

6th International Conference on machine Learning, Optimization & Data science – LOD 2020
Certosa di Pontignano – Siena, Tuscany, Italy
19 – 23 July 2020

Program Ver.10 – July 18 – 14 pages – Final Version

Time Zone: Central European Summer Time (CEST), Offset: UTC+2, Example City: Rome – (GMT+2:00) Rome

	Sun, 19 July	Mon, 20 July	Tue, 21 July	Wed, 22 July	Thu, 23 July	
07:30 – 09:00	Breakfast	Breakfast	Breakfast	Breakfast	Breakfast	
09:00 – 09:45	Opening & Jan Peters	Raniero Romagnoli	Marta Kwiatkowska	8:30 Social Tour Guided Visit of Siena	Free Time	
09:45 – 10:30	Session 1 Session 2	Session 7 Session 8	Session 19 Session 20			
10:30 – 11:00	Coffee break	Coffee break	Coffee break			
11:00 – 11:45	Session 3 Session 4	Session 9 Session 10	Session 21 Session 22			
11:45 – 12:30	Session 5 Session 6	Session 11 Session 12	Session 23 Session 24			
12:30 – 13:15	V. Sciacca Tutorial	Session 13 Session 14	Session 25 Session 26			
13:15 – 14:40	Lunch	Lunch	Lunch	Lunch	Lunch	
14:40 – 15:25	Starting time: 15 :00 Workshop on “Biologically Plausible Learning” * Yoshua Bengio * Tommy Poggio * Pierre Baldi	Isabel Valera	Maria Schuld	Bettina Berendt	Workshop on “Integrative Machine Learning” * Welcome Michelangelo Diligenti * Luc De Raedt * Andrea Passerini * Michelangelo Diligenti * Francesco Giannini	
15:25 – 16:10		Short Papers Session 15	Poster Presentations Session 16	Angelo Lucia		Session 35 Session 36
16:10 – 16:40	Coffee break <small>16:30-16:45</small>	Coffee break	Coffee break	Coffee break	Coffee break	
16:40 – 17:25	Workshop on “Biologically Plausible Learning” * Naftali Tishby * Cristina Savin * Marco Gori	Oral Presentations Session 17	Oral Presentations Session 18	Session 27 Session 28	Workshop on “Integrative Machine Learning” * Artur d'Avila Garcez * Michele Lombardi * Round Table/Marco Gori	
17:25 – 18:10		17:25 Guided Visit of the Certosa di Pontignano, & 18:25 Wine Tasting	Session 29	Session 30		Session 37 Session 38
18:10 – 18:25			Pause	Pause		
18:25 – 19:10			Session 31	Session 32		Pierre Baldi
19:10 – 19:55			Session 33	Session 34		Session 39 & Closing
19:55 – 21:30	Dinner	Dinner	Dinner	Dinner	Social Dinner	

Arrival: July 18 (Dinner at 20:30)

Departure: July 24 (Breakfast 07:30-09:00)

REGISTRATION

The registration desk will be located close to the Main Conference Room.

Upon registration at the desk, you will receive your badge, vouchers, and conference materials. To facilitate the process please bring with you the *registration confirmation*. You are kindly requested to wear your name badge during all events of the conference.

ZOOM: for LOD 2020 participants using remote connection

As you know, LOD 2020 is a hybrid event: in person for those who can come to Tuscany, and online for those who want to attend virtually. LOD 2020 (for participants using remote connection) will use Zoom (<https://zoom.us>). The online lectures and tutorials (e.g., live presentations or recorded ones) will be made possible. LOD 2020 virtual participants will receive the link and the password.

PRESENTATIONS GUIDE

A quick reference on all presentation-related elements of LOD 2020. We will share an allocation schedule asap.

- **Long Papers & Oral Presentations**
 - Long Papers and Oral Presentations are **13 mins long, with an additional 2 mins for questions.**
- **Short Papers & Poster Presentations**
 - Short papers and Poster Presentations are 4 mins long, **with an additional 1 min for questions.**

WiFi Name: Silver (it is an open Wi-Fi); if you have login and password you can use Eduroam.

GENERAL CHAIRS

Vincenzo Sciacca, Almawave, Italy

Renato Umeton, Department of Informatics, Dana-Farber Cancer Institute, Boston, MA, USA & MIT, Cambridge, MA, USA

PROGRAM CHAIRS

Giovanni Giuffrida, University of Catania, Italy, and Neodata Group

Varun Ojha, University of Reading, UK

Panos Pardalos, University of Florida, USA

KEYNOTE SPEAKERS:

Pierre Baldi, University of California Irvine, USA

Yoshua Bengio, Université de Montréal, Canada - A.M. Turing Award 2018

Bettina Berendt, Technische Universität Berlin, Germany

Artur d'Avila Garcez, City University London, UK

Luc De Raedt, KU Leuven, Belgium

Marta Kwiatkowska, University of Oxford, UK

Angelo Lucia University of Rhode Island, USA

Andrea Passerini University of Trento, Italy

Jan Peters, Technische Universitaet Darmstadt & Max-Planck Institute for Intelligent Systems, Germany

Tomaso Poggio, MIT, USA

Raniero Romagnoli, Almawave, Italy

Cristina Savin Center for Neural Science, New York University, USA

Maria Schuld, Xanadu & University of KwaZulu-Natal, South Africa

Naftali Tishby, Hebrew University, Israel

Ruth Urner, York University, Toronto, Canada

Isabel Valera, Saarland University, Saarbrücken & Max Planck Institute for Intelligent Systems, Tübingen, Germany

TUTORIAL SPEAKER:

Vincenzo Sciacca, Almawave, Italy

STEERING COMMITTEE

Giuseppe Nicosia, University of Cambridge, UK & University of Catania, Italy

Panos Pardalos, University of Florida, USA

Sunday, 19 July

- 09:00 – 09:45 *Plenary Session: Keynote Talk*
Room: Lecture Hall 1
Opening
“Machine Learning of Robot Skills”
Jan Peters, Technische Universitaet Darmstadt & Max-Planck Institute for Intelligent Systems, Germany
Chair: Giuseppe Nicosia
- 09:45 – 10:30 **Session 1 - Special Session on Big data in Economics & Finance**
Virtual Room: Lecture Hall 1 (Real Room: Sala Bracci)
Chairs: Vincenzo Sciacca & Sergio Consoli
- 09:45 – 10:00 Salvatore Mario Carta, Sergio Consoli, Luca Piras, Alessandro Sebastian Podda and Diego Reforgiato Recupero, *Dynamic Industry-specific Lexicon Generation for Stock Market Forecast* (pre-recorded video)
- 10:00 – 10:15 Vittorio Bellini, Massimo Guidolin and Manuela Pedio, *Can Big Data Help to Predict Conditional Stock Market Volatility? An Application to the Brexit Vote* (pre-recorded video)
- 10:15 – 10:30 Giorgio Gnecco, Stefano Amato, Alessia Patuelli and Nicola Lattanzi, *Machine learning application to family business status classification* (pre-recorded video)
- 09:45 – 10:30 **Session 2**
Virtual Room: Lecture Hall 2
Chair: Varun Ojha
- 09:45 – 10:00 Alberto Cenzato, Alberto Testolin and Marco Zorzi, *Long-term prediction of physical interactions: a challenge for deep generative models* (onsite talk)
- 10:00 – 10:15 Laura Selicato, Nicoletta Del Buono and Flavia Esposito, *Methods for Hyperparameters Optimization in Learning Approaches: an overview* (pre-recorded video)
- 10:15 – 10:30 Antonella Falini, Graziano Castellano, Cristiano Tamborrino, Francesca Mazzia, Rosa Maria Mininni, Annalisa Appice and Donato Malerba, *Novel Reconstruction Errors for Saliency Detection in Hyperspectral Images* (screen sharing)
- 10:30 – 11:00 **Coffee break**
- 11:00 – 11:45 **Session 3 - Special Session on Big data in Economics & Finance**
Room: Lecture Hall 1
Chair: Vincenzo Sciacca & Sergio Consoli
- 11:00 – 11:15 Sergio Consoli, Luca Tiozzo Pezzoli and Elisa Tosetti, *Using the GDELTA dataset to analyse the Italian bond market* (pre-recorded video)
- 11:15 – 11:30 Quaini, Korsaye and Trojani, *Smart Stochastic Discount Factors view*
- 11:30 – 11:45 Iulia Igescu, *Monitoring Location Shifts with One-Class Support Vector Machines* (onsite talk)
- 11:00 – 11:45 **Session 4**
Room: Lecture Hall 2
Chair: Varun Ojha
- 11:00 – 11:15 Cláudia Constantino, Alexandra M. Carvalho and Susana Vinga, *Sparse consensus classification for discovering novel biomarkers in rheumatoid arthritis* (onsite talk)
- 11:15 – 11:30 Sasho Nedelkoski, Mihail Bogojeski and Odej Kao, *Learning more expressive joint distributions in multimodal variational methods* (screen sharing)
- 11:30 – 11:45 Dhekra Bousnina, Wellington de Oliveira and Peter Pflaum, *A stochastic optimization model for frequency control and energy management in a microgrid* (pre-recorded video)
- 11:45 – 12:30 **Session 5 - Special Session on Big data in Economics & Finance**
Room: Lecture Hall 1
Chair: Vincenzo Sciacca & Luca Tiozzo Pezzoli
- 11:45 – 12:00 Salvatore Carta, Diego Reforgiato Recupero, Maria Stanciu and Roberto Saia, *A General Framework for Risk Controlled Trading Based on Machine Learning and Statistical Arbitrage* (pre-recorded video or screen sharing)
- 12:00 – 12:15 Thomas Cook and Taeyoung Doh, *Assessing Macroeconomic Tail Risks in a Data-Rich Environment* (screen sharing)
- 12:15 – 12:20 Luca Barbaglia, Sergio Consoli and Sebastiano Manzan, *Fine-grained, aspect-based semantic sentiment analysis on news for economic forecasting and nowcasting*
- 11:45 – 12:30 **Session 6**
Room: Lecture Hall 2
Chair: Varun Ojha
- 11:45 – 12:00 David Llácer, Beatriz Otero, Rubén Tous, Marisol Monterrubio-Velasco, José Carlos Carrasco-Jiménez and Otilio Rojas, *Optimal Random Forests Parameterization for Earthquake Catalog Generation* (pre-recorded video)

Sunday, 19 July

12:00 – 12:15 Federico Bianchi, Pietro Tarocco, [Alberto Castellini](#) and Alessandro Farinelli, *Convolutional Neural Network and Stochastic Variational Gaussian Process for Heating Load Forecasting* ([screen sharing](#))

12:15 – 12:30 [Mauro Maria Baldi](#), Elisabetta Fersini and Enza Messina, *Relational Bayesian Model Averaging for Sentiment Analysis in Social Networks* ([screen sharing](#))

12:30 – 13:15 *Plenary Session: Tutorial Talk*
Room: Lecture Hall 1
“Natural Language Processing and Deep Learning”
Vincenzo Sciacca, Almwave, Italy
Chair: Giuseppe Nicosia

13:15 – 15:00 **Lunch**

15:00 – 19:55 *Plenary Session*
Room: LOD 2020 Lecture Hall 1
[Workshop on “Biologically Plausible Learning”](#)
[Satellite Workshop at the 6th International Conference on Machine Learning, Optimization & Data Science July 19, 2020](#)

[Yoshua Bengio](#), [Tommy Poggio](#), [Pierre Baldi](#), [Naftali Tishby](#), [Cristina Savin](#), [Marco Gori](#)

Alessandro Sperduti Chair

14:55- 15:00 **Alessandro Sperduti**, “Introduction”

15:00 – 15:30 **Tommaso Poggio**, “Towards new foundations for machine learning”

15:30 – 16:00 **Yoshua Bengio**, “Equilibrium Propagation”

16:00 – 16:30 **Naftali Tishby**, “Local Information Bottleneck optimization as a Biologically plausible feedforward learning mechanism”

Coffee Break

16:45-17:15 **Pierre Baldi**, “The Theory of Local Learning”

17:15 – 17:45 **Marco Gori**, “Backprop Diffusion is Locally Plausible”

17:45 – 18:15 **Cristina Savin**, “TBA”

18:30 – 20:00 Panel

Ten questions for speakers who are supposed to select the one they like most

1. To what extent can neuroscience provide insights to gain the abstraction needed to conceive effective learning algorithms? What is your preferred example of success in machine learning? How do you rank the possibility of breakthroughs based on this approach for years to come
2. What are most relevant “biological plausibility requirements” for learning machines? Which one is most predominant?
3. Machine learning relies on the indisputable classic notion of algorithm. On the other hand, the regularities that emerge in human perception might be stimulated by information-based laws in the continuous setting of computation. Is there a pre-algorithmic level for an in-depth understanding of learning perceptual tasks in vision, speech and language understanding?
4. The overall field of artificial intelligence is mostly dominated by searching and optimization methods. Interestingly, the search for optimal solutions, which stimulates the growth of heuristics, does characterize both symbolic and sub-symbolic models behind intelligent agents. On the other hand, human learning processes can hardly be regarded as search or as optimization of risk functions created by big data collections. Humans learn incrementally as time goes by. Couldn't be the case that learning mechanisms that involve time can better be regarded as equilibrium computational processes instead of search/optimization?
5. There is plenty of evidence that deep nets strongly favor the emergence of rich representational pattern descriptions in their hidden layers. Are there other insightful architectural regularities we can borrow from biology to improve the results of deep learning?
6. Most interesting human learning processes are strongly driven by appropriate focus of attention mechanisms. How to replicate similar computational schemes with the purpose of dramatically cutting the complexity of learning? Should we focus on “biological replication” or on the understanding of underlining computational structures behind focus of attention.
7. There are surprising results that come from developmental psychology on what a newborn see. Charles Darwin came up with the following remark:

It was surprising how slowly he acquired the power of following with his eyes an object if swinging at all rapidly; for he could not do this well when seven and a half months old.

At the end of the seventies, this early remark was given a technically sound basis. Nowadays, we know that for newborns to gain adult visual acuity, depending on the specific visual test, several months are required. Does it come from our own biology or is it a more general information-based principle for efficiently learning to see?

8. Why do foveal animals perform eye movements? Could this be related to information-based principles? What about possible computer-based implementations?

9. At the beginning of the nineties, it has been pointed out that the visual cortex of humans and other primates is composed of two main information pathways that are referred to as the ventral stream and dorsal stream. The ventral “what” and the dorsal “where/how” visual pathways are traditionally distinguished, so as the ventral stream is devoted to perceptual analysis of the visual input, such as object recognition, whereas the dorsal stream is concerned with motion ability in the interaction with the environment. Why are there two different mainstream systems in the visual cortex? Couldn’t this be related to studies to invariance in computer vision and machine learning?
10. When thinking of ImageNet, one might figure out what human life could have been in a world of visual information with shuffled frames. Could children really acquire visual skills in such an artificial world, which is the one we are presenting to machines? Couldn’t be the case that we are tackling a problem that is more difficult than the one nature has offered us? When considering the spectacular results of deep learning, there could still be remarkable room of improvement.

19:55

Dinner

Monday, 20 July

- 09:00 – 09:45 *Plenary Session: Keynote Talk*
Room: Lecture Hall 1
“NLP for Close Domain Applications with Real World Data: a hybrid approach to jointly leverage prior domain knowledge, reasoning techniques and deep learning”
Raniero Romagnoli, Almawave, Italy
Chair: Giuseppe Nicosia
- 09:45 – 10:30 **Session 7 - Special Session on Big data in Economics & Finance**
Room: Lecture Hall 1
Chair: Vincenzo Sciacca & Luca Tiozzo Pezzoli
- 09:45 – 10:00 Massimo Guidolin, Roland Fuess and Christian Koeppel, Sentiment Risk Premia in the Cross-Section of Global Equity (pre-recorded video)
- 10:00 – 10:15 Viktor Burján and Bálint Gyires Tóth, GPU Accelerated Data Preparation for Limit Order Book Modeling (screen sharing)
- 10:15 – 10:30 Stefano Scalone, Giorgio Scricco, Michael Braüning and Despo Malikkidou, A new approach to Early Warning Systems for small European banks (pre-recorded video)
- 09:45 – 10:30 **Session 8**
Room: Lecture Hall 2
Chair: Varun Ojha
- 09:45 – 10:00 Federico Esposito and Andrea Bonarini, Gradient Bias to solve the Generalization Limit of Genetic Algorithms through hybridization with Reinforcement Learning (pre-recorded video)
- 10:00 – 10:15 Francesco Craighero, Fabrizio Angaroni, Alex Graudenzi, Fabio Stella and Marco Antoniotti, Investigating the Compositional Structure of Deep Neural Networks (pre-recorded video)
- 10:15 – 10:30 Bruno Galuzzi, Enza Messina, Antonio Candelieri and Francesco Archetti, Optimal Scenario-Tree Selection for Multistage Stochastic Programming (screen sharing)
- 10:30 – 11:00 **Coffee break**
- 11:00 – 11:45 **Session 9**
Room: Lecture Hall 1
Chair: Vincenzo Sciacca
- 11:00 – 11:15 Jamolbek Mattiev and Branko Kavsek, CMAC: Clustering class association rules to form a Compact and Meaningful Associative Classifier (in person)
- 11:15 – 11:30 Ondrej Slowik, Giner Leh and Drahomír Novák, Combinatorial reliability-based optimization of nonlinear finite element model using an artificial neural network-based approximation (onsite talk)
- 11:30 – 11:45 Rishab Gupta and Rohit Parimi, Driving Subscriptions Through User Behavior Modelling and Prediction at Bloomberg Media (pre-recorded video)
- 11:00 – 11:45 **Session 10**
Room: Lecture Hall 2
Chair: Varun Ojha
- 11:00 – 11:15 Charul Giri, Morten Goodwin and Ketil Oppedal, Deep 3D Convolution Neural Network for Alzheimer’s Detection (pre-recorded video)
- 11:15 – 11:30 Andrea Asperti, Variance Loss in Variational Autoencoders
- 11:30 – 11:45 Nicolas Bach, Andrew Melnik, Malte Schilling, Timo Korthals and Helge Ritter, Learn to Move Through a Combination of Policy Gradient Algorithms: DDPG, D4PG, and TD3(screen sharing)
- 11:45 – 12:30 **Session 11**
Room: Lecture Hall 1
Chair: Vincenzo Sciacca
- 11:45 – 12:00 Milad Mokhtardoost and Mehmet Gönen, Identifying Key miRNA–mRNA Regulatory Modules in Cancer Using Sparse Multivariate Factor Regression (screen sharing)
- 12:00 – 12:15 Mickael Febrissy and Mohamed Nadif, Wasserstein Embeddings for Nonnegative Matrix Factorization (onsite talk)
- 12:15 – 12:30 Michele Fraccaroli, Evelina Lamma and Fabrizio Riguzzi, Automatic Setting of DNN Hyper-Parameters by Mixing Bayesian Optimization and Tuning Rules (onsite talk)
- 11:45 – 12:30 **Session 12**
Room: Lecture Hall 2
Chair: Varun Ojha
- 11:45 – 12:00 Stephane Chretien and Benjamin Guedj, Revisiting clustering as matrix factorisation on the Stiefel manifold

Monday, 20 July

- 12:00 – 12:15 Norma Gutierrez, Eva Rodriguez, Sergi Mus, Beatriz Otero and Ramón Canal, *Privacy preserving Deep Learning framework in Fog computing* ([pre-recorded video](#))
- 12:00 – 12:15 Emmanouela Rapanaki, Iraklis-Dimitrios Psychas, Magdalene Marinaki, Nikolaos Matsatsinis and Yannis Marinakis, *A Krill Herd Algorithm for the Multi-objective Energy Reduction Multi-Depot Vehicle Routing Problem* ([screen sharing](#))
- 12:30 – 13:15 **Session 13**
Room: Lecture Hall 1
Chair: Vincenzo Sciacca
- 12:30 – 12:45 Federico Bianchi, Francesco Masillo, Alberto Castellini and Alessandro Farinelli, *XM HeatForecast: Heating Load Forecasting in Smart District Heating Networks* ([pre-recorded video](#))
- 12:45 – 13:00 Andrea Borghesi, Federico Baldo, Michele Lombardi and Michela Milano, *Injective Domain Knowledge in NNs for Transprecision Computing* ([onsite talk](#))
- 13:00 – 13:15 Moiz Khan Sherwani, Paolo Zaffino, Pierangela Bruno, Maria Francesca Spadea and Francesco Calimeri, *Evaluating the Impact of Training Loss on MR to Synthetic CT Conversion* ([screen sharing](#))
- 12:30 – 13:15 **Session 14**
Room: Lecture Hall 2
Chair: Varun Ojha
- 12:30 – 12:45 Maurizio Boccia, Antonio Diglio, Adriano Masone and Claudio Sterle, *A location-routing based solution approach for reorganizing postal collection operations in rural areas* ([screen sharing](#))
- 12:45 – 13:00 Alexandre Maciel-Guerra, Graziela P. Figueredo and Jamie Twycross, *Dynamic selection of classifiers applied to high-dimensional small-instance data sets: problems and challenges*
- 13:00 – 13:15 Mirco Tracoli, Marco Baiocchi, Valentina Poggioni and Daniele Spiga, *Caching suggestions using Reinforcement Learning* ([screen sharing](#))
- 13:15 – 14:40 **Lunch**
- 14:40 – 15:25 *Plenary Session: Keynote Talk*
Room: Lecture Hall 1
“Technical challenges of Ethical ML”
Isabel Valera, Saarland University, Saarbrücken & Max Planck Institute for Intelligent Systems, Tübingen, Germany
Chair: Giuseppe Nicosia
- 15:25 – 16:10 **Session 15 – Short Papers**
Room: Lecture Hall 1
Chair: Vincenzo Sciacca
- 15:25 – 15:30 Adel Rahimi, Tetiana Kodliuk and Othman Bencheikroun, *Using Hessians as a Regularization Technique* ([pre-recorded video](#))
- 15:30 – 15:35 Falco Joannes Bargagli-Stoffi, Gustavo Cevolani and Giorgio Gnecco, *Should simplicity be always preferred to complexity in supervised machine learning?*
- 15:35 – 15:40 Maria Alexandra Ramalho de Oliveira, Luís Guimarães and José Borges, *Understanding production process productivity in glass container industry: a big data approach*
- 15:40 – 15:45 Alessandro Zonta, Ali El Hassouni, David W. Romero and Jakub Tomczak, *Generative Fourier-based Auto-Encoders: Preliminary Results* ([pre-recorded video](#))
- 15:45 – 15:50 Hamid Mousavi, Jakob Drefs and Jörg Lücke, *A Double-Dictionary Approach Learns Component Means and Variances for VI Encoding* ([screen sharing](#))
- 15:50 – 15:55 Giorgia Franchini, Valeria Ruggiero and Luca Zanni, *Steplength and mini-batch size selection in Stochastic Gradient Methods* ([pre-recorded video](#))
- 15:55 – 16:00 Gail Gilboa Freedman, Yair Amichai-Hamburger and Dotan Castro, *Who Accepts Information Measures*
- 15:25 – 16:10 **Session 16 – Poster Presentations**
Room: Lecture Hall 2
Chair: Varun Ojha
- 15:25 – 15:30 Filippo Maria Castelli, Giacomo Mazzamuto, Matteo Roffilli, Irene Costantini, Ludovico Silvestri and Francesco Saverio Pavone, *Semantic Segmentation of Neuronal Bodies in Fluorescence Microscopy Using a 2D+3D CNN Training Strategy with Sparsely Annotated Data* ([pre-recorded video](#))
- 15:30 – 15:35 Igor Griva, *Analyzing Data with Lagrange multipliers methods*
- 15:35 – 15:40 Federico Esposito and Andrea Bonarini, *Policy Feedback in Deep Reinforcement Learning to exploit expert knowledge* ([pre-recorded video](#))

Monday, 20 July

- 15:40 – 15:45 Alessandro Rossi and Nicola Pacchiani, *BcRAIN: A Deep Learning based approach for B-cell repertoire description* (screen sharing)
- 15:45 – 15:50 Young Hee Geum, *Study on the class of Jarratt-like iterative methods*
- 15:50 – 15:55 Giulia Lo Dico, Verónica Carcelén and Maciej Haranczyk, *Accelerating development of natural porous materials assisted by statistical machine learning* (pre-recorded video)
- 16:10 – 16:40 **Coffee break**
- 16:40 – 17:25 **Session 17 – Oral Presentations**
Room: Lecture Hall 1
Chair: Vincenzo Sciacca
- 16:40 – 16:55 Vera Kalinichenko and Garima Garg, *From Business Curated Products to Algorithmically Generated* (pre-recorded video)
- 16:55 – 17:10 Raul Villamarin Rodriguez, *Future of HR from 2020: Machine Learning*
- 17:10 – 17:25
- 16:40 – 17:25 **Session 18 – Oral Presentations**
Room: Lecture Hall 2
Chair: Varun Ojha
- 16:40 – 16:55 Nikita Benkovich, Roman Dedenok and Dmitry Golubev, *Deep Quarantine for Suspicious Mail* (screen sharing)
- 16:55 – 17:10 Nikita Benkovich, Alan Savushkin and Dmitry Golubev, *Neural Random Projection: From the Initial Task to the Input Similarity Problem* (screen sharing)
- 17:10 – 17:25 Thu Dinh, Bao Wang, Andrea Bertozzi, Stanley Osher and Jack Xin, *Sparsity Meets Robustness: Channel Pruning for the Feynman-Kac Formalism Principled Robust Deep Neural Nets* (pre-recorded video)
- 17:25 **Guided Visit of the Certosa di Pontignano,**
- 18:25 **Wine Tasting**
- 19:55 **Dinner**

Tuesday, 21 July

- 09:00 – 09:45 *Plenary Session: Keynote Talk*
Room: Lecture Hall 1
“Safety and Robustness for Deep Learning with Provable Guarantees”
Marta Kwiatkowska, University of Oxford, UK
Chair: Giuseppe Nicosia
- 09:45 – 10:30 **Session 19**
Room: Lecture Hall 1
Chair: Vincenzo Sciacca
- 09:45 – 10:00 Ali Hassouni, Mark Hoogendoorn, Gusz Eiben and Vesa Muhonen, *Structural and Functional Representativity of GANs for Data Generation in Sequential Decision Making* ([pre-recorded video](#))
- 10:00 – 10:15 David Jaidan and Le Toan Duong, *Image Features Anonymization for Privacy aware Machine Learning* ([screen sharing](#))
- 10:15 – 10:30 Mika Rantonen and Joni Korpiahkola, *Prediction of Spot prices in Nord Pool's Day-ahead market using Machine and Deep learning* ([screen sharing](#))
- 09:45 – 10:30 **Session 20**
Room: Lecture Hall 2
Chair: Varun Ojha
- 09:45 – 10:00 Arun Pandey, Joachim Schreurs and Johan Suykens, *Robust Generative Restricted Kernel Machines using Weighted Conjugate Feature Duality* ([pre-recorded video](#))
- 10:00 – 10:15 Tomás Dlask, *Unit Propagation by Means of Coordinate-Wise Minimization* ([pre-recorded video](#))
- 10:15 – 10:30 Gabriele Iommazzo, Claudia D'Ambrosio, Antonio Frangioni and Leo Liberti, *A learning-based mathematical programming formulation for the automatic configuration of optimization solvers* ([screen sharing](#))
- 10:30 – 11:00 **Coffee break**
- 11:00 – 11:45 **Session 21**
Room: Lecture Hall 1
Chair: Vincenzo Sciacca
- 11:00 – 11:15 Francesco Branda, Fabrizio Marozzo and Domenico Talia, *Discovering Travelers' Purchasing Behavior from Public Transport Data* ([screen sharing](#))
- 11:15 – 11:30 Elisa Marcelli and Renato De Leone, *Multi-Kernel Covariance Terms in Multi-Output Support Vector Machines* ([pre-recorded video](#))
- 11:30 – 11:45 Riste Stojanov, Gorjan Popovski, Nasi Jofce, Dimitar Trajanov, Barbara Korousic Seljak and Tome Eftimov, *FoodViz: Visualization of Food Entities Linked Across Different Standards* ([pre-recorded video](#))
- 11:00 – 11:45 **Session 22**
Room: Lecture Hall 2
Chair: Varun Ojha
- 11:00 – 11:15 Julia Krützmann, Alexander Schiendorfer, Sergej Beratz, Judith Moosburger-Will, Wolfgang Reif and Siegfried Horn, *Learning Controllers for Adaptive Spreading of Carbon Fiber Tows* ([pre-recorded video](#))
- 11:15 – 11:30 Alper Yegenoglu, Sandra Diaz Pier, Kai Krajsek and Michael Herty, *Ensemble Kalman Filter optimizing Deep Neural Networks: An alternative approach to non-performing Gradient Descent* ([pre-recorded video](#))
- 11:30 – 11:45 Christofer Fellicious, Thomas Weißgerber and Michael Granitzer, *Effects of random seeds on the accuracy of Convolutional Neural Networks* ([screen sharing](#))
- 11:45 – 12:30 **Session 23**
Room: Lecture Hall 1
Chair: Vincenzo Sciacca
- 11:45 – 12:00 Jimiana Mafeni Mase, Peter Chapman, Graziela Figueredo and Mercedes Torres Torres, *Benchmarking Deep Learning Models for Driver Distraction Detection* ([pre-recorded video](#))
- 12:00 – 12:15 Per-Arne Andersen, Morten Goodwin and Ole-Christoffer Granmo, *Safer Reinforcement Learning for Agents in Industrial Grid-Warehousing* ([pre-recorded video](#))
- 12:15 – 12:30 Nima Nabizadeh, Martin Heckmann and Dorothea Kolossa, *Target-aware Prediction of Tool Usage in Sequential Repair Tasks* ([pre-recorded video](#))
- 11:45 – 12:30 **Session 24**
Room: Lecture Hall 2
Chair: Varun Ojha
- 11:45 – 12:00 Leandro L. Lorente-Leyva, M.M.E. Alemany, Diego Hernán Peluffo-Ordoñez and Israel David Herrera Granda, *A Comparison of Machine Learning and Classical Demand Forecasting Methods: A Case Study of Ecuadorian Textile Industry* ([pre-recorded video](#))

Tuesday, 21 July

- 12:00 – 12:15 Jon Vadillo, Roberto Santana and Jose A. Lozano, *Exploring Gaps in DeepFool in Search of More Effective Adversarial Perturbations* (pre-recorded video)
- 12:15 – 12:30 Israel Herrera, Leandro Lorente, Diego Peluffo, Maria Del Mar Alemany, *A forecasting model to predict the demand of roses in an Ecuadorian small business under uncertain scenarios* (pre-recorded video)
- 12:30 – 13:15 **Session 25**
Room: Lecture Hall 1
Chair: Vincenzo Sciacca
- 12:30 – 12:45 Sara Atito Ali Ahmed, Berrin Yanikoglu, Cemre Zor, Muhammad Awais and Josef Kittler, *Skin Lesion Diagnosis with Imbalanced ECOC Ensembles*
- 12:45 – 13:00 Helge Spieker and Arnaud Gotlieb, *Learning Objective Boundaries for Constraint Optimization Problems* (pre-recorded video)
- 13:00 – 13:15 Filippo Portera, *A Generalized Quadratic Loss for SVM and Deep Neural Networks* (onsite talk)
- 12:30 – 13:15 **Session 26**
Room: Lecture Hall 2
Chair: Varun Ojha
- 12:30 – 12:45 Michela Quadri, Sebastian Daberdaku and Carlo Ferrari, *Hierarchical Representation and Graph Convolutional Networks for the Prediction of Protein-Protein Interaction Sites* (onsite talk)
- 12:45 – 13:00 Petia Koprinkova-Hristova and Nadejda Bocheva, *Brain-inspired Spike Timing Model of Dynamic Visual Information Perception and Decision Making with STDP and Reinforcement Learning* (screen sharing)
- 13:00 – 13:15 Aynalem Misganaw and Sabine Roller, *PlattForm: Parallel Spoken Corpus of Middle West German Dialects with Web-Based Interface* (screen sharing)
- 13:15 – 14:40 **Lunch**
- 14:40 – 15:25 *Plenary Session: Keynote Talk*
Room: Lecture Hall 1
“**Machine Learning with quantum computers**”
Maria Schuld, *Xanadu & University of KwaZulu-Natal, South Africa*
Chair: Giuseppe Nicosia
- 15:25 – 16:10 *Plenary Session: Keynote Talk*
Room: Lecture Hall 1
“**Viral Metabolic Reprogramming**”
Angelo Lucia, *University of Rhode Island, USA*
Chair: Giuseppe Nicosia
- 16:10 – 16:40 **Coffee break**
- 16:40 – 17:25 **Session 27**
Room: Lecture Hall 1
Chair: Vincenzo Sciacca
- 16:40 – 16:55 Günther Schindler, Wolfgang Roth, Franz Pernkopf and Holger Fröning, *Parameterized Structured Pruning for Deep Neural Networks* (pre-recorded video)
- 16:55 – 17:10 Majid Jahani, Mohammadreza Nazari, Sergey Rusakov, Albert Solomon Berahas and Martin Taká, *Scaling Up Quasi-Newton Algorithms: Communication Efficient Distributed SRI* (sharing screen)
- 17:10 – 17:25 Franco Robledo, Pablo Rodríguez-Bocca and Pablo Romero, *Optimal Broadcast Strategy in Homogeneous Point-to-Point Networks* (pre-recorded video)
- 16:40 – 17:25 **Session 28**
Room: Lecture Hall 2
Chair: Varun Ojha
- 16:40 – 16:55 Astrid Merckling, Alexandre Coninx, Loïc Cressot, Stéphane Doncieux and Nicolas Perrin, *State Representation Learning from Demonstration* (pre-recorded video)
- 16:55 – 17:10 Abhay Harpale, *Chronologically guided deep network for remaining useful life estimation*
- 17:10 – 17:25 Rommel Regis, *High-Dimensional Constrained Discrete Multi-Objective Optimization Using Surrogates* (pre-recorded video)
- 17:25 – 18:10 **Session 29**
Room: Lecture Hall 1
Chair: Vincenzo Sciacca
- 17:25 – 17:40 Mayumi Ohta, Nathaniel Berger, Artem Sokolov and Stefan Riezler, *Sparse Perturbations for Improved Convergence in SZO Optimization* (screen sharing)

Tuesday, 21 July

- 17:40 – 17:55 Guido Lagos and Pablo Romero, *On the Reliability of Dynamical Stochastic Binary Systems* (pre-recorded video)
- 17:55 – 18:10 Vladimir Soloviev, Nikita Titov and Elena Smirnova, *Coking coal railway transportation forecasting using ensembles of ElasticNet, LightGBM, and Facebook Prophet* (screen sharing)
- 17:25 – 18:10 **Session 30**
Room: Lecture Hall 2
Chair: Varun Ojha
- 17:25 – 17:40 Mayowa Ayodele, Richard Allmendinger and K. Nadia Papamichail, *Heuristic Search in LegalTech: Dynamic Allocation of Legal Cases to Legal Staff* (screen sharing)
- 17:40 – 17:55 Jose Cruz, Wilson Mamani, Christian Romero and Ferdinand Pineda, *Multi-parameter Regression of Photovoltaic Systems using Selection of Variables with the Method: Recursive Feature Elimination for Ridge, Lasso and Bayes*
- 17:55 – 18:10 Abhay Harpale, *Automatic curriculum recommendation for employees*
- 18:10 – 18:25 **Pause**
- 18:25 – 19:10 **Session 31**
Room: Lecture Hall 1
Chair: Vincenzo Sciacca
- 18:25 – 18:40 Marcin Orchel and Johan Suykens, *Fast hyperparameter tuning for support vector machines with stochastic gradient descent* (onsite talk)
- 18:40 – 18:55 Abhinav Raj and Subhankar Mishra, *Lottery Ticket Hypothesis: Placing the k-orrect bets* (screen sharing)
- 18:55 – 19:10 Yaodong He and Shiu Yin Yuen, *Black Box Algorithm Selection by Convolutional Neural Network* (pre-recorded video)
- 18:25 – 19:10 **Session 32**
Room: Lecture Hall 2
Chair: Varun Ojha
- 18:25 – 18:40 Giovanna Fortez, Franco Robledo, Pablo Romero and Omar Viera, *A Fast Genetic Algorithm for the Max Cut-Clique Problem* (pre-recorded video)
- 18:40 – 18:55 Hyaejung Lim and Chang-Kyo Suh, *The Intellectual Structure of Business Analytics: 2002~2019* (screen sharing)
- 18:55 – 19:10 Jacques Egmont Knoll and Thorsten Schmidt-Dumont, *Reinforcement Learning for Playing WrapSlide* (pre-recorded video)
- 19:10 – 19:55 **Session 33**
Room: Lecture Hall 1
Chair: Vincenzo Sciacca
- 19:10 – 19:25 Richard Ball, Hennie Kruger and Lynette Drevin, *A Unified Approach to Anomaly Detection* (pre-recorded video)
- 19:25 – 19:40 Alma Rahat and Michael Wood, *On Bayesian Search for the Feasible Space Under Computationally Expensive Constraints* (pre-recorded video)
- 19:40 – 19:55 Daniel Nissani -Nissensohn, *Unsupervisedly Learned Representations – Should the Quest be Over?* (pre-recorded video)
- 19:55 – 20:10 Alexey Marchenko, Alexey Utki-Otki and Dmitry Golubev, *Efficient text processing via Context Triggered Piecewise Hashing algorithm for spam detection* (screen sharing)
- 19:10 – 19:55 **Session 34**
Room: Lecture Hall 2
Chair: Varun Ojha
- 19:10 – 19:25 Jake Williams, Abel Tadesse, Tyler Sam, Huey Sun and George Montanez, *Limits of Transfer Learning* (pre-recorded video)
- 19:25 – 19:40 Sani Aji, Poom Kumam, Punnarai Siricharoen and Ali Maina Bukar, *Automatic Classification of low Angle Fuze-Quick Craters Using Deep Learning* (pre-recorded video)
- 19:40 – 19:55 Galina Samigulina and Zarina Samigulina, *Machine learning for big data analysis in drug design* (pre-recorded video)
- 19:55 – 20:10 Carla Freitas Silveira Netto, Mohsen Bahrami, Vinicius Brei, Burcin Bozkaya, Selim Balcisoy and Alex ‘Sandy’ Pentland, *Gravitational Forecast Reconciliation* (pre-recorded video)
- 20:10 **Dinner**

Wednesday, 22 July

- 08:30 – 13:15 **Social Tour: Guided Visit of Siena**
- 13:15 – 14:40 **Lunch**
- 14:40 – 15:25 *Plenary Session: Keynote Talk*
Room: Lecture Hall 1
“A problem for every solution” – on adversarial methods for AI Ethics
Bettina Berendt, Technische Universität Berlin, Germany Weizenbaum Institute for the Networked Society, Germany
Chair: Giuseppe Nicosia
- 15:25 – 16:10 **Session 35**
Room: Lecture Hall 1
Chair: Vincenzo Sciacca
- 15:25 – 15:40 Harry Wang and Brian Denton, *Pareto-Weighted-Sum-Tuning: Learning-to-Rank for Pareto Optimization Problems* (pre-recorded video)
- 15:40 – 15:55 Cole Smith, Andrii Dobroshynskiy and Suzanne McIntosh, *Quantifying Local Energy Demand through Pollution Analysis* (pre-recorded video)
- 15:55 – 16:10 Marius Bommert and Günter Rudolph, *Reliable Solution of Multidimensional Stochastic Problems Using Metamodels* (pre-recorded video)
- 15:25 – 16:10 **Session 36**
Room: Lecture Hall 2
Chair: Varun Ojha
- 15:25 – 15:40 Gideon Mbiydenyuy, *Univariate Time Series Anomaly Labelling Algorithm*
- 15:40 – 15:55
- 15:55 – 16:10
- 16:10 – 16:40 **Coffee break**
- 16:40 – 17:25 *Plenary Session: Keynote Talk*
Room: Lecture Hall 1
“Promises and Challenges of Transfer Learning”
Ruth Urner, York University, Toronto, Canada
Chair: Giuseppe Nicosia
- 17:25 – 18:10 **Session 37**
Room: Lecture Hall 1
Chair: Vincenzo Sciacca
- 17:25 – 17:40 Anahit Sargsyan, Areg Karapetyan, Wei Lee Woon and Aamena Alshamsi, *Explainable AI as a Social Microscope: A Case Study on Academic Performance*
- 17:40 – 17:55 Zahra Jandaghi and Liming Cai, *On Graph Learning with Neural Networks*
- 17:55 – 18:10 Nicholas Mandarano, Rommel Regis and Elizabeth Bloom, *Machine Learning and Statistical Models for the Prevalence of Multiple Sclerosis* (pre-recorded video)
- 17:25 – 18:10 **Session 38**
Room: Lecture Hall 2
Chair: Varun Ojha
- 17:25 – 17:40 Jorio Cocola and Paul Hand, *Global Convergence of Sobolev Training for Overparametrized Neural Networks* (screen sharing)
- 17:40 – 17:55 Natalya Selitskaya, Stanislav Selitskiy and Nikolaos Christou, *Challenges in Real-Life Face Recognition With Heavy Makeup and Occlusions Using Deep Learning Algorithms* (pre-recorded video)
- 17:55 – 18:10 Nicolas Bach, Andrew Melnik, Federico Rossetto and Helge Ritter, *An error-based addressing architecture for dynamic model learning* (screen sharing)
- 18:10 – 18:25 **Pause**
- 18:25 – 19:10 *Plenary Session: Keynote Talk*
Room: Lecture Hall 1
“Virtualization and Deep Learning”
Pierre Baldi, University of California Irvine, USA
Chair: Giuseppe Nicosia
- 19:10 – 19:55 **Session 39 – Oral Presentations**
Room: Lecture Hall 1
Chair: Vincenzo Sciacca

Wednesday, 22 July

- 19:10 – 19:25 Georg Hahn, Sharon Marie Lutz, Nilanjana Laha and Christoph Lange, *A fast and efficient smoothing approach to LASSO regression and an application in statistical genetics: polygenic risk scores for Chronic obstructive pulmonary disease (COPD)* (pre-recorded video)
- 19:25 – 19:40 Stefan Silva and José Crispim, *An application of Machine Learning to study utilities expenses in the Brazilian Navy* (pre-recorded video)
- 19:40 – 19:55 Andrea Bommert and Jörg Rahnenführer, *Adjusted Measures for Feature Selection Stability for Data Sets with Similar Features* (pre-recorded video)
- 19:55 – 20:10 Seved Amin Tabatabaei, Jan Klein and Mark Hoogendoorn, *Estimating the F1 score for Learning from Positive and Unlabeled Examples* (pre-recorded video)
- Closing*
- 19:10 – 19:55 **Session 40 – Oral Presentations**
Room: Lecture Hall 2
Chair: Varun Ojha
- 19:10 – 19:25 Anwaya Aras, Manisha Mundhe and Anna He, *The Speech Processing Platform at Uber*
- 19:25 – 19:40 Mahdi Jammal, Stephane Canu and Maher Abdallah, *Robust and Sparse Support Vector Machines via Mixed Integer Programming* (pre-recorded video)
- 19:40 – 19:55 Mahdi Jammal, Stephane Canu and Maher Abdallah, *l1 Regularized Robust and Sparse Linear Modeling Using Discrete Optimization* (pre-recorded video)
- 19:55 – 20:10 Diogo R. Ferreira, Teresa Scholz and Rune Prytz, *Importance Weighting of Diagnostic Trouble Codes for Anomaly Detection*
- 20:10 **Dinner**

Thursday, 23 July

09:00 – 13:15

Free Time

13:15 – 14:40

Lunch

14:40

Workshop on “Integrative Machine Learning”

Luc De Raedt, Andrea Passerini, Michelangelo Diligenti, Francesco Giannini, Artur d'Avila Garcez, Michele Lombardi, Marco Gori

14.40-14.50 – Welcome

14.50-15.20 – **Prof. Luc de Raedt** – *From Probabilistic Logic Programming to Neural Symbolic Computation*

15.20-15.50 – **Prof. Andrea Passerini** – *Constructive Machine Learning*

15.50-16.10 – **Michelangelo Diligenti/Francesco Giannini** – *Relational Neural Machines*

16.10-16.40 – Virtual coffee break

16.40-17.10 – **Prof. Michele Lombardi** – *Teaching the Old Dog New Tricks: Constraint Support in Classical Supervised Learning via Declarative Optimization*

17.10-17.40 – **Prof. Arthur d'Avila Garcez** – *Neural Symbolic Computing for Trusted AI*

17.40-18.10 – *Round Table/Closing Remarks* – **Prof. Marco Gori**

The Workshop will be streamed from the following **google meet room**:

<https://meet.google.com/rga-yvtm-dkb>

or at the following **live stream**

<https://stream.meet.google.com/stream/cdba0b85-2ba6-4c34-a594-770a772feff7>

19:55

Social Dinner