Navigating the Research Frontier of AI and Complexity

CENTAI'S Kick-off Event

1–2 March 2023

Intesa Sanpaolo tower

First day

ORGANIZERS
Francesco Bonchi and Yamir Moreno

9.00–9.15
Opening
Paolo M. V. Grandi. Intesa Sanpaolo
Mario Rasetti. CENTAI

9.15–10.05
Complexity economics: What is it, and how can it help the world?
Doyne Farmer

10.05–10.40
How AI is helping us understand the economy
Cesar Hidalgo

10.40–11.00
Coffee Break

11.00–11.50
Rules and Social Norms in Finance and Financial Reporting Complex Systems
Shyam Sunder

11.50–12.25
Behavioral and Experimental Game Theory for Algorithmic Predictions
Rosemarie Nagel

12.25–12.45
Behavioral Insights
Shabnam Mousavi

12.45–14.00
Lunch Break

14.00–14.50
eXplainable AI (XAI): a basic brick towards synergistic human-machine interaction and collaboration
Fosca Giannotti

14.50–15.25
Counterfactually Explanaining (some) AI Models
Fabrizio Silvestri

15.25–15.45
Explainability, Fairness, Transparency: Research Perspectives for Responsible AI
André Panisson

15.45–16.10
Coffee Break

16.10–17.00
Foundations for Fair Social Computing
Krishna Gummadi

17.00–17.35
Social AI: the pitfalls and opportunities of complexity
Dino Pedreschi

17.35–17.55
Social Algorithmics with a grain of SALT
Gianmarco De Francisci Morales

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Second day

ORGANIZERS
Francesco Bonchi and Yamir Moreno

9.10–10.00
The dynamics of higher-order networks: the effect of topology and triadic interactions
Ginestra Bianconi

10.00–10.20
Mathematical foundations of complex systems
Guilherme Ferraz de Arruda

10.20–10.40
Coffee Break

10-40–11.30
Toward an Understanding of the Basis for Natural Intelligence in the Human Brain
Jonathan Cohen

11.30–12.05
Higher-order informational interactions in neuroscience and AI: ideas, implementations, and applications
Daniele Marinazzo

12.05–12.25
Between mechanisms and observables in higher-order systems
Giovanni Petri

12.25–12.45
AI challenges–a European perspective
Katharina Morik

12.45–14.15
Lunch Break

14.15–15.05
Geometric Deep Learning – The Erlangen Programme of ML
Michael Bronstein

15.05–15.40
A journey through multi-task, meta and continual learning
Massimiliano Pontil

15.40–16.00
Machine Learning research at CENTAI
Fabio Vitale

16.00–16.20
Coffee Break

16.20–16.40
HPC4AI: the research on AI beyond the public cloud
Marco Aldinucci

16.40–17.15
Love, Regret, and Bandits
Nicolò Cesa-Bianchi

17.15–17.35
Responsible AI
Ricardo Baeza-Yates

17.35–17.45
Closing
Paolo Benanti

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Speakers

Michael Bronstein

AFFILIATION

University of Oxford.

BIOGRAPHY

Michael Bronstein is the DeepMind professor of AI at the University of Oxford. He was previously a professor at Imperial College London and held visiting appointments at Stanford, MIT, and Harvard, and has also been affiliated with three Institutes for Advanced Study (at TUM as a Rudolf Diesel Fellow (2017-2019), at Harvard as a Radcliffe fellow (2017-2018), and at Princeton as a short-time scholar (2020)). Michael received his PhD from the Technion in 2007. He is the recipient of the Royal Society Wolfson Research Merit Award, Royal Academy of Engineering Silver Medal, Dalle Molle Foundation prize, five ERC grants, and multiple Google Faculty Research Awards and Amazon AWS ML Research Awards. He is a Member of the Academia Europaea, Fellow of IEEE, IAPR, BCS, and ELLIS, ACM Distinguished Speaker, and World Economic Forum Young Scientist. In addition to his academic career, Michael is a serial entrepreneur and founder of multiple startup companies, including Novafora, Invision (acquired by Intel in 2012), Videocites, and Fabula AI (acquired by Twitter in 2019).

Daniele Marinazzo

AFFILIATION

Department of Data Analysis, Ghent University, Belgium.

BIOGRAPHY

Daniele Marinazzo is a full professor in the department of Data Analysis at Ghent University (Belgium). Following his training as a statistical physicist, he investigates dynamics and structure of complex systems. The research that he carries on with his collaborators ranges from theoretical and computational physics to methodological and computational aspects of neuroscience research and experimental neurophysiology. He is also involved in active collaborations with theoretical and experimental groups in Belgium and abroad, including the Human Brain Project. He is coordinator of the Belgian node of the International Neuroinformatics Coordinating Facility (INCF) and on their behalf every year is a mentor for Google Summer of Code, promoting open science projects through the contribution of junior researchers, often from developing countries. He is spokesperson for Ghent University in the constitution of the Belgian part of EBRAINS, the platform originating from the Human Brain Project and now part of the ESFRI European Agenda.
He is Deputy Editor at PLOS Computational Biology, Co-Editor-in-Chief at Neurons, Behavior, Data analysis, and Theory, and academic editor at Network Neuroscience, NeuroImage, Brain Topography.

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Jonathan D. Cohen

AFFILIATION

Robert Bendheim and Lynn Bendheim Thoman Professor in Neuroscience, Professor of Psychology, Princeton Neuroscience Institute, Princeton University.

BIOGRAPHY

Professor Jonathan Cohen's research focuses on the neural mechanisms underlying cognitive control, and their relationship to the human capacity for general intelligence. His work integrates behavioral and neuroimaging studies of human cognitive and brain function with theoretical modeling at the interface of computational cognitive neuroscience and machine learning. He received his B.A. in Biology and Philosophy from Yale University, an M.D. from University of Pennsylvania, residency training in psychiatry at Stanford University School of Medicine, and a Ph.D. in Cognitive Psychology from Carnegie Mellon University (CMU). He received his first faculty appointment at CMU, followed by Princeton University, where he founded the Center for the Study of Brain, Mind and Behavior, and then served as one of the two founding co-directors of the Princeton Neuroscience Institute. He has been conferred the highest disciplinary awards for his research, including the American Psychological Association's Distinguished Scientific Contribution Award, the William James Fellow Award from the Association for Psychological Science, and is an elected member of the American Academy of Arts and Sciences.

Nicolò Cesa-Bianchi

AFFILIATION

Università degli Studi di Milano and Politecnico di Milano.

BIOGRAPHY

Nicolò Cesa-Bianchi is professor of Computer Science at Università degli Studi di Milano and holds a joint appointment at Politecnico di Milano. His main research interests are the design and analysis of machine learning algorithms for online learning, sequential decision-making, and graph analytics. He is co-author of the monographs "Prediction, Learning, and Games" and "Regret Analysis of Stochastic and Nonstochastic Multi-armed Bandit Problems". He served as President of the Association for Computational Learning and co-chaired the program committees of some of the most important machine learning conferences, including NeurIPS, COLT, and ALT. He is the recipient of a Google Research Award, a Xerox Foundation Award, a Criteo Faculty Award, a Google Focused Award, and an IBM Research Award. He is ELLIS fellow, member of the ELLIS board, and co-director of the ELLIS program on Interactive Learning and Interventional Representations. He serves on the steering committee of the Italian Laboratory on AI and Intelligent Systems.

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J. Doyne Farmer

BIOGRAPHY

J. Doyne Farmer is Director of the Complexity Economics programme at the Institute for New Economic Thinking at the Oxford Martin School, Baillie Gifford Professor in the Mathematical Institute at the University of Oxford and an External Professor at the Santa Fe Institute.
His current research is in economics, including agent-based modeling, financial instability and technological progress. He was a founder of Prediction Company, a quantitative automated trading firm that was sold to the United Bank of Switzerland in 2006. His past research includes complex systems, dynamical systems theory, time series analysis and theoretical biology. He was an Oppenheimer Fellow and the founder of the Complex Systems Group at Los Alamos National Laboratory. While a graduate student he built the first wearable digital computer, which was successfully used to predict the game of roulette.

Ricardo Baeza-Yates

AFFILIATION

Director of Research, Institute for Experiential AI, Northeastern University, USA.

BIOGRAPHY

Ricardo Baeza-Yates is Director of Research at the Institute for Experiential AI of Northeastern University. He is also a part-time Professor at Universitat Pompeu Fabra in Barcelona and Universidad de Chile in Santiago. Before he was the CTO of NTENT, a semantic search technology company based in California and prior to these roles, he was VP of Research at Yahoo Labs, based in Barcelona, Spain, and later in Sunnyvale, California, from 2006 to 2016. He is co-author of the best-seller Modern Information Retrieval textbook published by Addison-Wesley in 1999 and 2011 (2nd ed), which won the ASIST 2012 Book of the Year award. From 2002 to 2004 he was elected to the Board of Governors of the IEEE Computer Society and between 2012 and 2016 was elected to the ACM Council. Since 2010 he has been a founding member of the Chilean Academy of Engineering. In 2009 he was named ACM Fellow and in 2011 IEEE Fellow, among other awards and distinctions. He obtained a Ph.D. in CS from the University of Waterloo, Canada, and his areas of expertise are web search and data mining, information retrieval, bias and ethics on AI, data science and algorithms in general.

CENTAI

César Hidalgo

AFFILIATION

Director, Center for Collective Learning, ANITI, TSE-R, IAST, IRIT, Universities of Toulouse, Manchester, and HarvardFounder & CIO, Datawheel.

BIOGRAPHY

Cesar A. Hidalgo directs the Center for Collective Learning at the Artificial and Natural Intelligence Institute (ANITI, University of Toulouse. Prior to joining ANITI, he directed the Collective Learning group at MIT. Hidalgo holds a PhD in Physics from the University of Notre Dame, and is the author of dozens of peer reviewed papers and three books. His latest book is How Humans Judge Machines (MIT Press, 2021).
Cesar Hidalgo directs the Center for Collective Learning at ANITI, University of Toulouse. He directed the Collective Learning group at MIT, holds a PhD in Physics from the University of Notre Dame, and is the author of dozens of papers & three books.

Katharina Morik

AFFILIATION

Co-founder of the Lamarr-Institute for Machine Learning and Artificial Intelligence. Speaker of the Collaborative Research Center 876
Emerita of the TU Dortmund University

BIOGRAPHY

Katharina Morik received her doctorate from the University of Hamburg in 1981 and her habilitation from the TU Berlin in 1988. In 1991, she established the chair of Artificial Intelligence at the TU Dortmund. She retired in 2023. She is a pioneer of bringing machine learning and computing architectures together so that machine learning models may be executed or even trained on resource restricted devices. In 2011, she acquired the Collaborative Research Center CRC 876 “Providing Information by Resource-Constrained Data Analysis” consisting of 12 projects and a graduate school. After the longest possible funding period of 12 years, the CRC ended with the publication of 3 books on Resource-Constrained Machine Learning (De Gruyter).
She has participated in numerous European research projects and has been the coordinator of one. She was a founding member and Program Chair of the conference series IEEE International Conference on Data Mining (ICDM) and is a member of the steering committee of ECML PKDD. She is a co-founder of the Lamarr Institute for Machine Learning and Artificial Intelligence. Prof. Morik is a member of the Academy of Technical Sciences and of the North Rhine-Westphalian Academy of Sciences and Arts. She has been awarded Fellow of the German Society of Computer Science GI e.V. in 2019.

CENTAI

Massimiliano Pontil

AFFILIATION

Italian Institute of Technology and University College London.

BIOGRAPHY

Massimiliano Pontil is Senior Researcher at the Italian Institute of Technology (IIT), where he leads the Computational Statistics and Machine Learning group, co-director of the ELLIS Unit Genoa, and part-time Professor at University College London. He has made significant contributions to machine learning, particularly in the areas of kernel methods, multitask and transfer learning, sparsity regularization and statistical learning theory.
Recent interests include meta-learning, algorithm fairness and learning dynamical systems. He was awarded the Best Paper Runner Up Award from ICML 2013, an EPSRC Advanced Research Fellowship in 2006-2011, and the Edoardo R. Caianiello Award for the Best Italian PhD Thesis on Connectionism in 2002. He is regularly on the programme committee of the main machine learning conferences (COLT, ICML and NeurIPS), has been on the editorial board of the Machine Learning Journal, Statistics and Computing, JMLR, and was on the Scientific Advisory Board of Max Planck Institute for Intelligent Systems during 2013-2020. He has held visiting positions at a number of universities and research institutes, including the Isaac Newton Institute for Mathematical Sciences in Cambridge, the Catholic University of Leuven, the City University of Hong Kong, the University Carlos III de Madrid, ENSAE Institute Polytechnique Paris, and Ecole Polytechnique.

Fabrizio Silvestri

AFFILIATION

Sapienza University of Rome, Italy.

BIOGRAPHY

Fabrizio Silvestri is a full professor at DIAG of the Sapienza University of Rome. His research interests lie in artificial intelligence, and in particular, machine learning applied to web search problems and natural language processing. He authored more than 150 papers in international journals and conference proceedings. It holds nine industrial patents. At Facebook AI, Fabrizio Silvestri has directed research groups to develop artificial intelligence techniques to combat malicious actors who use the Facebook platform for malicious purposes (hate speech, misinformation, terrorism, and so on). Fabrizio Silvestri has a Ph.D. in computer science from the University of Pisa.

Shyam Sunder

AFFILIATION

James L. Frank Professor Emeritus, Yale School of Management and Department of Economics
Research Staff, Cowles Foundation
Fellow, Berkeley College at Yale
Member, Elizabethan Club at Yale
Member, Henry Koerner Center at Yale
Guest Professor and Member of the International Advisory Council, Indian Institute of Technology, Gandhinagar, India
Member, Academic Advisory Council, Indian Institute of Management, Bodh Gaya, India
Member, International Advisory Board, Jindal Global Business School, O. P. Jindal Global University, Sonipat, India.
Founding Editor, Journal of Accounting, Economics and Law: A Convivium

BIOGRAPHY

Shyam Sunder is the James L. Frank Professor Emeritus of Accounting, Economics and Finance at the Yale School of Management and Department of Economics. Educated as an engineer at IIT-Kh and Indian Railways' School at Jamalpur, he received his M.S. and PhD degrees from Carnegie Mellon University. He served as a professor at the University of Chicago, University of Minnesota, Carnegie Mellon University and Yale University, and as a visiting professor at California Institute of Technology, Indian Institute of Management (Ahmedabad), Universität Pompeu Fabra (Barcelona), Kobe and Keio Universities (Japan), London School of Economics, Northwestern University, and many others.
His research includes role of information in stock markets, statistical theory of valuation, social norms, standards, and regulation of financial reporting, experimental finance and experimental macro-economics and introduction of the concept of zero-intelligence agents to explore properties of economic systems. His writings include ten books and more than 230 articles in the leading scholarly journals of accounting, economics, and finance, as well as in popular media. His books have been translated into Chinese, Japanese, Korean, Portuguese and Spanish. He has been an invited speaker at more than 600 universities on all continents and has been awarded many honors. He served as elected president of the American Accounting Association and founded Accounting, Economics and Law: A Convivium. His research is available at: https://faculty.som.yale.edu/shyamsunder/research/.

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Rosemarie Nagel

BIOGRAPHY

Rosemarie Nagel is an ICREA Research Professor working in experimental, behavioral, and neuroeconomics at the Universitat Pompeu Fabra (UPF), and the Barcelona School of Economics (BSE). She is the Director of BESlab-UPF and Fellow of the Econometric Society. Nagel gained her doctoral degree in Economics in 1994 from the University of Bonn under Reinhard Selten. In 1994-95 she was a postdoctoral fellow with Alvin Roth at the University of Pittsburgh. Her research builds bridges between theory and human behavior with descriptive models and designs using laboratory, field experiments, and computational and neuroscientific tools. Nagel originated studying bounded rationality via a step-level reasoning model (also called level-k), first developed in Keynesian Beauty Contest experiments. She co-organizes yearly workshops on Theoretical and Experimental Macroeconomics and Computational and Experimental Economics. Her approaches have been applied in micro-, macro-, financial-, and neuro-economics, management, business research, psychology, philosophy, and computer science. Her publications are in leading journals such as American Economic Review, Econometrica, Review of Economic Studies, Proceedings of the National Academy of Sciences (PNAS), Nature: Human Behavior, and Strategic Management Journal. Popular coverage includes Financial Times, Expansión, NY Times, and Spektrum der Wissenschaft. Beauty Contest variations are a main part of an episode of “Alice in Borderland.”

Fosca Giannotti

BIOGRAPHY

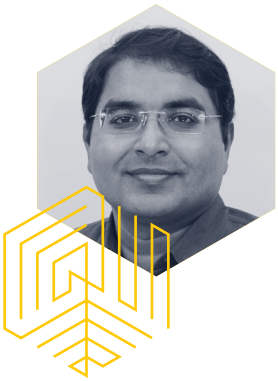
Fosca Giannotti is Full Professor at Scuola Normale Superiore, Pisa, Italy. She is a pioneering scientist in mobility data mining, social network analysis and privacy-preserving data mining. Fosca leads the Pisa KDD Lab - Knowledge Discovery and Data Mining Laboratory, a joint research initiative of the University of Pisa and ISTI-CNR, founded in 1994 as one of the earliest research lab on data mining. Her research focus is on social mining from big data: smart cities, human dynamics, social and economic networks, ethics and trust, diffusion of innovations. She is author of more than 300 papers. She has coordinated tens of European projects and industrial collaborations. Fosca is the former coordinator of SoBigData, the European research infrastructure on Big Data Analytics and Social Mining, an ecosystem of ten cutting edge European research centres providing an open platform for interdisciplinary data science and data-driven innovation. Recently she became the recipient of a prestigious ERC Advanced Grant entitled XAI – Science and technology for the explanation of AI decision making.

CENTAI

Dino Pedreschi

BIOGRAPHY

Dino Pedreschi is a Professor of Computer Science at the University of Pisa, and a pioneering scientist in mobility data mining, social network mining and privacy-preserving data mining. He co-leads with Fosca Giannotti the Pisa KDD Lab - Knowledge Discovery and Data Mining Laboratory, a joint research initiative of the University of Pisa and the Information Science and Technology Institute of the Italian National Research Council, one of the earliest research lab centered on data mining. His research focus is on big data analytics and mining and their impact on society. He is a founder of the Business Informatics MSc program at Univ. Pisa, a course targeted at the education of interdisciplinary data scientists. Dino has been a visiting scientist at Barabasi Lab (Center for Complex Network Research) of Northeastern University, Boston (2009-2010), and earlier at the University of Texas at Austin (1989-90), at CWI Amsterdam (1993) and at UCLA (1995). In 2009, Dino received a Google Research Award for his research on privacy-preserving data mining.



Krishna Gummadi

BIOGRAPHY

Krishna Gummadi is a scientific director and head of the Networked Systems research group at the Max Planck Institute for Software Systems (MPI-SWS) in Germany. He also holds a professorship at the University of Saarland. He received his Ph.D. (2005) and B.Tech. (2000) degrees in Computer Science and Engineering from the University of Washington and the Indian Institute of Technology, Madras, respectively. Krishna's research interests are in the measurement, analysis, design, and evaluation of complex Internet-scale systems. His current projects focus on understanding and building social computing systems. Specifically, they tackle the challenges associated with (i) assessing the credibility of information shared by anonymous online crowds, (ii) understanding and controlling privacy risks for users sharing data on online forums, (iii) understanding, predicting and influencing human behaviors on social media sites (e.g., viral information diffusion), and (iv) enhancing fairness and transparency of machine (data-driven) decision making in social computing systems. Krishna's work on fair machine learning, online social networks and media, Internet access networks, and peer-to-peer systems has been widely cited and his papers have received numerous awards, including Test of Time Awards at ACM SIGCOMM and AAAI ICWSM, Casper Bowden Privacy Enhancing Technologies (PET) and CNIL-INRIA Privacy Runners-Up Awards, IW3C2 WWW Best Paper Honorable Mention, and Best Papers at NIPS ML & Law Symposium, ACM COSN, ACM/Usenix SOUPS, AAAI ICWSM, Usenix OSDI, ACM SIGCOMM IMC, ACM SIGCOMM CCR, and SPIE MMCN. He has also co-chaired AAAI's ICWSM 2016, IW3C2 WWW 2015, ACM COSN 2014, and ACM IMC 2013 conferences. He received an ERC Advanced Grant in 2017 to investigate "Foundations for Fair Social Computing".

CENTAI

Ginestra Bianconi

BIOGRAPHY

Ginestra Bianconi is Professor of Applied Mathematics in the School of Mathematical Sciences of Queen Mary University of London and she is Alan Turing Fellow at the Alan Turing Institute. Currently she is Chief Editor of JPhys Complexity, Editor of PloSOne, and Scientific Reports, and she is Associate Editor of Chaos, Solitons and Fractals. Award: Network Science Fellowships by the NetSci Society.
Her research activity on Statistical Mechanics and Network Science includes Network Theory and its interdisciplinary applications. She has formulated the Bianconi-Barabasi model that displays the Bose-Einstein condensation in complex networks. She has formulated the statistical mechanics of network ensembles and she has proven their non-equivalence. She has made important contribution on the study of critical phenomena on networks. In the last years, she has been focusing on multilayer networks, simplicial complexes, network geometry and topology, percolation, synchronization and network control. She is the author of the books Multilayer Networks: Structure and Function (Oxford University Press, 2018), Higher-order Networks: An introduction to simplicial complexes (Cambridge University Press, 2021) and editor of Networks of Networks in Biology (Cambridge University Press, 2021).

Marco Aldinucci

BIOGRAPHY

Marco Aldinucci is a full professor and P.I. of the Parallel Computing research group at the University of Torino. He received his PhD from the University of Pisa (2003), and he has been a researcher at the Italian National Research Council (CNR). He authored over 120+ scientific articles (see Google scholar). He is the recipient of the HPC Advisory Council University Award 2011, the NVidia Research award 2013, the IBM Faculty Award 2015, the Autodesk award 2021. He is a research fellow at Links foundation. He has participated in over 15 EU-funded research projects on parallel and cloud and high-performance computing attracting over 10M€ of research funds to the University of Torino. He has been the Italian delegate at the EuroHPC Joint Undertaking Governing Board (2018-2021). He has led the design of the HPC4AI laboratory. He is the founding director of the CINI HPC Key Technologies and Tools national laboratory, gathering researchers from 38 Italian Universities. He is co-leading FureHPC, the technological spoke of the Italian National Centre on HPC (ICSC). He co-designed the FastFlow programming framework and several other libraries for parallel computing.

CENTAI

Gianmarco De Francisci Morales

AFFILIATION

CENTAI Institute.

BIOGRAPHY

Gianmarco De Francisci Morales is a Principal Researcher at CENTAI, a private research institute that focuses on Artificial Intelligence and Complex Systems sciences, where he leads the Social Algorithmics Team (SALT). Previously, he worked as a Senior Researcher at ISI Foundation in Turin, as a Scientist at Qatar Computing Research Institute in Doha, as a Visiting Scientist at Aalto University in Helsinki, as a Research Scientist at Yahoo Labs in Barcelona, and as a Research Associate at ISTI-CNR in Pisa. He received his Ph.D. in Computer Science and Engineering from the IMT Institute for Advanced Studies of Lucca in 2012. His research focuses on computational social science and scalable data mining, with an emphasis on polarization on social media and Web mining. He is a member of the open source community of the Apache Software Foundation, has worked on the Hadoop ecosystem, and has been a committer for the Apache Pig project. He was one of the lead developers of Apache SAMOA, an open-source platform for mining big data streams. He commonly serves on the PC of several major conferences in the area of data mining, including WSDM, WWW, KDD, and ICWSM. He co-organized the workshop series on Social News on the Web (SNOW), co-located with the WWW conference. He has published more than 90 scientific articles and won best paper awards at WSDM, CHI, WebSci, and SocInfo.

Paolo Benanti

AFFILIATION

Pontifica Università Gregoriana, CENTAI Institute.

BIOGRAPHY

Paolo Benanti, born in Rome (Italy), on 20 July 1973, has been a Franciscan of the Third Order Regular since 1999. His studies have included engineering (La Sapienza), as well as philosophy and theology (Lateran, Gregorian), with special interest in ethics and moral theology; his doctorate was in the area of bioethics. Professor of Moral Theology, Bioethics and Neuroethics at the Pontifical Gregorian University. He served as member of the Task Force on Artificial Intelligence of the Agenzia per l'Italia Digitale and the Prime Minister's Office and he is member of Hight Expert Group on Artificial Intelligence of Ministero dello Sviluppo Economico of Italian Government. The author of many academic and more popular articles, he has recently published the books Le macchine sapienti, Marietti, Bologna 2018, Oracoli. Tra algoretica e algocrazia, Luca Sossela Editore, Roma 2018, and Homo Faber. The Techno-Human condition, EDB, 2018, Human in the loop, Mondadori 2022.

Fabio Vitale

AFFILIATION

CENTAI Institute, University of Lille.

BIOGRAPHY

Fabio Vitale received a BSc and an MSc degree in Computer Science from the University of Insubria, Italy, and a Ph.D. in Computer Science from Milan University under the supervision of Prof. Nicolò Cesa-Bianchi and Dr. Claudio Gentile. Since 2013, he has held a tenured position as an Associate Professor (Maître de conférences - currently on leave) at the University of Lille in France. His research mainly focuses on developing new scalable Machine Learning algorithms for networked data and assessing their performance in theory and practice. His interests include designing and analyzing new clustering, online, and active learning algorithms. The results of his work have been published in several papers in top-tier Machine Learning venues. He has participated in international projects involving leading academic institutions, such as University College London, and industrial partners (including collaborations with Google Research New York).

Giovanni Petri

AFFILIATION

CENTAI Institute, Networks Unit Lucca.

BIOGRAPHY

Giovanni Petri, PhD is a Principal Researcher at CENTAI since May 2022, and a Guest Scholar in the Networks Units of IMT Lucca since January 2021. Prior to CENTAI, he was Senior Research Scientist in the “Mathematics and Complex Systems” lab of ISI Foundation since 2016. He is a theoretical physicist that shortly after graduating decided that complex systems – in the broadest sense – were more intriguing than cosmology. He fell in love with the idea of high-order interactions, of emergent properties and ended up earning a PhD on complex networks at Imperial College London in 2012.
Theoretical approaches never stopped fascinating him, and he continues this research today working at the interface between complex systems and algebraic topology. His research spans the analysis of neuroimaging data and AI systems with topological techniques, the formalization of cognitive control models with tools of statistical mechanics and network theory, and the study of the predictability of socio-technical systems.

CENTAI

Shabnam Mousavi

AFFILIATION

CENTAI Institute, Max Planck Institute.

BIOGRAPHY

Shabnam Mousavi is a Senior Researcher and Team Leader at CENTAI. She holds a PhD in Statistics and a PhD in Economics from Virginia Polytechnic Institute and State University. Research visits to the Yale School of Management as part of the A Three-Tier Framework for Modeling Action project (in collaboration with Shyam Sunder) led to the co-founding of a new scientific community of social scientists and computer scientists dealing with the exact opposite of rational behavior: zero-intelligent agents in various market structures.
Shabnam Mousavi is a member of the steering committee of the Bank of Italy's Behavioral Financial Regulation and Policy (BEFAIRLY) initiative, in the context of which conversations began that introduced topological data analysis, the latest strand of her research (Mousavi & Rasetti 2022). The fundamental focuses of her work include analyzing the foundations and concepts of the behavioral and computer sciences, then using physical laws as a structuring framework to build an integrative framework for future explorations.

André Panisson

AFFILIATION

CENTAI Institute.

BIOGRAPHY

André Panisson is a Principal Researcher at the CENTAI Institute in Turin, Italy. He received his PhD in Computer Science from the University of Turin (Italy) in 2012. As a researcher, he has contributed to fundamental and industrial research projects in the areas of finance and healthcare for risk and behavioral analysis, collaborating with companies based in Italy and the US. His current research focuses on the development of tools to facilitate the explainability, fairness, and transparency of Artificial Intelligence systems. His past and current research also focuses on the intersection of Machine Learning, Network Science, and Data Science, primarily on developing methods for the analysis, modeling, and simulation of complex phenomena in systems that involve technological and social factors.

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Guilherme Ferraz de Arruda

AFFILIATION
CENTAI Institute.

BIOGRAPHY
Guilherme Ferraz de Arruda got his degree in electrical engineering in 2011, focusing on digital systems and control theory at EESC-University of São Paulo, Brazil. He got his master's (2013) and Ph.D. (2017) at ICMC-University of São Paulo, Brazil, both in complex networks. His Ph.D. thesis is entitled "Modeling spreading processes in complex networks," where he studied spreading processes in single and multilayer networks. After his Ph.D., he was a post-doc at ISI Foundation for five years. Currently, he is a researcher at the CENTAI Institute, where he is studying the structure and dynamics of higher-order systems.

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