UNIVERSITÉ CÔTE D'AZUR | INSTITUT INTERDISCIPLINAIRE D'INTELLIGENCE ARTIFICIELLE 3IA CÔTE D'AZUR

Our website

COLLABORATE WITH 3IA CÔTE D'AZUR RESEARCHERS

Axis 1 – Core elements of AI

Charles BOUVEYRON
Université Côte d'Azur, Chairholder

Generative models for unsupervised and deep learning with complex data

Charles Bouveyron's Chair develops deep generative models with sparsity priors to address learning challenges posed by real-world constraints, including unsupervised deep learning, architecture selection, heterogeneous data integration, and ultra-high-dimensional scenarios.
https://3ia.univ-cotedazur.eu/research/chair-holder-charles-bouveyron-1

Elena CABRIO
Université Côte d'Azur, Chairholder

Advanced Natural Language Understanding

Elena Cabrio's Chair develops sophisticated computational models to address implicit and incomplete information exchange in argumentative debates and represent the dynamic nature of complex debates across various domains.
https://3ia.univ-cotedazur.eu/research/chair-holder-elena-cabrio

Mathieu CARRIÈRE
Inria, Chairholder

TopMoDaL: Multiparameter topological data analysis for Machine Learning Models and data sets

Mathieu Carrière's Chair explores how multiparameter topological data analysis can become an important asset for standard machine learning models, developing new descriptors and regularization tools from mTDA to drastically improve predictive and generative powers across complex data types.
https://3ia.univ-cotedazur.eu/research/chairholder-mathieu-carriere

Antitza DANTCHEVA
Inria, Chairholder

Generating synthetic videos for automated visual learning

Antitza Dantcheva's Chair develops algorithmic foundations for joint video generation and visual learning, creating new video generation algorithms that produce synthetic data to surgically enhance real datasets and work synergistically with iterative training approaches.
https://3ia.univ-cotedazur.eu/research/chairholder-antitza-dantcheva

Fabien GANDON
Inria, Chairholder

Combining artificial and augmented intelligence technics on and through the web

Fabien Gandon's Chair formalizes knowledge-based models and designs algorithms to manage interactions between different forms of artificial intelligence (rule-based, connectionist, evolutionary) and natural intelligences (individual users, crowds) on the web.
https://3ia.univ-cotedazur.eu/research/chair-holder-fabien-gandon-1

Marco LORENZI
Inria, Chairholder

Interpretability and security of statistical learning in healthcare

Marco Lorenzi's Chair ensures interpretability and secured data access in healthcare through interpretable biomedical data modeling via probabilistic inference of dynamical systems and variational inference in federated learning for multicentric brain imaging and genetics data.
https://3ia.univ-cotedazur.eu/research/chair-holder-marco-lorenzi

Pierre-Alexandre MATTEI
Inria, Chairholder

Dirty data: the interplay of foundations and practice

Pierre-Alexandre Mattei's Chair designs machine learning models that handle "dirty" real-world datasets containing missing values, anomalies, or improper normalization, collaborating with doctors and astronomers to address practical challenges beyond clean, curated data.
https://3ia.univ-cotedazur.eu/research/chair-holder-pierre-alexandre-mattei

Emanuele NATALE
CNRS, Chairholder

Neural network sparsity and applications

Emanuele Natale's Chair investigates interdisciplinary challenges spanning machine learning, computational neuroscience, and theoretical computer science, developing algorithmic tools and mathematical frameworks for neural network sparsification, brain organization modeling, multi-agent systems, and collective behaviors in biological systems.
https://3ia.univ-cotedazur.eu/research/chairholder-emanuele-natale

Giovanni NEGLIA
Inria, Chairholder

Distributed Machine Learning over the Internet

Giovanni Neglia's Chair removes barriers to deploying large-scale learning systems by developing models and algorithms for distributed environments, from server clusters to the entire Internet, optimizing latency, resource usage, and accuracy for both training and inference tasks.
https://3ia.univ-cotedazur.eu/research/chair-holder-giovanni-neglia

Xavier PENNEC
Inria, Chairholder

Geometric statistics and geometric subspace learning

Xavier Pennec's Chair studies how topology and geometry of data and model spaces impact statistical learning, with applications to computational anatomy and life sciences, demonstrating that geometry is critical when learning with limited resources and real-world constraints.
https://3ia.univ-cotedazur.eu/research/chair-holder-xavier-pennec

Jean-Charles RÉGIN
Université Côte d'Azur, Chairholder

Decision intelligence

Jean-Charles Régin's Chair designs explainable decision-making processes that satisfy real-world constraints in multi-objective environments with incomplete, fuzzy, or stochastic data.
https://3ia.univ-cotedazur.eu/research/chair-holder-jean-charles-regin

Samuel VAITER
CNRS, Chairholder

BOGL: Bilevel optimization for graph learning

Samuel Vaiter's Chair brings together bilevel optimization methodology and graph machine learning, developing new algorithms for graph classification, link prediction, and community detection that account for the non-Euclidean aspects of data.
https://3ia.univ-cotedazur.eu/research/chairholder-samuel-vaiter

Vincent VANDEWALLE
Université Côte d'Azur, Chairholder

Finding structures in heterogeneous data

Vincent Vandewalle's Chair discovers structures in heterogeneous data to aid understanding and decision-making, designing generative models that reveal multiple clustering viewpoints and adapting them to deep-learning settings through collaborations with doctors and retailers.
https://3ia.univ-cotedazur.eu/research/chair-holder-vincent-vandewalle

Serena VILLATA
CNRS, Chairholder

Artificial argumentation for humans

Serena Villata's Chair designs intelligent machines capable of effectively communicating, collaborating, and augmenting people by understanding human language, emotions, intentions, behaviors, interacting at multiple scales, and explaining their decisions.
https://3ia.univ-cotedazur.eu/research/chair-holder-serena-villata

Axis 2 – AI for health

Nicholas AYACHE
Inria, Chairholder

AI for e-patients and e-medicine

Nicholas Ayache's Chair designs and exploits modern AI methods to personalize parameters of advanced e-patient models and drive e-medicine algorithms on digital twins for automated diagnosis, prognosis, and therapy in an efficient, robust, safe, and explainable manner.
https://3ia.univ-cotedazur.eu/research/chair-holder-nicholas-ayache

Pascal BARBRY
CNRS, Chairholder

Human lung atlas

Pascal Barbry's Chair develops novel data-mining approaches based on machine learning to analyze complex biological samples at single-cell resolution, applying them to study the normal and pathological lung in the context of COVID-19, asthma, cystic fibrosis, and cancer.
https://3ia.univ-cotedazur.eu/research/chair-holder-pascal-barbry

Laure BLANC-FERAUD
CNRS, Chairholder

Imaging for biology

Laure Blanc-Feraud's Chair develops new AI methods and algorithms for novel acquisition setups for super-resolution imaging and extraction of valuable quantitative information from large heterogeneous biological datasets enabled by recent advances in microscope technology.
https://3ia.univ-cotedazur.eu/research/chair-holder-laure-blanc-feraud

François BREMOND
Inria, Chairholder

Video analytics for human behavior understanding

François Bremond's Chair uses video analytics to objectively measure human behavior by recognizing everyday activities, emotions, eating habits, and lifestyle, learning from large quantities of sensor data to improve quality of life for people with behavior disorders.
https://3ia.univ-cotedazur.eu/research/chair-holder-francois-bremond

Frédéric CAZALS
Inria, Chairholder

AIMS: Artificial intelligence for molecular studies

Frédéric Cazals's Chair learns essential features of proteins and their complexes to deliver biologically relevant information for large molecular systems on biologically relevant time scales, providing key inputs for protein design, engineering, and interaction networks.
https://3ia.univ-cotedazur.eu/research/chair-holder-frederic-cazals

Hervé DELINGETTE
Inria, Chairholder

Joint biological and imaging biomarkers in oncology

Hervé Delingette's Chair exploits joint information from imaging and biological data to improve diagnosis and treatment planning in lung cancer through unsupervised deep learning, uncertainty quantification, sparse Bayesian feature selection, and handling of confounding factors.
https://3ia.univ-cotedazur.eu/research/chair-holder-herve-delingette

Olivier HUMBERT
Université Côte d'Azur / CHU Nice, Chairholder

Comprehensive omics profiling for precision medicine in oncology

Olivier Humbert's Chair combines various patient-extracted «omics» data, including multimodal imaging features, for integrative and data-driven computational medicine, focusing on radiogenomics and outcome research in metastatic breast cancer and prediction of response to immunotherapy.
https://3ia.univ-cotedazur.eu/research/chair-holder-olivier-humbert

Maxime SERMESANT
Inria, Chairholder

AI and biophysical models for computational cardiology

Maxime Sermesant's Chair introduces physiological priors in AI through biophysical models to address healthcare challenges of robustness and explainability, reformulating problems through such models, learning spatiotemporal dynamics, and augmenting features with simulations.
https://3ia.univ-cotedazur.eu/research/chair-holder-maxime-sermesant

Marc-Olivier GAUCI
Université Côte d'Azur / CHU Nice, Fellow

Global approach to research, development, and global deployment of digital solutions in surgery, with osteoarticular surgery and traumatology as a use case

Marc-Olivier Gauci's Fellowship develops computational and augmented surgery solutions using AI tools and healthcare data reuse, integrating 3D/4D geometric and biomechanical models for surgical simulation and planning with intraoperative guidance through 3D printing, navigation, robotics, and mixed reality platforms.
https://3ia.univ-cotedazur.eu/research/fellow-marc-olivier-gauci

Gergő GÓGL
Inserm, Fellow

Decoding complex interactomes of macromolecules

Gergő Gógl's Fellowship decodes complex interactomes using AI-based tools that integrate quantitative biochemical data with advanced computational modeling, developing novel methods to identify recurring motifs, infer network topologies, and predict binding affinities to reveal how mutations rewire cellular signaling and uncover cancer driver mechanisms.
https://3ia.univ-cotedazur.eu/research/fellow-gergo-gogl

Juliette RAFFORT-LAREYRE
CHU Nice, Fellow

Applications of AI for patients with vascular diseases

Juliette Raffort-Lareyre's Fellowship develops AI-based decision support systems for evidence-based and precision medicine in vascular diseases through biomarker identification, automated vascular imaging analysis, and predictive model development, while federating national databases and European registries for international research.
https://3ia.univ-cotedazur.eu/research/fellow-juliette-raffort-lareyre

Jean-Pierre MERLET
Inria, Emeritus Chairholder

Non-invasive assessment of disabilities

Jean-Pierre Merlet's Chair uses mathematical and AI methods to design non-intrusive, affordable monitoring and assistance devices adaptable to user and doctor needs, deducing medically pertinent health indicators from data while accounting for measurement errors and detecting rare events signaling emerging pathology.
https://3ia.univ-cotedazur.eu/research/chair-holder-jean-pierre-merlet

Ellen VAN OBBERGHEN-SCHILLING
Inserm, Emeritus Chairholder

AI-powered analysis of the tumor microenvironment

Ellen Van Obberghen-Schilling's Chair integrates tissue imaging modalities and AI-based analysis tools for deeper understanding and control of cancer, targeting the tumor microenvironment and the role of extracellular matrix in carcinoma progression, spread, and therapy response.
https://3ia.univ-cotedazur.eu/research/chair-holder-ellen%E2%80%AFvan-obberghen-schilling

Axis 3 - AI for smart and secure spaces

Pierre ALLIEZ
Inria, Chairholder

3D modeling of large-scale environments for the smart territory

Pierre Alliez's Chair explores generating 3D models from raw measurement data such as point clouds, developing progressive shape reconstruction methods, supervised learning for sharp feature detection, novel clustering methods, and embedding differentiable 3D Voronoi diagrams into generative deep networks.
https://3ia.univ-cotedazur.eu/research/chair-holder-pierre-alliez

Quentin BLETERY
CNRS, Chairholder

AI-based earthquake and tsunami early warning for smart and secure territories

Quentin Bletery's Chair studies the seismic cycle through multiple geophysical datasets to understand earthquake physics and anticipate them, designing AI algorithms for rapid magnitude estimation and forecasting of shakings and tsunamis, as well as searching for precursory signals to assess earthquake predictability.
https://3ia.univ-cotedazur.eu/research/chairholder-quentin-bletery

David GESBERT
EURECOM, Chairholder

AI- and robotics-assisted future communication networks

David Gesbert's Chair uses AI to enable intelligent and agile communication networks by associating novel robotics components with wireless network design, including AI-driven autonomous flying radio nodes that act as relays to maximize quality of service through distributed learning frameworks and cooperative behavior.
https://3ia.univ-cotedazur.eu/research/chair-holder-david-gesbert

Frédéric GIROIRE
CNRS, Chairholder

Integrating AI into Network Solutions: Exploring Privacy, Security, and Energy Efficiency

Frédéric Giroire's Chair explores how AI techniques can revisit classical and current network problems, with special interest in privacy and security of federated learning models and the study of energy efficiency and frugality of information systems.
https://3ia.univ-cotedazur.eu/research/chairholder-frederic-giroire

Ezio MALIS
Inria, Chairholder

Autonomous robotic systems in dynamic and complex environments, including collaboration between robots and interaction with humans

Ezio Malis's Chair focuses on robust perception for reliable interaction of autonomous robotic systems with complex dynamic environments, designing multi-robot systems with heterogeneous sensors for monitoring applications in smart and secure territories, earth observation, and environmental contexts.
https://3ia.univ-cotedazur.eu/research/chairholder-ezio-malis

Benoît MIRAMOND
Université Côte d'Azur, Chairholder

eBRAIN - embedded Bio-inspiRed Artificial Intelligence and Neuromorphic architectures

Benoît Miramond's Chair draws on biological brain structure and function to develop energy-efficient AI methods and algorithms, addressing minimization of quantization error in spiking neural networks, integration of attention in deep learning models, activity sparsity, frugal training with self-organizing multimodal models, and hardware-aware NAS for Edge AI.
https://3ia.univ-cotedazur.eu/research/chair-holder-benoit-miramond-1

Melek ÖNEN
EURECOM, Chairholder

Privacy-preserving machine learning

Melek Önen's Chair explores privacy-preserving variants of machine learning techniques while leveraging novel cryptographic methods to address data privacy risks posed by outsourcing computations in cloud computing environments.
https://3ia.univ-cotedazur.eu/research/chair-holder-melek-onen

Paolo PAPOTTI
EURECOM, Chairholder

Large Language Models for structured data

Paolo Papotti's Chair addresses limitations of Large Language Models in handling structured data by developing novel frameworks and architectures for encoding structured data into LLMs, enabling complex table understanding capabilities in pre-trained models for data-centric tasks.
https://3ia.univ-cotedazur.eu/research/chairholder-paolo-papotti

Cédric RICHARD
Université Côte d'Azur, Chairholder

Intelligent Urban Flow and Environmental Monitoring through Telecommunication Optical Fiber Sensing

Cédric Richard's Chair develops breakthrough solutions for urban traffic and environmental monitoring by repurposing telecommunication optical fibers as dense networks of seismo-acoustic sensors, leveraging Distributed Acoustic Sensing technology and advanced AI algorithms to design continuous, scalable, infrastructure-free monitoring solutions for safer and more sustainable cities.
https://3ia.univ-cotedazur.eu/research/chair-holder-cedric-richard

Marina TELLER
Université Côte d'Azur, Chairholder

DL4T: Deep law for tech

Marina Teller's Chair builds the legal framework for deep technologies, positioning research upstream of technology to support the emergence of technical standards and promote convergence between law and AI.
https://3ia.univ-cotedazur.eu/research/chair-holder-marina-teller

Christophe Eloy
Centrale Méditerranée, Fellow

Fluid Dynamics

Christophe Eloy's Fellowship develops a theoretical framework for understanding how soft particles with complex shapes move in turbulent flows, using AI to optimize shape and flexibility for transport, clustering, and navigation in contexts such as microplastic drift and plankton behavior.
https://3ia.univ-cotedazur.eu/research/fellow-christophe-eloy

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Date de publication : février 2026