

Pablo Piantanida

Academic Curriculum Vitae

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Executive Profile

Full Professor at CentraleSupélec, Université Paris-Saclay, and senior researcher developing the **mathematical and information-theoretic foundations of reliable, adaptive, and collaborative intelligence**. My research studies what information is relevant to a task, how it should be represented, acquired, and exchanged, what can be inferred from limited observations, and how intelligent systems should reason and act under uncertainty and resource constraints. It connects information theory, statistical decision theory, statistics, and modern machine learning to develop fundamental results, actionable methods, and experimentally validated approaches to learning, reasoning, evaluation, and decision-making. Since 2022, I have served as **Director of the CNRS International Research Laboratory on Learning Systems** in Montréal, where I shape the scientific strategy, develop institutional partnerships, and coordinate France–Canada research initiatives connecting foundational AI with language, healthcare, scientific discovery, and engineering.

My research has evolved from the fundamental limits of communication and distributed inference toward information for learning, reasoning, and reliable decision-making. My contributions span task-relevant representations, information estimation and privacy, uncertainty and failure prediction, generative AI evaluation, and pragmatic multi-agent communication. A common objective is to determine what information is sufficient for a task and when additional information, computation, or interaction has decision value.

My 2027–2031 programme develops three interconnected directions: **learning, representation, and reasoning; uncertainty, evaluation, and reliability; and collaborative and agentic intelligence**. As AI systems increasingly reason, retrieve information, use tools, communicate, and act in complex environments, the challenge is to determine **what information to acquire, what computation to perform, what to communicate, and when to act or defer**. The programme seeks fundamental limits, decision-theoretic principles, and resource-aware algorithms, with validation in language, scientific discovery, healthcare, and engineering.

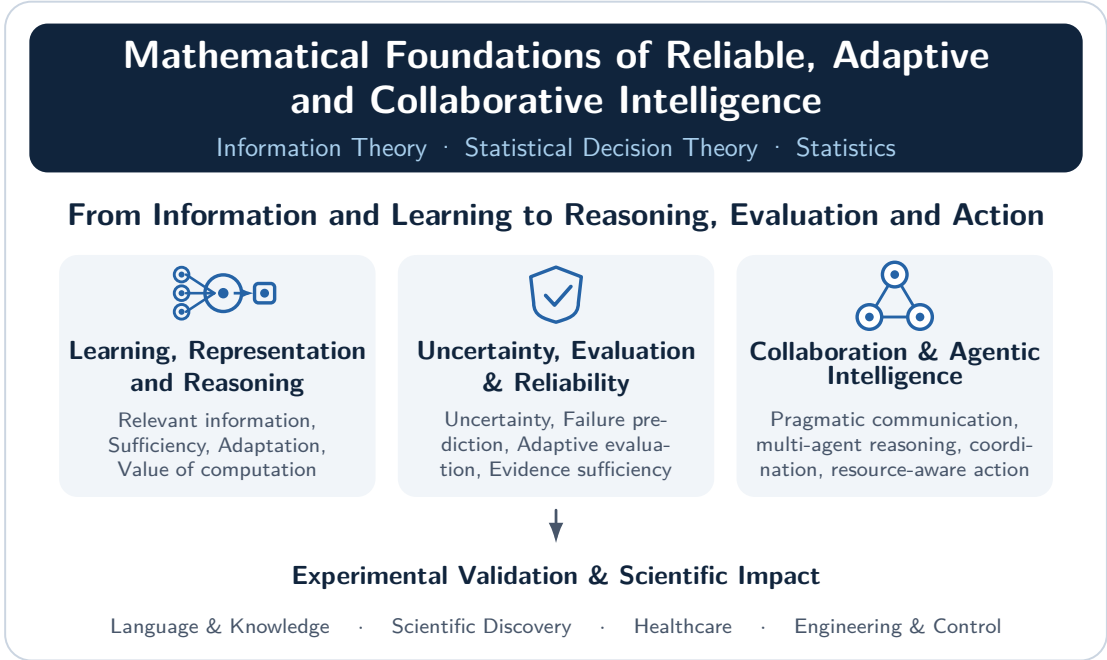
Research Impact at a Glance

Publications	253 publications: 60 journal articles (predominantly Q1) and 193 international conference papers, including numerous papers in flagship (A*) conferences.
Research funding	EUR 2.31M + CAD 504K + USD 60K in competitive funding secured as PI, co-PI, co-holder, or chair holder, plus EUR 120K in in-kind GPU resources.
Industry	Recent research collaborations with GE HealthCare, Mistral AI, Safran, IBM, Ekimetrics, and Air Liquide on medical imaging, AI-assisted control, tabular foundation models, and generative AI for molecular generation.
Doctoral supervision	22 completed Ph.D. students and 13 current Ph.D. students , supervised or co-supervised.
Profiles	Google Scholar DBLP LinkedIn ORCID: 0000-0002-8717-2117
Impact	h-index: 36; 5,800+ citations (Google Scholar).

CV Contents

Research Trajectory and Programme	2
Current and Previous Appointments	5
Research and Institutional Leadership	6
Competitive Funding and Research Support	6
Doctoral Supervision and Research Mentoring	8
Selected Honors and Distinctions	12
Publication Record	13
International Scientific Leadership and Service	13
Teaching, Graduate Training and Curriculum Leadership	15
Education and Degrees	15
Invited Seminars, Tutorials and Outreach	16
Full Publication List	18

Research Trajectory and Programme



Unifying scientific vision

Artificial intelligence is undergoing a fundamental transition. Modern systems are evolving from specialised predictors into increasingly general-purpose models capable of learning from heterogeneous sources of information, adapting to new tasks, performing multi-step reasoning, invoking external tools, interacting with physical environments, and collaborating with humans and other artificial agents. This evolution raises fundamental questions that extend beyond predictive accuracy or computational scale:

How can intelligent systems acquire, represent, reason with, and exchange information to make reliable decisions under uncertainty and limited resources?

My research programme addresses this question through the **mathematical foundations of reliable, adaptive, and collaborative intelligence**. Its objective is to identify fundamental principles governing what information an intelligent system needs, which representations and computations preserve information relevant to a task, when additional reasoning or interaction has positive decision value, what can be inferred about reliability from finite evidence, and when an autonomous system should act, acquire further information, communicate, or defer.

The programme builds on my contributions to information theory, statistical decision theory, representation learning, privacy, uncertainty quantification, distributed inference, and pragmatic communication. These areas provide complementary mathematical notions of relevance, sufficiency, deficiency, distinguishability, leakage, value of information, and resource constraints. They offer a natural language for studying modern AI systems whose capabilities depend not only on what they have learned, but also on how they acquire information, allocate computation, interact with their environment, and communicate with other decision-makers.

The central scientific ambition is to extend these foundations from *information for communication* and *information for learning* toward *information for reasoning, evaluation, and action*. Rather than seeking a universal measure of intelligence or trust, the objective is to establish operational quantities, fundamental limits, and decision-aware guarantees whose meaning is tied to explicit tasks, assumptions, evidence, resources, and consequences.

Three interconnected directions structure this programme: (I) mathematical foundations of learning, representation, and reasoning; (II) uncertainty, evaluation, and reliable decision-making; and (III) collaborative and resource-aware agentic intelligence. Together they seek to develop fundamental characterisations, statistically principled algorithms, and experimentally testable predictions for increasingly capable AI systems.

From information theory to reliable and collaborative intelligence

My foundational research focused on communication and distributed decision-making under uncertainty, interference, secrecy, privacy, and resource constraints. It developed achievability and converse techniques to characterise the fundamental limits of multiterminal systems, including *Distributed Information-Theoretic Clustering* (Information and Inference, 2022) and *Three-Terminal Interactive Lossy Source Coding* (IEEE Trans. Inf. Theory, 2017). These problems are unified by a small number of fundamental questions: *what can be inferred or decided from partial observations, which information is relevant to a task, how much information must be acquired or communicated, and when does interaction provide additional value?*

These questions extend naturally from communication systems to learning systems. My subsequent research has investigated which information representations must preserve for downstream tasks, how statistical experiments and learned representations can be compared according to their decision value, how information can be estimated or protected, and how uncertainty and distribution shift affect prediction reliability. This work connects information-theoretic notions of relevance and compression with statistical notions of sufficiency, deficiency, generalisation, and decision risk.

Modern foundation models and agentic systems now make these questions both more difficult and more consequential. An intelligent system may need to decide not only *what to predict*, but also *what to compute, what information to retrieve, which tool to invoke, what experiment to perform, what to communicate, and when to stop or request assistance*. Reasoning itself can therefore be viewed, in part, as a sequential process of constructing, acquiring, and transforming

decision-relevant information under computational and observational constraints.

This perspective defines a continuous research trajectory: information for communication; information for learning; information for reasoning and evaluation; information for reliable action and collaboration. Information theory and statistical decision theory provide the common mathematical foundations, while modern machine learning provides new phenomena, models, and experimental settings in which these principles can be investigated.

Selected Scientific Publications

Axis I – Foundations of learning, representation, and reasoning

- **Task-relevant information and representation learning:** *The Role of Mutual Information in Variational Classifiers* (Machine Learning, 2023), *Information Maximization for Few-Shot Learning* (NeurIPS 2020), and *Learning Task-Agnostic Representations through Multi-Teacher Distillation* (NeurIPS 2025) investigate how representations preserve information relevant to downstream tasks, adaptation, and generalisation.
- **Decision-relevant representations and task comparison:** *When is an Embedding Model More Promising than Another?* (NeurIPS 2024) and *Statistical Deficiency for Task Inclusion Estimation* (ACL 2025) develop decision-theoretic approaches to comparing representations according to the downstream tasks they can support. Together with task-agnostic representation learning, these works provide the basis for studying decision sufficiency, transfer, and representation comparison in foundation models.
- **Information estimation, leakage, and fundamental limits:** *Differential Entropy Estimation* (ICML 2022), *Mutual-Information Estimation for Disentanglement* (ACL 2021), *g-Leakage Estimation* (CCS 2020), and *Fundamental Limits of Membership Inference* (JMLR 2025) develop estimators and fundamental limits for information that must be preserved, inferred, or protected. These results provide tools for studying the information–utility–privacy trade-offs.
- **Toward information-theoretic foundations of reasoning:** recent work on pragmatic inference and adaptation motivates a broader study of reasoning as sequential construction and acquisition of decision-relevant information. The objective is to characterise the value of intermediate computations, retrieval, verification, and additional inference-time computation, and to determine when a system should continue reasoning, acquire external information, or stop. This direction is supported by the DATAIA Chair *Mathematical Principles of Learning and Communication in Attention-Based Models*.

Axis II – Uncertainty, evaluation, and reliable decision-making

- **Uncertainty, distribution shift, and failure prediction:** *Fisher–Rao Regularization* (IEEE TPAMI 2023), *DOCTOR* (NeurIPS 2021), *IGOOD* (ICLR 2022), *Relative Uncertainty* (ICLR 2024), and *Beyond the Norms* (ICML 2024) develop complementary approaches to detecting unreliable predictions and distributional departures from observable evidence.
- **Evaluation of generated language and generative systems:** *InfoLM* (AAAI 2022 Outstanding Student Paper), *COSMIC* (ACL 2024), *Unsupervised Hallucination Detection*, and *MOSAIC* (Findings of ACL 2025) extend reliability assessment to generated content when direct ground-truth evaluation is incomplete or unavailable.
- **Decision-aware uncertainty:** *ECUAS: A Family of Metrics for Principled Evaluation of Uncertainty-Augmented Systems* (2026) evaluates uncertainty through the downstream decisions enabled by predictions and their associated uncertainty. This provides a starting point for studying calibra-

tion, abstention, selective prediction, and risk through their operational decision value.

- **From static to adaptive evaluation and auditing:** *Auditing Is Not Evaluating: LLM Audit Requires Dynamic, Contextual, Budget-Aware and Reliable Evidence* (NeurIPS 2026 Position Paper) motivates a shift from static benchmarks toward dynamic and resource-aware evidence acquisition, complemented by the *REGARD project* on real-world evaluation of generative AI. The emerging direction extends this framework to agentic systems, developing adaptive tests, controlled interventions, and stopping rules for assessing reliability from finite evidence.

Axis III – Collaborative and resource-aware agentic intelligence

- **Fundamental limits of distributed inference and interaction:** *Collaborative Distributed Hypothesis Testing with General Hypotheses* (ISIT 2016), *The Three-Terminal Interactive Lossy Source Coding Problem* (IEEE Trans. Inf. Theory, 2017), and *Collaborative Information Bottleneck* (IEEE Trans. Inf. Theory, 2019) characterise how distributed observations, communication constraints, and interaction determine the limits of collective inference and decision-making.
- **Pragmatic information use and communication:** *Rational Retrieval Acts: Leveraging Pragmatic Reasoning to Improve Sparse Retrieval* (SIGIR 2025) introduces pragmatic reasoning into information retrieval, while *Collaborative Rational Speech Act: Pragmatic Reasoning for Multi-Turn Dialog* (EMNLP 2025) develops pragmatic multi-turn communication between agents with private information. These works connect communication with beliefs about other decision-makers, their information, and the task to be solved.
- **From pragmatic reasoning to the fundamental limits of collaborative intelligence:** ongoing work interpreting Rational Speech Acts through information-geometric projections provides a mathematical foundation for pragmatic inference and communication. Building on this research, the emerging direction asks when interaction among agents provides a genuine decision advantage, how this gain depends on complementary information and heterogeneous capabilities, and when communication or coordination is unnecessary or detrimental. This connects information geometry and pragmatic reasoning with the fundamental limits of collaborative decision-making.
- **Toward resource-aware agentic intelligence:** future work will jointly model *acting, observing, computing, retrieving, using tools, communicating, delegating, and requesting human assistance* as alternative information-processing actions with different costs and decision value. The objective is to characterise optimal policies and fundamental trade-offs among task performance, reliability, computation, communication, privacy, and human intervention.

Current and Previous Appointments

- January 2022 – Present **Director, CNRS International Research Laboratory on Learning Systems (ILLS, IRL2020)**, *International Research Laboratory jointly supported by McGill University, ÉTS, Mila, Université Paris-Saclay, and CentraleSupélec*, Montréal, QC
- Sep. 2023 – Present **Associate Academic Member**, *Mila - Quebec AI Institute*, Montréal, QC, Canada
- Sep. 2022 – Present **Adjunct Professor**, *École de technologie supérieure (ÉTS)*, Montréal, QC, Canada
- Sep. 2020 – Present **Full Professor**, *CentraleSupélec - Université Paris-Saclay*, France
- Sep. 2019 – 2022 **Associate Research Member**, *Comète Inria Team (Laboratoire d'informatique de l'École polytechnique)*, *École polytechnique*, Palaiseau, France

- Sep. 2019 – **Visiting Researcher**, *Laboratoire de Mathématiques d'Orsay (LMO)*, Orsay, France
2020
- June 2018 – **Visiting Researcher**, *Université de Montréal (UdeM)*, Mila - Quebec AI Institute,
2019 Montréal, QC, Canada
- Sep. 2015 – **Associate Professor**, *École CentraleSupélec*, Laboratoire des Signaux et Systèmes
2020 (L2S, UMR 8506), CNRS, Université Paris Saclay, France
- Sep. 2007 – **Assistant Professor**, *École Supélec*, Département de Télécommunications, France
2015

Research and Institutional Leadership

- 2022 – **Director and founding scientific lead**, *CNRS International Research Laboratory*
Present *on Learning Systems (ILLS, IRL2020)*, Montréal, Canada, Joint laboratory involving McGill University, ÉTS, Mila, CNRS, Université Paris-Saclay, and CentraleSupélec
Lead the laboratory's international research strategy, institutional partnerships, scientific programme, and France–Canada research and training initiatives
- 2017 – 2020 **Scientific Coordinator of the IRP (International Research Project) “Information, Learning and Control”**, *France–Canada collaborative research network*, 8 Canadian and French institutions: McGill University, Université de Montréal, ÉTS, Concordia University, INRS, Université Paris-Sud, CNRS, and CentraleSupélec, Co-ordination of an international research network in information, learning, and control, laying the groundwork for long-term transatlantic collaboration
- 2017 – 2018 **Curriculum Coordinator, ST4 track, SCOC program**, *CentraleSupélec*, Led first-year course and curriculum design within the engineering program
- 2018 – 2019 **Co-coordinator of the International Summer School on Artificial Intelligence**, *Direction Internationale, CentraleSupélec*
- 2015 – 2019 **Coordinator, research group ITA**, *Information Theory and its Applications (7 staff members out of 15)*, Laboratoire des Signaux et Systèmes, CNRS-UMR8506
- 2015 – 2019 **Co-responsible for CentraleSupélec of Master**, *Multimedia Networking, E3A / Electrical Engineering*, Université Paris Saclay

Competitive Funding and Research Support (selected)

- 2025 – 2029 **ANR–Canada Tri-agency joint call on AI (ANR; NSERC/SSHRC/CIHR) with IVADO support**, *PI*, “REGARD — Robust Evaluation of Generative AI in Real-World Environments”
Collaboration between University of Waterloo, McGill University, Aix-Marseille Université, CNRS, CentraleSupélec, and Orange Labs.
- 2026 – 2030 **Holder of the AI Cluster DATAIA Paris-Saclay - Chaires modulaires**, *Mathematical Principles of Learning and Communication in Attention-Based Models*, Jointly with Prof. Claire Boyer and Etienne Boursier at Laboratoire des Mathématiques d'Orsay (LMO, UPSaclay)
- 2025 – 2027 **IVADO R2 Group, co-PI**, “Cognitive Communications for Multi-Agent Reinforcement Learning”
Collaboration between McGill University, ETS, Université Laval

- 2026 – 2029 **CIFRE - GE HealthCare (industry collaboration)**, *PI*, “Foundation Models for 3D Image Segmentation”, 90K Euros (excluding salary and other expenses).
- 2026 – 2029 **CIFRE - Ekimetrics (industry collaboration)**, *PI*, “Foundation Models for Tabular Data” (excluding salary and other expenses).
- 2024 – 2027 **CIFRE - Air Liquide (industry collaboration)**, *PI*, “Generative AI for Industrial Applications” (excluding salary and other expenses).
- 2024 – 2026 **FRQS - HEALTH DATA HUB**, *Co-PI*, “Management of Patients with Breast Cancer”
- 2023 **Amazon Research Awards**, *The awards program offers unrestricted funds and AWS Promotional Credits to support research at academic institutions and non-profit organizations in areas of AI*, (website)
- 2022 – 2023 **Bourse de recherche Mitacs Globalink - Centre National de la Recherche Scientifique (CNRS)**, *PI*, “Making AI Ready for Safety-Critical Applications”
- 2021 – 2022 **Collaborative industrial project - 360Learning - (industry collaboration)**, *Co-PI*, “Collaborative Learning Score”, s
- 2020 – 2023 **PSPC Aida (BPI France) - Université Paris Saclay - IBM France -**, *Co-PI*, Safety AI
- 2019 – 2022 **Grant DATAIA - Institut de convergence**, *Co-PI*, Leakage of Sensitive Training Data from Deep Neural Networks
- 2018 – 2020 **H2020-MSCA-IF-2017 - Marie Skłodowska-Curie Global Fellowships - European Commission**, *PI*, Information Theory beyond Communications: Distributed Representations and Deep Learning

Doctoral Supervision and Research Mentoring

My mentoring activity spans doctoral supervision, co-tutelle arrangements, postdoctoral training, and research guidance across France, Canada, US, Germany, Austria, Argentina, Chile, and international collaborations. It reflects a sustained commitment to graduate education, interdisciplinary AI research, several industry collaborations, and the development of early-career researchers.

13 Current Ph.D. students (3 graduating in 2026):

- Mr. Judeson Fernando Anthony**, *Ph.D. student at [Technische Hochschule Ingolstadt \(THI\)](#), affiliated with Kunstliche Intelligenz/Informatik*, topic: “Uncertainty Estimation in Vision-Based Perception Systems for Autonomous Driving”, Started in Automne 2026
1. Co-advised at 50% with Prof. Torsten Schön (THI), Germany.

2. **Mr. Guillermo Martin**, *Ph.D. (co-tutelle) student at [Ecole de Technologie Supérieure \(ÉTS\)](#) and [Université Paris-Saclay](#), affiliated with LMF, ILLS, and Mila - Quebec AI Institute*, topic: "Belief Shaping and Strategic Communication in Multi-Agent AI Systems", Started in Winter 2026
Co-advised at 33% with Prof. Christian Desrosiers (ILLS, ÉTS) and Prof. Benedikt Bollig (LMF, Université Paris-Saclay).
3. **Mr. Thomas Hennequin**, *Ph.D. student at [Ecole de Technologie Supérieure \(ÉTS\)](#), collaboration with [Safran Canada](#)*, topic: "AI-based Control Method for Aircraft Flight Assistance", Started in Autumn 2026
Co-advised at 50% with Philippe Feyel (Safran).
4. **Ms. Cléa Chataigner**, *Ph.D (co-tutelle) student at [McGill University](#) and [Université Paris-Saclay](#), affiliated with Mila - Quebec AI Institute and ILLS*, topic: "Human-In-The-Loop Auditing for Generative AI Systems", Started in Fall 2025
Co-advised at 50% with Prof. Golnoosh Farnadi (Mila, McGill University | Google).
5. **Mr. Antoine Andurao**, *Ph.D. student at [Université Paris-Saclay](#), CIFRE with [GE Healthcare](#), affiliated with MICS and ILLS*, topic: "Foundation Models for 3D Medical Imaging", Started in Winter 2025
Co-advised at 50% with Prof. Maria Vakalopoulou (MICS, CentraleSupélec).
6. **Mr. Matteo Sammut**, *Ph.D. (co-tutelle) student at [Ecole de Technologie Supérieure \(ÉTS\)](#) and [Paris Dauphine University](#), affiliated with LAMSADE, ILLS, and Mila - Quebec AI Institute*, topic: "Toward a Theoretical Framework for Auditing Generative AI Models", Started in Fall 2025
Co-advised at 33% with Prof. Yan Chevalyre (LAMSADE, Paris-Dauphine University) and Prof. Rafael Pinot (LPSM, Sorbonne Université).
7. **Ms. Chiara Roverato**, *Ph.D. student at [McGill University](#), affiliated with Mila - Quebec AI Institute and ILLS*, topic: "Diffusion Models for Tabular Data", Started in Winter 2025
Co-advised at 50% with Prof. Mark Coates (ILLS, Mila, McGill University).
8. **Mr. Andrew McDonald**, *Ph.D. student at [Université Paris-Saclay](#), CIFRE with [Ekimetrics](#), affiliated with ILLS*, topic: "Building Foundation Models for Tabular Data", Started in Fall 2025
Co-advised at 50% with Dr. Spyros Angelopoulos (ILLS, CNRS).
9. **Mr. Lautaro Estienne**, *Ph.D. student at [Université Paris-Saclay](#), affiliated with LISN and ILLS*, topic: "Smart Conversations: Transforming Human-Machine Interaction", Started in Winter 2025
Co-advised at 50% with Prof. Nona Naderi (LISN, Université Paris-Saclay)
10. **Ms. Zahra Dehghani Tafti**, *Ph.D. student at [Ecole de Technologie Supérieure \(ÉTS\)](#), affiliated with ILLS*, topic: "Machine Unlearning", Started in Autumn 2023
Co-advised at 50% with Prof. Mohammad Hadi Shateri (LIVIA, ÉTS Montréal).

11. **Mr. Arthur Satouf**, *Ph.D. student at [Paris-Saclay University](#), CIFRE with [Air Liquide](#)*, Topic: "Information Retrieval", Started in 2024
Principal advisor and co-advising at 33% with Dr. Habiboulaye Amadou-Boubacar (Air Liquide) and Benjamin Piwowarski (CNRS, ISIR).
12. **Mr. Matthieu Dubois**, *Ph.D. student at [Sorbonne Université](#), affiliated with ISIR*, topic: "Detecting AI Generated Text", Started in Fall 2023
Co-advised at 50% with Dr. François Yvon (ISIR, CNRS).
13. **Mr. Philippe Formont**, *Ph.D (co-tutelle) student at [Université Paris-Saclay](#) and [Ecole de Technologie Supérieure \(ETS\)](#)*, Topic: "Computational Tools for Molecule Discovery", Started in Spring 2023
Principal advisor and co-advising at 50% with Prof. Ismail Ben Ayed (ETS, LIVIA - ILLS).

22 Former Ph.D. students:

1. **Dr. Eric Aubinais (Fellow researcher at KTH)**, *Ph.D from [Paris-Saclay University](#)*, Topic: "Conformal Learning with Applications to Machine Learning", Graduated in 2025
Co-advising at 50% with Prof. Elisabeth Gassiat (LMO, Université Paris-Saclay)
2. **Dr. Maxime Darrin (Mistral AI, France)**, *Ph.D (co-tutelle) from [Paris-Saclay University](#) and [McGill University](#)*, Topic: "Metrics and Methods for Generative AI Model Evaluation", Graduated in 2025
Principal advisor and co-advising at 50% with Prof. Jackie Cheung (McGill University, Canada).
3. **Dr. Eduardo DADALTO CAMARA GOMES (Helsing France)**, *Ph.D from [Paris-Saclay University](#)*, Topic: "Securing the use of AI", Graduated in 2024
Principal advisor with co-advising at 70% with Dr. Florence Alberge (L2S, Université Paris-Saclay).
4. **Dr. Ganesh Del Grosso (Researcher/Developer in AI and Cybersecurity at Situation.sh, France)**, *Ph.D from [École Polytechnique](#)*, Topic: "Leakage of Sensitive Training Data from Deep Neural Networks", Graduated in 2023
Co-advising at 50% with Dr. Catuscia Palamidessi (LIX, Inria).
5. **Dr. Sebastian Espinosa (Engineering Researcher, Chile)**, *Ph.D from [Universidad de Chile](#)*, Topic: "Learning Invariances in Deep Learning", Graduated in 2023
Co-advising at 50% with Prof. Jorge Silva (University of Chile, Chile).
6. **Dr. Marine Picot (Research Scientist at Digeiz, France)**, *Ph.D (co-tutelle) from [Université Paris-Saclay](#) and [McGill University](#)*, Topic: "Artificial Intelligence in Smart Grids", Graduated in 2023 from Paris-Saclay University and McGill University
Principal advisor with co-advising at 50% with Prof. F. Labeau (McGill University, Canada) and collaborating with Prof. Francisco Messina (Universidad de Buenos Aires, Argentina).
7. **Dr. Malik Boudiaf (Co-Founder - Equall, Canada)**, *Ph.D from [Ecole de Technologie Supérieure \(ETS\)](#)*, Topic: "Information measures for low-shot learning", Graduated in 2023
Co-advising at 50% with Prof. Ismail Ben Ayed (ÉTS, Canada).

8. **Dr. Federica Granese (Junior Researcher at INRIA)**, *Ph.D (co-tutelle) from Institut Polytechnique de Paris and Università degli Studi di Roma*, Topic: "Information-Theoretic Methods for Safety AI", Graduated in 2023
Co-advising at 25% with Dr. Catuscia Palamidessi (LIX, Inria, France) and Daniele Gorla (Università degli Studi di Roma, Italy).
9. **Dr. Mohammad Hadi Shateri (Assistant Professor at ÉTS Montreal)**, *Ph.D from McGill University*, Topic: "Deep Learning and Privacy in Smart Grids", Graduated in 2022
Co-advising at 50% with Prof. F. Labeau (McGill University, Canada) and Prof. Francisco Messina (Universidad de Buenos Aires, Argentina).
10. **Dr. Matias Vera (Research Scientist at Conicet)**, *Ph.D from Universidad de Buenos Aires (Argentina)*, Topic: "Learning via Information-Bottleneck Methods", Graduated in 2020
Co-advised at 50% with Prof. Leonardo Rey Vega (UBA - CONICET, Argentina).
11. **Dr. Clément Feutry (Project Manager - Groupe BPCE)**, *Ph.D from Université Paris-Saclay*, Topic: "Two Sides of Relevant Information: Anonymized Representation through Deep Learning and Predictor Monitoring", Graduated in 2019
Co-advising at 70% with Dr. P. Duhamel (CNRS).
12. **Dr. Kai Wan (Assistant Professor at Huazhong University of Science and Technology)**, *Ph.D from Université Paris-Saclay*, Topic: "Fundamental Limits of Index Coding", Graduated in 2018
Principal advisor with co-advising at 50% with Prof. D. Tuninetti (University of Chicago, US).
13. **Dr. Georg Pichler (Assistant Professor at TU Wien)**, *Ph.D from TU Wien (Austria)*, Topic: "Information-Theoretic Clustering", TUWien, Austria, Graduated in 2017
Co-advised at 50% with Prof. G. Matz (TUWien, Austria).
14. **Dr. Gil Katz (Co-founder | Innovation enthusiast | Mentor @TenGiving)**, *Ph.D from Université Paris-Saclay (France)*, Topic: "Distributed Statistical Inference with Communication Constraints", Graduated in 2017
Co-advising at 50% with Prof. M. Debbah (CentraleSupélec).
15. **Dr. Maggie Mhanna (AI Field Solutions Architect at Google)**, *Ph.D from Université Paris-Saclay*, Topic: "Distributed Hypothesis Testing with Privacy Constraints", Graduated in 2017
Co-advising at 50% with Dr. P. Duhamel (CNRS).
16. **Dr. Chao He (Researcher at Ericsson in Stockholm)**, *Ph.D from Université Paris-Saclay*, Topic: "Cooperation and Feedback in Wireless Networks", Graduated in 2016
Co-advising at 30% with Prof. S. Yang (CentraleSupélec).

17. **Dr. Meryem Benammar (Associate Professor at ISAE SUPAERO)**, *Ph.D from Supélec*, Topic: "Broadcast Channels: Side Information and Security Constraints", Graduated in 2016
Principal advisor.
18. **Dr. German Bassi (Researcher at Ericsson Research)**, *Ph.D from Supélec*, Topic: "Interference Relay Networks: Feedback and Security Constraints", Graduated in 2015
Co-advised at 50% with Prof. S. Yang (CentraleSupélec).
19. **Dr. Andres Altieri (Staff engineer at Qualcomm)**, *Ph.D (co-tutelle) from Supélec and Universidad de Buenos Aires (Argentina)*, Topic: "Fundamental Limits of Cooperative Large Wireless Networks", Graduated in 2014
Co-advised at 50% with Prof. C. Galarza (UBA - CONICET, Argentina) and Prof. Leonardo Rey Vega (UBA - CONICET, Argentina).
20. **Dr. Joffrey Villard (CTO at Syntelier)**, *Ph.D from Supélec*, Topic: "Task-Oriented Source Coding: Secure Transmission, Detection", Graduated in 2012
Co-advised at 50% with Pascal Bianchi (Télécom ParisTech).
21. **Dr. Arash Behboodi (Director of Engineering at Qualcomm AI Research)**, *Ph.D from Supélec*, Topic: "Cooperative Networks with Channel Uncertainty", Graduated in 2012 from Supélec
Advising at 90% (CentraleSupélec).
22. **Dr. Patricia Layec (Team lead & researcher at Nokia Bell Labs)**, *Ph.D from Supélec, CIFRE Orange*, Topic: "Information-Theoretic Bounds and Practical Coding Schemes for MIMO Communications Under Imperfect CSIR and Partial and/or Imperfect CSIT", Graduated in 2009
Co-advising at 20% with Prof. Antoine O. Berthet (CentraleSupélec).

List of Postdoctoral Fellows:

1. **Dr. Andres Altieri (Staff engineer at Qualcomm)**, "*Securing the use of AI*", June 2023 – May 2024, (L2S, Paris-Saclay University).
2. **Dr. Pierre Colombo (VLM & Multimodal Research @ Cohere)**, "*Securing the use of AI*", since January 2022 – September 2022, (L2S, Paris-Saclay University).
3. **Dr. Marco Romanelli (Assistant Professor at Hofstra University)**, "*Securing the use of AI*", since Nov. 2020 – September 2022, (L2S, Paris-Saclay University).
4. **Dr. Hamid Jalalzai**, "*Bounding Information Leakage in Machine Learning*", February 2021 – September 2022, In collaboration with Dr. Catuscia Palamidessi (LIX, Inria, France).
5. **Dr. Matias Vera (Researcher at CONICET)**, "*Generalization, Information and Learning*", April 2019 – 2021, In collaboration with Prof. Leonardo Rey Vega (UBA - CONICET, Argentina).

6. **Dr. Francisco Messina (Assistant Professor at UBA)**, “*Artificial Intelligence in Smart Grids: Robust Learning*”, June 2018 - October 2020, In collaboration with Prof. F. Labeau (McGill University, Canada).
7. **Dr. Georg Pichler (Assistant Professor at TU Wien)**, “*Estimation of Information Measures based on Neural Networks*”, July 2018 - Sep. 2019, (L2S, Paris-Saclay University).
8. **Zuxing Li (Assistant Professor at Tongji University)**, “*Distributed Compression and Learning on Power Lines*”, March 2018 - February 2020, In collaboration with RTE France and Prof. M. Kieffer (Paris-Saclay University) (L2S, Université Paris Saclay).

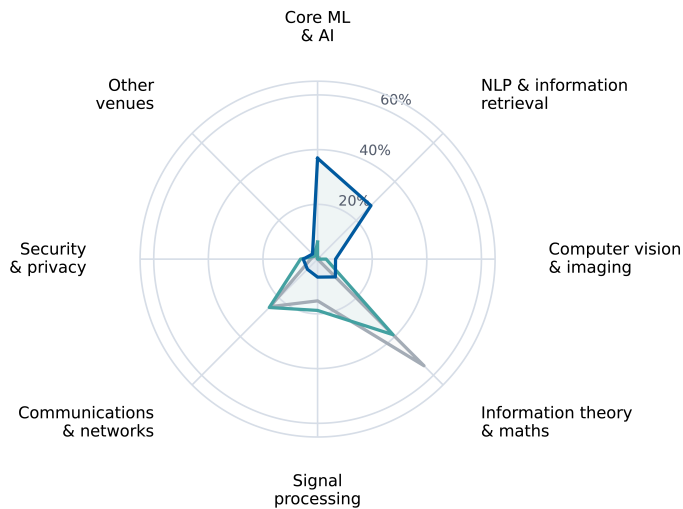
Selected Honors and Distinctions

- 2026 - 2030 **Holder of the AI Cluster DATAIA Paris-Saclay - Chaires modulaires**, *Mathematical Principles of Learning and Communication in Attention-Based Models*, Jointly with Prof. Claire Boyer at Laboratoire des Mathématiques d’Orsay (LMO, UPSaclay), 500K Euros
- 2024 **Area Chair Award**, *Association for Computational Linguistics (ACL 2024)*
- 2023 **Amazon Research Awards**, *The awards program offers unrestricted funds and AWS Promotional Credits to support research at academic institutions and non-profit organizations in areas of AI*, (website)
- 2022 **AAAI Outstanding Student Paper Award**, *InfoLM: A New Metric to Evaluate Summarization & Data2Text Generation*, AAAI Conference on Artificial Intelligence
- Jan. 2018 **H2020-MSCA-IF-2017 - Marie Skłodowska-Curie Global Fellowship**, *Information Theory beyond Communications: Distributed Representations and Deep Learning*, [European Commission \(7% of acceptance rate\)](#), 2 years
- 2016 **IEEE Senior Member**
- April 2016 **Visiting Professor Fellowship**, *Information Processing Group, Ecole Polytechnique Federale Lausanne (EPFL)*, Lausanne, Switzerland, 1 week
- 2014 **Coauthor of Best Paper Award**, *Young Researcher Award from Newcom#*
- 2003 – 2005 **Saint-Exupéry Fellowship**, *French Embassy in Argentina*, France
- 2001 – 2002 **Merit Award Scholarship**, *University of Buenos Aires*, Buenos Aires, Argentina

Publication Record

Research trajectory. Mathematical and information-theoretic contributions increasingly appear in core machine learning and language research, building on a substantial record in information theory, statistics, and communication theory. This trajectory follows my research on mathematical foundations, evaluation, and reliable AI, with collaborative intelligence as its next frontier. This chart describes publication outlets rather than the boundaries of my expertise.

— 2001–2016 (n=118) — 2017–2020 (n=64) — 2021–2026 (n=76)



60 journal articles and **193 international conference papers**, including **20 invited contributions to special sessions**.

Over **50 invited lectures**, including seminars, tutorials, and workshops.

Selected venues.

NeurIPS, ICML, ICLR, AISTATS, AAAI, ACL, EMNLP, CVPR, ECCV, and ACM CCS.

Machine Learning, JMLR, TMLR, IEEE TPAMI, IEEE Transactions on Information Theory, The Annals of Applied Probability, and Information and Inference.

IEEE ISIT, ITW, and ICASSP.

International Scientific Leadership and Service

Coordination of scientific activities (selected subset)

Feb 18 - 20, **General Chair**, *Workshop: AI for Health*, ETS Montreal, (website)
2026 (up to 110 participants on site)

Oct 1 - 3, **General Chair**, *Workshop: NLP in the era of generative AI, cognitive sciences, and societal transformation*, Mila - Quebec AI Institute, (website)
2024 (up to 250 participants on site and 3000 online)

May 24 - 26, **General Co-Chair**, *Workshop ILLS - DATAIA*, Paris-Saclay University, (website)
2023

May 18, 2023 **General Co-Chair**, *Séminaire des IRL CRM et ILLS*, Pôle CRM de l'UQAM, (website)

2021 - 2023 **Conference Committee Chair**, *IEEE Information Theory Society*

July 2019 **General Co-Chair of the 2019**, *IEEE International Symposium on Information Theory (ISIT) in Paris*, IEEE Information Theory Society, (the most prestigious conference in the field with around 1100 participants)
<https://2019.ieee-isit.org>

Nov. 2016 **Conference Special Session**, *Information Theory and Statistical Learning*, Asilomar Conference on Signals, Systems, and Computers

Outreach and participation in scientific committees (selected subset)

2024 - **Area Chair and Senior Area Chair**, *ICML 2026, NeurIPS 2026, ARR 2026, AAAI present 2025-2027, CCS 2025, USENIX 2025, ISIT, and ITW*

2022 - 2023 **International expert for committee evaluation program TRAIL**, *Trusted AI Labs*, Walloon and Brussels regions

- 2021 - 2022 **Vice-president of the expert committee 23 (Artificial Intelligence) of the ANR for the evaluation of call for research projects**, ANR, National Research Agency
- 2020 - 2021 **Member of the expert committee 23 (Artificial Intelligence) of the ANR for the evaluation of call for research projects**, ANR, National Research Agency
- Nov. 2020 - 2024 **Board of Entropy**, *Topic Editor of Information Theory, Probability and Statistics*
- 2019 - 2021 **Associate Editor**, *IEEE Transactions on Information Forensics and Security*
- 2010 - **Session Chair**, *IEEE Intern. Symposium on Information Theory (ISIT) and IEEE Present Workshop on Information Theory (ITW)*

Service on Ph.D. committees (selected subset)

- Dec. 3, 2024 **Ph.D. examiner/president of jury**, *Université Paris-Saclay*, by Alexandre Perez-Label, *Évaluation de classifieurs probabilistes et impact sur la décision*
- Dec. 11th, 2023 **Ph.D. examiner**, *Université Paris-Saclay*, by Fabio Arnez, *Deep Neural Network Uncertainty Runtime Monitoring for Robust and Safe AI-based Automated Navigation*
- Dec. 13th, 2021 **Ph.D. examiner/president of jury**, *Université Paris-Saclay*, by Victor Bouvier, *Vers l'apprentissage adaptatif à l'aide de représentations invariantes*
- Nov. 17th, 2021 **Ph.D. examiner**, *Institut Polytechnique de Paris, Télécom ParisTech*, by Pierre Colombo, *Apprendre à représenter et à générer du texte en utilisant des mesures d'information*
- Nov. 6th, 2020 **Ph.D. reviewer**, *Institut Polytechnique de Paris, Télécom ParisTech*, by Hamid Jalalzai, *Learning from Multivariate Extremes: Theory and Application to Natural Language Processing*

International and French Collaborations

- At the international level, collaborations have been established with TU Wien (Austria), TU Berlin (Germany), UCLouvain (Belgium), Technion (Israel), McGill (Canada), University of Montreal (Canada), ETS (Canada), INRS (Canada), Universidad de Chile (Chile), Universidad de Buenos Aires (Argentina), University of Chicago (USA), New York University (USA), University of Michigan (USA), among others.
- At the national level, collaborations have been established with Telecom ParisTech, INRIA (Lix - Ecole Polytechnique), Sorbonne université (ISIR), ENS Lyon (LIP), Université Aix-Marseille (LIS), University Paris-Saclay (LMO, LISN), Université de Cergy (ENSEA), among others.

Teaching, Graduate Training and Curriculum Leadership

Courses at Master (M2) Level (selected subset)

- 2019 – 2020 **Foundations of Privacy and Machine Learning**, *Parisian Master of Research in Computer Science (MPRI)*, ENS Ulm, Ecole Polytechnique, University Paris Diderot, Telecom Paris Tech, University Paris Diderot
(4 lectures of 3h each per year)

- 2018 – 2021 **Introduction to Deep Learning**, *International summer school on Artificial Intelligence*, Direction International of CentraleSupélec, CentraleSupélec
(2 lectures of 2h30 each per year)
- 2017 – 2018 **Deep Learning and IoT Data Analytics**, *Master Advanced Wireless Communications Systems (SAR)*, Research master M2, CentraleSupélec
(4 lectures of 3h each per year)
- 2015 – 2018 **Mathematics of Information and Source Coding**, *Master Multimedia Networking (MN)*, Master M2, Telecom ParisTech/CentraleSupélec/Université Paris-Sud
(8 lectures of 3h each per year)
- 2009 – 2018 **Elements of Information Theory**, *Master Advanced Wireless Communications Systems (SAR)*, Research master M2, CentraleSupélec
(5 lectures of 3h each per year)
- 2009 – 2016 **Network Information Theory**, *Master Advanced Wireless Communications Systems (SAR)*, Research Master M2, CentraleSupélec
(4 lectures of 3h each per year)

Courses/TAs/TPs at Engineering Level (selected subset)

- 2021 – **Deep Learning**, 3rd year of engineering program at CentraleSupélec
present (24h of lectures per year)
- 2020 **Research Projects**, 2nd and 3rd year of engineering program at CentraleSupélec
(24h per year)
- 2020 – 2021 **Information Theory, Large Dimensional Data and AI**, 2nd year (SG8) of engineering program at CentraleSupélec
(2 lectures of 3h each per year)
- 2017 – 2018 **Information Theory and Information Complexity**, *1st year of engineering program at CentraleSupélec*, ST4 - responsible of the course and curriculum design (replaced by R. Combes during sabbatical leave)
(around 18h per year)

Around 200h per year, according to the French system (equivalent TD), until Dec. 2021.

Education and Degrees

- May 2019 **Habilitation à Diriger les Recherches (HDR)**, *Université Paris Saclay* (May 2019), France, (ultimate French university degree to serve as Ph.D supervisor)
Information-Theoretic Methods: From Communication to Decision, Privacy and Learning, at the Heart of Data Sciences
- May 2007 **Ph.D in Physics**, *Université Paris Sud*, Orsay, France
Multi-user information theory: State information and imperfect channel knowledge
- Dec. 2003 **MSc/BSc Mathematics and Electrical Engineering**, *Faculty of Engineering and Mathematics*, *University of Buenos Aires*, Buenos Aires, Argentina
- Dec. 2000 **BSc Electrical Engineering**, (with Honors) *Faculty of Engineering*, *University of Buenos Aires*, Buenos Aires, Argentina

Earlier Research Experience

Feb. 2004 – **Visting Researcher**, *Institut für Nachrichtentechnik und Hochfrequenztechnik*, Vienna, Austria, (working on Capacity of Time-Varying channels)
 March 2001 – **Young Research Associate**, *Institute of Biomedical Engineering, Faculty of Engineering*, Buenos Aires, Argentina, (working on Speech Recognition)

Invited Seminars, Tutorials and Outreach (subset)

1. Can We Trust AI to Do Science? Reasoning, Evaluation, and the Future of Scientific Discovery, [Keynote at AI Tech Days - VINCI Groupe](#), Nanterre, October 5, 2026.
2. Rational Speech Acts as KL Projections: From Pragmatic Reasoning to Multi-Agent Communication, [IVADO Regroupement 2 Workshop Day](#), Montreal, August 2026.
3. Generative AI in the Age of Multi-Agent Reasoning: *Evaluation, coordination, and scientific discovery*, [COMMEX annual meeting of Air Liquide - Keynote IA](#), France, April 13th, 2026.
4. Generative AI and Scientific Discovery, [R7+ Meeting - Keynote IA](#), Ottawa, November 2025.
5. Information-Theoretic Methods for Trustworthy Machine Learning, [STARaCom Annual Meeting at McGill University](#), Montréal, QC, June 6th, 2023.
6. AI and Data Privacy, [Keynote at the Symposium on Artificial Intelligence | MIT-France](#), July 12th to 13th, 2022: (online)
7. Information-Theoretic Methods in Data Sciences: Model Uncertainty, Robustness and Model Drift, [Keynote at Journée Statistique et Informatique pour la Science des Données à Paris Saclay](#), January 26th, 2022: (online)
8. Information Theory for / by Deep Learning, [Keynote at Research Days of Labex Digicosme](#), November 9th, Université Paris-Saclay (virtual talk), 2020: (online)
9. Learning Anonymized Representations with Mutual Information, [MLAI 2019 – International Workshop on Machine Learning and Artificial Intelligence](#), Paris, October 7th-8th, 2019: (online)
10. Les clés de l'IA: le traitement et l'optimisation de l'information, [more than 450 participants \(undergrads, Ph.D. students, industry, interested public\) at ÉTS](#), Montréal, Canada, October 16th, 2018. Part I: (online) and Part II: (online)
11. Information-Theoretic Biclustering and Distributed Binary Detection, [Royal Institute of Technology in Stockholm \(KTH\)](#), Stockholm, Sweden, Sep. 14th, 2017.
12. Exploring Connections between Information Theory, Machine Learning and Statistics, [Institut National de la Recherche Scientifique \(INRS\)](#), Montreal, Canada, September 1st, 2016.
13. The Compound Broadcast Channel: Recent Advances and Challenges, Information Processing Group, [Ecole Polytechnique Federale Lausanne \(EPFL\)](#), Switzerland, July 23rd, 2015.
14. On the Multiterminal Interactive Lossy Source Coding Problem, [Dept. of EE, Imperial College London](#), UK, September 17th, 2014.
15. A Proof of the Generalized Markov Lemma with Countable Infinite Alphabets, [Dept. of Mathematics, University of Hong Kong](#), Hong Kong, June 3rd, 2014.
16. An Information-Theoretic Approach to Secure Transmission and Storage of Data Sources, [Technische Universität Wien \(TUW\)](#), Vienna, Austria, April 4th, 2014.

17. The Mathematical Nature of Information, [Café sciences](#), [Ecole Centrale de Paris](#), Paris, France, February 27th, 2014: (online)
18. Capacity of Simultaneous State-Dependent Channels with State Information at the Transmitter, [EE Colloquium](#), [Israel Institute of Technology](#), [Technion](#), Haifa, Israel, April 23, 2009.

Full Publication List

Preprints and submitted/revised articles

- [P1] P. Formont, M. Darrin, I. B. Ayed, and P. Piantanida, “MolRGen: A Training and Evaluation Setting for De Novo Molecular Generation with Reasoning Models,” 2026. [\[paper\]](#) [\[arXiv\]](#)
- [P2] M. Dubois, F. Yvon, and P. Piantanida, “How much were you told? measuring external information in peer reviews,” 2026. [\[paper\]](#) [\[arXiv\]](#)
- [P3] P. Piantanida and G. Pichler, “A theory for rational speech acts as KL projections with powered semantics,” 2026, (submitted)
- [P4] Y. Bahram, Z. Dehghani, M. Desbos, E. Granger, P. Piantanida, and M. Shateri, “Continuous adversarial meanflow transfer,” 2026. [\[paper\]](#) [\[arXiv\]](#)
- [P5] C. Chataigner, P. Piantanida, and G. Farnadi, “Position: Auditing Is Not Evaluating; LLM Audit Requires Dynamic, Contextual, Budget-Aware and Reliable Evidence,” Feb. 2026, working paper or preprint. [\[paper\]](#)
- [P6] L. Estienne, E. Ernst, M. Vera, P. Piantanida, and L. Ferrer, “Ecuas_n: A family of metrics for principled evaluation of uncertainty-augmented systems,” 2026. [\[paper\]](#) [\[arXiv\]](#)

Journal papers

- [J1] E. Aubinais, E. Gassiat, and P. Piantanida, “Fundamental Limits of Membership Inference Attacks on Machine Learning Models,” *Journal of Machine Learning Research*, vol. 26, no. 263, pp. 1–54, 2025. [\[paper\]](#) [\[arXiv\]](#)
- [J2] Z. Dehghani Tafti, P. Piantanida, and M. Shateri, “A Universal Source-Free Class Unlearning Framework via Synthetic Embeddings,” *Transactions on Machine Learning Research*, May 2026. [\[paper\]](#)
- [J3] P. Morales-Álvarez, S. Christodoulidis, M. Vakalopoulou, P. Piantanida, and J. Dolz, “BayesAdapter: Enhanced Uncertainty Estimation in CLIP Few-Shot Adaptation,” *International Journal of Computer Vision*, vol. 134, no. 2, p. 51, February 2026. [\[paper\]](#) [\[arXiv\]](#)
- [J4] L. Estienne, M. Vera, E. Fons, E. Kochkina, P. Piantanida, and L. Ferrer, “Adapting Language Models to Produce Good Class Probabilities for Classification Tasks,” *Transactions on Machine Learning Research*, February 2026. [\[paper\]](#)
- [J5] D. Gorla, L. Jalouzet, F. Granese, C. Palamidessi, and P. Piantanida, “On Estimating the Strength of Differentially Private Mechanisms in a Black-Box Setting,” *IEEE Transactions on Dependable and Secure Computing*, vol. 22, no. 5, pp. 5494–5507, September 2025. [\[paper\]](#)
- [J6] P. Formont, H. Jeannin, P. Piantanida, and I. Ben Ayed, “A Strong Baseline for Molecular Few-Shot Learning,” *Transactions on Machine Learning Research*, February 2025. [\[paper\]](#) [\[arXiv\]](#)

- [J7] C. Presvôts, M. Kieffer, T. Prevost, P. Panciatici, Z. Li, and P. Piantanida, "Multiple-model coding scheme for electrical signal compression," *Signal Processing*, vol. 236, p. 110037, November 2025. [\[paper\]](#)
- [J8] E. D. C. Gomes, F. Alberge, P. Duhamel, and P. Piantanida, "Combine and Conquer: A Meta-Analysis on Data Shift and Out-of-Distribution Detection," *Transactions on Machine Learning Research*, July 2024. [\[paper\]](#) [\[arXiv\]](#)
- [J9] M. Shateri, F. Messina, F. Labeau, and P. Piantanida, "Preserving Privacy in GANs Against Membership Inference Attack," *IEEE Transactions on Information Forensics and Security*, vol. 19, pp. 1728–1743, 2024. [\[paper\]](#) [\[arXiv\]](#)
- [J10] G. Pichler, M. Romanelli, L. Rey Vega, and P. Piantanida, "Perfectly Accurate Membership Inference by a Dishonest Central Server in Federated Learning," *IEEE Transactions on Dependable and Secure Computing*, vol. 21, no. 4, pp. 4290–4296, July 2024. [\[paper\]](#) [\[arXiv\]](#)
- [J11] M. Vera, L. Rey Vega, and P. Piantanida, "PACMAN: PAC-style bounds accounting for the Mismatch between Accuracy and Negative log-loss," *Information and Inference: A Journal of the IMA*, vol. 13, no. 1, p. iaae002, January 2024. [\[paper\]](#) [\[arXiv\]](#)
- [J12] G. Del Grosso, G. Pichler, C. Palamidessi, and P. Piantanida, "Bounding information leakage in machine learning," *Neurocomputing*, vol. 534, pp. 1–17, May 2023. [\[paper\]](#) [\[arXiv\]](#)
- [J13] C. Pinzón, C. Palamidessi, P. Piantanida, and F. Valencia, "On the incompatibility of accuracy and equal opportunity," *Machine Learning*, vol. 113, no. 5, pp. 2405–2434, May 2024. [\[paper\]](#)
- [J14] M. Vera, L. Rey Vega, and P. Piantanida, "The role of mutual information in variational classifiers," *Machine Learning*, vol. 112, no. 9, pp. 3105–3150, September 2023. [\[paper\]](#) [\[arXiv\]](#)
- [J15] M. Picot, F. Granese, G. Staerman, M. Romanelli, F. Messina, P. Piantanida, and P. Colombo, "A Halfspace-Mass Depth-Based Method for Adversarial Attack Detection," *Transactions on Machine Learning Research*, March 2023. [\[paper\]](#)
- [J16] M. Vera, L. Rey Vega, and P. Piantanida, "Information flow in Deep Restricted Boltzmann Machines: An analysis of mutual information between inputs and outputs," *Neurocomputing*, vol. 507, pp. 235–246, October 2022. [\[paper\]](#)
- [J17] M. Picot, F. Messina, M. Boudiaf, F. Labeau, I. Ben Ayed, and P. Piantanida, "Adversarial Robustness Via Fisher-Rao Regularization," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 45, no. 3, pp. 2698–2710, March 2023. [\[paper\]](#) [\[arXiv\]](#)
- [J18] M. Shateri, F. Messina, P. Piantanida, and F. Labeau, "Privacy-Cost Management in Smart Meters With Mutual-Information-Based Reinforcement Learning," *IEEE Internet of Things Journal*, vol. 9, no. 22, pp. 22 389–22 398, November 2022. [\[paper\]](#) [\[arXiv\]](#)
- [J19] J. F. Silva and P. Piantanida, "On Universal D-Semifaithful Coding for Memoryless Sources With Infinite Alphabets," *IEEE Transactions on Information Theory*, vol. 68, no. 4, pp. 2782–2800, April 2022. [\[paper\]](#) [\[arXiv\]](#)
- [J20] S. Espinosa, J. F. Silva, and P. Piantanida, "On the Exponential Approximation of Type II Error Probability of Distributed Test of Independence," *IEEE Transactions on Signal and Information Processing over Networks*, vol. 7, pp. 777–790, 2021. [\[paper\]](#) [\[arXiv\]](#)

- [J21] —, “Finite-Length Bounds on Hypothesis Testing Subject to Vanishing Type I Error Restrictions,” *IEEE Signal Processing Letters*, vol. 28, pp. 229–233, 2021. [\[paper\]](#) [\[arXiv\]](#)
- [J22] G. Pichler, P. Piantanida, and G. Matz, “Distributed information-theoretic clustering,” *Information and Inference: A Journal of the IMA*, vol. 11, no. 1, pp. 137–166, March 2022. [\[paper\]](#) [\[arXiv\]](#)
- [J23] K. Wan, D. Tuninetti, M. Ji, and P. Piantanida, “Combination Networks With End-User Caches: Novel Achievable and Converse Bounds Under Uncoded Cache Placement,” *IEEE Transactions on Information Theory*, vol. 68, no. 2, pp. 806–827, February 2022. [\[paper\]](#) [\[arXiv\]](#)
- [J24] M. Shateri, F. Messina, P. Piantanida, and F. Labeau, “Real-Time Privacy-Preserving Data Release for Smart Meters,” *IEEE Transactions on Smart Grid*, vol. 11, no. 6, pp. 5174–5183, November 2020. [\[paper\]](#) [\[arXiv\]](#)
- [J25] A. Bunin, Z. Goldfeld, H. H. Permuter, S. Shamai Shitz, P. Cuff, and P. Piantanida, “Key and Message Semantic-Security Over State-Dependent Channels,” *IEEE Transactions on Information Forensics and Security*, vol. 15, pp. 1541–1556, 2020. [\[paper\]](#) [\[arXiv\]](#)
- [J26] K. Wan, D. Tuninetti, M. Ji, G. Caire, and P. Piantanida, “Fundamental Limits of Decentralized Data Shuffling,” *IEEE Transactions on Information Theory*, vol. 66, no. 6, pp. 3616–3637, June 2020. [\[paper\]](#) [\[arXiv\]](#)
- [J27] K. Wan, D. Tuninetti, and P. Piantanida, “An Index Coding Approach to Caching With Uncoded Cache Placement,” *IEEE Transactions on Information Theory*, vol. 66, no. 3, pp. 1318–1332, March 2020. [\[paper\]](#) [\[arXiv\]](#)
- [J28] E. de Chérisey, S. Guilley, O. Rioul, and P. Piantanida, “Best Information is Most Successful: Mutual Information and Success Rate in Side-Channel Analysis,” *IACR Transactions on Cryptographic Hardware and Embedded Systems*, vol. 2019, no. 2, pp. 49–79, February 2019. [\[paper\]](#)
- [J29] J. F. Silva and P. Piantanida, “Universal Weak Variable-Length Source Coding on Countably Infinite Alphabets,” *IEEE Transactions on Information Theory*, vol. 66, no. 1, pp. 649–668, January 2020. [\[paper\]](#) [\[arXiv\]](#)
- [J30] G. Bassi, P. Piantanida, and S. Shamai Shitz, “The Wiretap Channel With Generalized Feedback: Secure Communication and Key Generation,” *IEEE Transactions on Information Theory*, vol. 65, no. 4, pp. 2213–2233, April 2019. [\[paper\]](#) [\[arXiv\]](#)
- [J31] A. Altieri and P. Piantanida, “Performance Evaluation of Advanced Relaying Protocols in Large Wireless Networks,” *IEEE Access*, vol. 7, pp. 22 214–22 226, 2019. [\[paper\]](#) [\[arXiv\]](#)
- [J32] M. Benammar, P. Piantanida, and S. Shamai, “On the Compound Broadcast Channel: Multiple Description Coding and Interference Decoding,” *IEEE Transactions on Information Theory*, vol. 66, no. 1, pp. 38–64, January 2020. [\[paper\]](#) [\[arXiv\]](#)
- [J33] G. Bassi, P. Piantanida, and S. Shamai (Shitz), “The Secret Key Capacity of a Class of Noisy Channels with Correlated Sources,” *Entropy*, vol. 21, no. 8, p. 732, July 2019. [\[paper\]](#)

- [J34] M. Vera, L. Rey Vega, and P. Piantanida, "Collaborative Information Bottleneck," *IEEE Transactions on Information Theory*, vol. 65, no. 2, pp. 787–815, February 2019. [\[paper\]](#) [\[arXiv\]](#)
- [J35] —, "Compression-Based Regularization With an Application to Multitask Learning," *IEEE Journal of Selected Topics in Signal Processing*, vol. 12, no. 5, pp. 1063–1076, October 2018. [\[paper\]](#) [\[arXiv\]](#)
- [J36] G. Pichler, P. Piantanida, and G. Matz, "Dictator functions maximize mutual information," *The Annals of Applied Probability*, vol. 28, no. 5, pp. 3094–3101, October 2018. [\[paper\]](#) [\[arXiv\]](#)
- [J37] C. He, S. Yang, and P. Piantanida, "A Novel Transmission Scheme for the K -User Broadcast Channel With Delayed CSIT," *IEEE Transactions on Wireless Communications*, vol. 17, no. 1, pp. 386–399, January 2018. [\[paper\]](#) [\[arXiv\]](#)
- [J38] M. Benammar, P. Piantanida, and S. Shamai Shitz, "Capacity Results for the Multicast Cognitive Interference Channel," *IEEE Transactions on Information Theory*, vol. 63, no. 7, pp. 4119–4136, July 2017. [\[paper\]](#) [\[arXiv\]](#)
- [J39] G. Katz, P. Piantanida, and M. Debbah, "Distributed Binary Detection With Lossy Data Compression," *IEEE Transactions on Information Theory*, vol. 63, no. 8, pp. 5207–5227, August 2017. [\[paper\]](#) [\[arXiv\]](#)
- [J40] L. Rey Vega, P. Piantanida, and A. O. Hero, "The Three-Terminal Interactive Lossy Source Coding Problem," *IEEE Transactions on Information Theory*, vol. 63, no. 1, pp. 532–562, January 2017. [\[paper\]](#) [\[arXiv\]](#)
- [J41] C. He, S. Yang, and P. Piantanida, "On the Gaussian Fading Broadcast Relay Channel With Causal State Feedback," *IEEE Transactions on Communications*, vol. 64, no. 7, pp. 2797–2807, July 2016. [\[paper\]](#)
- [J42] M. Benammar and P. Piantanida, "Secrecy Capacity Region of Some Classes of Wiretap Broadcast Channels," *IEEE Transactions on Information Theory*, vol. 61, no. 10, pp. 5564–5582, October 2015. [\[paper\]](#) [\[arXiv\]](#)
- [J43] J. Hoydis, R. Couillet, and P. Piantanida, "The Second-Order Coding Rate of the MIMO Quasi-Static Rayleigh Fading Channel," *IEEE Transactions on Information Theory*, vol. 61, no. 12, pp. 6591–6622, December 2015. [\[paper\]](#) [\[arXiv\]](#)
- [J44] M. Jabi, A. E. Hamss, L. Szczecinski, and P. Piantanida, "Multipacket Hybrid ARQ: Closing Gap to the Ergodic Capacity," *IEEE Transactions on Communications*, vol. 63, no. 12, pp. 5191–5205, December 2015. [\[paper\]](#) [\[arXiv\]](#)
- [J45] G. Bassi, P. Piantanida, and S. Yang, "Capacity Bounds for a Class of Interference Relay Channels," *IEEE Transactions on Information Theory*, vol. 61, no. 7, pp. 3698–3721, July 2015. [\[paper\]](#) [\[arXiv\]](#)
- [J46] A. Altieri, P. Piantanida, L. Rey Vega, and C. G. Galarza, "On Fundamental Trade-offs of Device-to-Device Communications in Large Wireless Networks," *IEEE Transactions on Wireless Communications*, vol. 14, no. 9, pp. 4958–4971, September 2015. [\[paper\]](#) [\[arXiv\]](#)

- [J47] A. Behboodi and P. Piantanida, "Mixed Noisy Network Coding and Cooperative Unicasting in Wireless Networks," *IEEE Transactions on Information Theory*, vol. 61, no. 1, pp. 189–222, January 2015. [\[paper\]](#) [\[arXiv\]](#)
- [J48] A. Altieri, L. Rey Vega, P. Piantanida, and C. G. Galarza, "On the Outage Probability of the Full-Duplex Interference-Limited Relay Channel," *IEEE Journal on Selected Areas in Communications*, vol. 32, no. 9, pp. 1765–1777, September 2014. [\[paper\]](#) [\[arXiv\]](#)
- [J49] J. Villard, P. Piantanida, and S. Shamai, "Secure Transmission of Sources Over Noisy Channels With Side Information at the Receivers," *IEEE Transactions on Information Theory*, vol. 60, no. 1, pp. 713–739, January 2014. [\[paper\]](#) [\[arXiv\]](#)
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