures and labs): MSc in software engineering, CERICS (6 h).
1993	Algorithmics and ML (labs): BSc in computer science (3rd year), University of Edinburgh (24 h).
1995 – 98	FORTRAN 90 programming and FORTRAN 77 – 90 migration (lectures and labs): Aérospatiale, CNES, EDF (152 h).
1998	TEMPO workshop (seminar): participants from both academia and industry, IRISA (10 h).
1996 – 99	Program specialization and domain-specific languages (lectures and labs): MSc in computer science, University of Rennes (13 h).
2005	Web programming (labs): ENSEIRB[12], telecom course of study (1st year) (37 h).
2005 – 06	Linguistic formalisms (lectures): MSc in linguistics (1st year), University of Bordeaux 3 (12 h).
2005 – 07	Software engineering (lectures): ENSEIRB, network and information system course of study, 1st year (72 h).
2010 – 11	C++ programming (lectures and labs): ENPC, 1st year (66 h).
2010 – 18	Algorithmics (lectures and labs): ENPC, 2nd year (12 h, 9 h since 2016).
2011 – 18	3D computer vision (lectures): MSc in vision and machine learning MVA (ENS Cachan) and IMA (Univ. Paris 6) (9 h, 6 h from 2014–15, 3 h from 2015–18).
2011 – 13	Mathematics for image processing (lectures and labs): ENPC, 2nd year (39 h, in charge of the course) – MSc M2SIS (UPEMLV) (12 h, in charge of the course).
2013 – 18	Information processing and artificial vision (project): ENPC, 2nd year (3 h, also in charge of this 39-h course).

Research Grants

- France Telecom, 1996–1999. *Automated generation of services for Intelligent Network* [180 k€]: main technical investigator (domain-specific languages).
- Alcatel, 1998–2000. *Techniques and tools for reusable telecommunication components* [110 k€]: contributor (adaptation declarations).
- Thomson Multimédia, 1999–2000. *Automatic generation of software components from high-level descriptions* [110 k€]: contributor (domain-specific languages and program specialization).
- European Commission, EUREKA-ITEA project, 1999-2001. *Engineering software architectures, processes, and platforms for system families (ESAPS)* [80 k€]: contributor (program specialization and adaptation declarations).
- European Commission, EUREKA-ITEA project, 1999-2001. *Software development process for real-time embedded software systems (DESS)* [80 k€]: contributor (program specialization).
- European Commission, IST/FET project, 2000–2003. *Secure and safe systems based on static analysis (SecSafe)* [1,100 k€]: contributor (domain analysis, requirement specification, case study development) and person in charge for Trusted Logic.
- RNTL, research project, 2000–2004. *Explanation and Automatic Verification of Cryptographic Protocols (EVA)*: contributor (link between protocols and Java Card applets).
- Aquitaine Region, research project, 2004–2007. *French Sign Language Computer Processing* [53 k€]: contributor (formalization).
- INRIA, collaborative research action (ARC), 2006–2007. *High-level syntactic formalisms (Mosaïque)* [96 k€]: contributor (formalization).
- ANR, research project, 2008–2011. *Development of a reference prosodic corpus of spoken French (Rhapsodie)* [220 k€]: co-organizer of the syntax workpackage, organizer of the transcription workpackage,

[12] ENSEIRB: École Nationale Supérieure d'Électronique, Informatique et Radiocommunications de Bordeaux.

contributor to the format and standards workpackage.

- INRIA, collaborative research action (ARC), 2009–2010. *Automatic construction of logical representations of discourse (CAuLD)* [36 k€]: contributor (logical representations).
- Aquitaine Region and INRIA, research projet, 2009–2012. *Automatic itinerary extraction from travel stories for intelligent information retrieval and application to legacy documentary funds related to the Aquitaine territory* [145 k€]: principal investigator. (Transfered to another collegue when I left INRIA to join the IMAGINE Group.)
- CSTB (Scientific and Technical Center for Building), research project, 2009–present. *Digital models of buildings and cities* [currently 5 PhD grants, representing 540 k€]: principal investigator.
- MEDDE (Ministry of Ecology, Sustainable Development and Energy), research project, 2009–2013. *Digital city* [100 k€]: principal investigator for ENPC.
- Bouygues chair *Bâtir durable et innover* (Sustainable construction and innovation) at ENPC, 2010–2015. *Digital models of existing buildings* [350 k€]: principal investigator for LIGM.
- ANR, research project, 2013-2016. *Semantic visual analysis and 3D reconstruction of urban environments (Semapolis)* [186/791 k€]: principal investigator.
- ANR, research project, 2018-2022. *Building Indoor/Outdoor Modeling (BIOM)* [127/723 k€]: principal investigator for ENPC.
- ISITE FUTURE project, 2018-2022. *Digital Construction Site (DiXite)* [200/750 k€]: principal investigator for LIGM (machine vision for construction sites).

Languages

Native French, fluent English, proficient Italian, intermediate but rusted Portuguese (from Brazil), Spanish and German basics.

Miscellaneous

Member of the Antibea theater company (Antibes, 1989-1992). Member of several choirs (classical music, jazz, world music) including the Sophia Antipolis Choir (1989-1992) et la Volière (Bordeaux 2005-2008). Organizer of the scuba diving association at INRIA Sophia Antipolis (1990-1992).

Taste for sport (volley-ball, badminton, squash), traveling, languages, writing (university award for best short story, Rennes 1999), reading (member of the committee of the Livre Inter Prize 1998, member of the committee of the university award for best short story, Rennes 2000), modeling, drawing and painting.