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WORKSHOP PROGRAM

Wednesday, November 4

SESSION 1.1 - General Session - PART 1
Room: Virtual Room #1
Chairs: Carlos Alberto Kamienski, *Federal University of ABC (UFABC), Brasil*
Matteo Nardello*, University of Trento, Italy*
Luigi Manfrini*, University of Bologna, Italy*

1 **Preliminary Design of a Remotely Piloted Aircraft System for Crop-Spraying on Vineyards**
Nicoletta Bloise, Politecnico di Torino, Italy
Manuel Carreño Ruiz, Politecnico di Torino, Italy
Domenic D'Ambrosio, Politecnico di Torino, Italy
Giorgio Guglieri, Politecnico di Torino, Italy

7 **Neural networks for Pest Detection in Precision Agriculture**
Andrea Segalla, University of Trento, Italy
Gianluca Fiacco, University of Trento, Italy
Luca Tramarin, University of Trento, Italy
Matteo Nardello, University of Trento, Italy
Davide Brunelli, University of Trento, Italy

13 **Reinforcement Learning for Connected Autonomous Vehicle Localization via UAVs**
Enrico Testi, University of Bologna, Italy
Elia Favarelli, University of Bologna, Italy
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Lorenzo Mistral Peppi, University of Bologna, Italy
Matteo Zauli, University of Bologna, Italy
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Pier Andrea Traverso, University of Bologna, Italy
Luca Corelli Grappadelli, University of Bologna, Italy
Luca De Marchi, University of Bologna, Italy

24 **Energy-neutral weather stations for precision agriculture: challenges and approaches**
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Fabio Antonelli, OpenIoT Research Unit, FBK, Italy
Massimo Vecchio, OpenIoT Research Unit, FBK, Italy
Andrea Maestrini, OpenIoT Research Unit, FBK, Italy

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Alberto Tamburini, University of Milan, Italy
Gabriele Mattachini, University of Milan, Italy
Maddalena Zucali, University of Milan, Italy
Elisabetta Riva, University of Milan, Italy
Giorgio Provolo, University of Milan, Italy
Marcella Guarino, University of Milan, Italy

SESSION 2.1 - Special Session on Mitigation Strategies to Reduce Gaseous Emissions from Livestock Buildings and Manure Stores
Room: Virtual Room #2
Chairs: Stefania Pindozzi, *University of Naples Federico II, Italy*
Daniele Torreggiani, *University of Bologna, Italy*

34   **Release of ammonia, particulate matter and nitrogen oxides during the Covid-19 quarantine: what is the role of livestock activities?**

Daniela Lovarelli, University of Milan, Italy
Cecilia Conti, University of Milan, Italy
Alberto Finzi, University of Milan, Italy
Jacopo Bacenetti, University of Milan, Italy
Marcella Guarino, University of Milan, Italy

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Viviana Guido, University of Milan, Italy
Alberto Finzi, University of Milan, Italy
Pietro Piazzi, University of Milan, Italy
Omar Ferrari, University of Milan, Italy
Celeste Righi Ricco, University of Milan, Italy
Elisabetta Riva, University of Milan, Italy
Giorgio Provolo, University of Milan, Italy

44   **Is the biochar an effective floating cover for manure storage to reduce ammonia emissions, adsorbing nitrogen at the same time?**

Ester Scotto di Perta, University of Naples Federico II, Italy
Paola Giudicianni, National Research Council, Italy
Antonio Mautone, University of Naples Federico II, Italy
Stefano Caro, Aalto University, Finland
Elena Cervelli, University of Naples Federico II, Italy
Raffaele Ragucci, National Research Council, Italy
Stefania Pindozzi, University of Naples Federico II, Italy

49   **Addition of powdery sulfur to pig slurry to reduce NH$_3$ and GHG emissions after mechanical separation**

Jacopo Maffia, University of Turin, Italy
Fabrizio Gioelli, University of Turin, Italy
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Gianfranco Airoldi, University of Turin, Italy
Paolo Balsari, University of Turin, Italy
Elio Dinuccio, University of Turin, Italy

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Silvio Matassa, University of Naples Federico II, University of Cassino, Italy
Stefano Papirio, University of Naples Federico II, Italy
Giovanni Esposito, University of Naples Federico II, Italy
Francesco Pirozzi, University of Naples Federico II, Italy

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Jacopo Maffia, University of Turin, Italy
Luca Rollé, University of Turin, Italy
Simone Pelissetti, Uptofarm s.r.l., Italy
Francesco Vocino, Uptofarm s.r.l., Italy
Marcin Dzikowski, Corteva Agriscience Munich, Germany
Matteo Ceruti, Corteva Agriscience Cremona, Germany
Elio Dinuccio, University of Turin, Italy

SESSION 1.2 - Special Session on Integrated Water Management for Agriculture (PART II): Architectures, Platforms and Sustainability - PART 1

Room: Virtual Room #1
Chairs: Luca Roffia, *University of Bologna, Italy*
           Cristiano Aguzzi, *University of Bologna, Italy*

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Franklin Magalhães Ribeiro Jr, Federal University of ABC, Federal Institute of Maranhão, Brazil
Ronaldo C. Prati, Federal University of ABC, Brazil
Reinaldo Bianchi, Centro Universitário FEI, Brazil
Carlos Alberto Kamienski, Federal University of ABC, Brazil

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Alexandre Heideker, Federal University of the ABC, Brazil
Dener Ottolini, Federal University of the ABC, Brazil
Ivan Dimitry Zyrianoff, Federal University of the ABC, Brazil
André Torre Neto, Brazilian Agricultural Research Corporation - Embrapa, Brazil
Tullio Salmon Cinotti, University of Bologna, Italy
Carlos Alberto Kamienski, Federal University of the ABC, Brazil

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Alexandre Heideker, Federal University of ABC, Brazil
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Dener Ottolini, Federal University of ABC, Brazil
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Juha-Pekka Soininen, VTT Technical Research Centre, Finland
Carlos Alberto Kamienski, Federal University of ABC, Brazil

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Jo~ao Henrique Kleinschmidt, Federal University of ABC, Brazil
Carlos Alberto Kamienski, Federal University of ABC, Brazil
Marcos Cezar Visoli, Embrapa Agricultural Informatics, Brazil

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SESSION 2.2 - Innovative Data Analysis Solutions in the Agri-Food Sector - PART 1

Room: Virtual Room #2
Chairs: Chiara Cevoli, *University of Bologna, Italy*

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Francesco Marinello, University of Padova, Italy
Luigi Sartori, University of Padova, Italy

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Loris Francesco Termite, Agrosit S.r.l., Italy
Massimiliano Proietti, Idea-Re S.r.l., Italy
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Gianluca Ferrari, Radarmeteo S.r.l., Italy
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99 **In-field Vis/NIR hyperspectral imaging to measure soluble solids content of wine grape berries during ripening**
Alessandro Benelli, University of Bologna, Italy
Chiara Cevoli, University of Bologna, Italy
Angelo Fabbri, University of Bologna, Italy

SESSION 1.3 - Special Session on Integrated Water Management for Agriculture (PART II): Architectures, Platforms and Sustainability - PART 2

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Chairs: Luca Roffia, *University of Bologna, Italy*
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Ramide Augusto Sales Dantas, Federal Institute of Pernambuco (IFPE), Brazil
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Giorgia Bucci, Università Politecnica delle Marche, Italy
Deborah Bentivoglio, Università Politecnica delle Marche, Italy
Matteo Belletti, Università Politecnica delle Marche, Italy
Adele Finco, Università Politecnica delle Marche, Italy
Emiliano Anceschi, Gruppo Filippetti, Italy

SESSION 2.3 - Innovative Data Analysis Solutions in the Agri-Food Sector - PART 2

Room: Virtual Room #2

Chairs: Chiara Cevoli, *University of Bologna, Italy*

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Leonardo Franceschelli, University of Bologna, Italy
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Marco Tartagni, University of Bologna, Italy
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Lerina Aversano, University of Sannio, Italy
Mario Luca Bernardi, University of Sannio, Italy
Marta Cimitile, Unitelma Sapienza, Italy
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Stefano Rondinella, CERICT Information Communication Tech., Italy

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Simona Bosco, Scuola Superiore Sant'Anna, Italy
Diego Guidotti, AEDIT srl, Italy
Michele Mammini, AEDIT srl, Italy
Simone Neri, West Systems srl, Italy
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Pierluigi Meriggi, Horta srl, Italy
Alberto Mantino, Scuola Superiore Sant'Anna, Italy
Patricia Laville, INRA AgroParisTech, France
Giorgio Ragaglini, Scuola Superiore Sant'Anna, Italy

Thursday, November 5

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Room: Virtual Room #1
Chairs: Pasqualina Sacco, *Fraunhofer Italia, Italy*
Annachiara Berardinelli, *University of Trento, Italy*

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Fuli Wang, University of Essex, United Kingdom
Vishwanathan Mohan, University of Essex, United Kingdom
Andrew Thompson, National Physical Laboratory, United Kingdom
Richard Dudley, National Physical Laboratory, United Kingdom

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Alessandro Benelli, University of Bologna, Italy
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Chairs: Alberto Barbaresi, *University of Bologna, Italy*
Andrea Pezzuolo, *University of Padova, Italy*

160 **Smart and cheap scale for estimating live-fish biomass in offshore aquaculture**
Eugenio Damiano, MEGA Materials s.r.l., Italy
Carlo Bibbiani, University of Pisa, Italy
Baldassare Fronte, University of Pisa, Italy
Alberto Di Lieto, University of Pisa, Italy

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   Marco Bovo, University of Bologna, Italy
   Stefano Benni, University of Bologna, Italy
   Enrica Santolini, University of Bologna, Italy
   Patrizia Tassinari, University of Bologna, Italy
   Miki Agrusti, University of Bologna, Italy
   Daniele Torreggiani, University of Bologna, Italy

SESSION 1.5 - Special Session on Integrated Water Management for Agriculture (PART I): Sensing, Modeling, and Data Integration - PART 1

Room: Virtual Room #1
Chairs: Gabriele Baroni, *University of Bologna, Italy*
   Lorenzo Carmelo Zingali, *University of Bologna, Italy*
   Giovanni Battista Chirico, *University of Naples, Italy*

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   Gilberto Souza, Centro Universitario FEI, Brazil
   Brenno Tondato de Faria, Centro Universitario FEI, Brazil
   Rafael Gomes Alves, Centro Universitario FEI, Brazil
   Fabio Lima, Centro Universitario FEI, Brazil
   Plinio Thomaz Aquino-Jr, Centro Universitario FEI, Brazil
   Juha-Pekka Soininen, VTT Technical Research Centre of Finland, Finland

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   Steven van der Veeke, University of Groningen, the Netherlands
   Ronald Koomans, Medusa Radiometrics B.V., the Netherlands
   Han Limburg, Medusa Radiometrics B.V., the Netherlands

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   Andrea Serafini, University of Ferrara, INFN, Italy
   Matteo Albéri, University of Ferrara, INFN, Italy
   Enrico Chiarelli, University of Ferrara, INFN, Italy
   Michele Montuschi, University of Ferrara, INFN, Italy
   Kassandra Giulia Cristina Raptis, University of Ferrara, INFN, Italy
   Virginia Strati, University of Ferrara, INFN, Italy
   Fabio Mantovani, University of Ferrara, INFN, Italy

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   Matteo Polo, University of Padova, Italy
   Marcello Lunardon, University of Padova, Italy
   Francesco Marinello, University of Padova, Italy
   Sandra Moretto, University of Padova, Italy
   Gabriele Baroni, University of Bologna, Italy

201 **Mapping near-surface soil moisture in a Mediterranean agroforestry ecosystem using Cosmic-Ray Neutron Probe and Sentinel-1 Data**

Aida Taghavi Bayat, University of Würzburg, Germany
Sarah Schönbrodt-Stitt, University of Würzburg, Germany
Paolo Nasta, University of Napoli Federico II, Italy
Nima Ahmadian, University of Halle-Wittenberg, Germany
Christopher Conrad, University of Halle-Wittenberg, Germany
Heye R. Bogena, Forschungszentrum Jülich GmbH, Germany
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Roland Baatz, Forschungszentrum Jülich GmbH, Germany
Nunzio Romano, University of Napoli Federico II, Italy

SESSION 2.5 - Special Session on Innovative Robotics Solutions and Autonomous Tasks in Agriculture - PART 1

Room: Virtual Room #2
Chairs: Lorenzo Marconi, *University of Bologna, Italy*
Dario Mengoli, *University of Bologna, Italy*

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Roberto Tazzari, University of Bologna, Italy
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Raimondo Gallo, Free Univeristy of Bolzano, Italy
Fabrizio Mazzetto, Free Univeristy of Bolzano, Italy

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Jorn Thieling, RWTH Aachen University, Germany
Jurgen Roßmann, RWTH Aachen University, Germany
Markus Robert, IAV GmbH, Germany
Rudiger Bosdorf, IAV GmbH, Germany

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Martina Mammarella, National Research Council, Italy
Lorenzo Comba, National Research Council, Università degli Studi di Torino, Italy
Alessandro Biglia, Università degli Studi di Torino, Italy
Fabrizio Dabbene, National Research Council, Italy
Paolo Gay, Università degli Studi di Torino, Italy

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Kushtrim Bresilla, University of Bologna, Italy
Gianmarco Bortolotti, University of Bologna, Italy
Alexandra Boini, University of Bologna, Italy
Giulio Perulli, University of Bologna, Italy
Brunella Morandi, University of Bologna, Italy
Luca Corelli Grappadelli, University of Bologna, Italy
Luigi Manfrini, University of Bologna, Italy

SESSION 1.6 - Special Session on Integrated Water Management for Agriculture (PART I): Sensing, Modeling, and Data Integration - PART 2

Room: Virtual Room #1
Chairs: Gabriele Baroni, *University of Bologna, Italy*
Lorenzo Carmelo Zingali, *University of Bologna, Italy*

Giovanni Battista Chirico, *University of Naples, Italy*

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   Caio K. G. Albuquerque, Federal University of ABC (UFABC), Brazil
   Sergio Polimante, Federal University of ABC (UFABC), Brazil
   André Torre-Neto, Brazilian Agricultural Research Corporation (EMBRAPA), Brazil
   Ronaldo C. Prati, Federal University of ABC (UFABC), Brazil

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   Giuseppe Francesco Cesare Lama, University of Naples Federico II, Italy
   Guido Rianna, Centro Euro-Mediterraneo sui Cambiamenti Climatici, Italy
   Monia Santini, Centro Euro-Mediterraneo sui Cambiamenti Climatici, Italy
   Marco Mancini, Centro Euro-Mediterraneo sui Cambiamenti Climatici, Italy
   Mirko Stojiljkovic, Centro Euro-Mediterraneo sui Cambiamenti Climatici, Italy

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   Fausto Tomei, Arpae, SIMC, Italy
   Attilio Toscano, University of Bologna, Italy
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   Salvatore Falanga Bolognesi, Ariespace s.r.l., Italy
   Guido D'Urso, University of Naples Federico II, Italy

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   Diego Manuel Jiménez Bravo, University of Salamanca, Spain
   André Sales Mendes, University of Salamanca, Spain
   Valderi Reis Quietinho Leithardt, Instituto Politécnico de Portalegre, Portugal

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SESSION 2.6 - *Special Session on Precision Horticulture*

Room: Virtual Room #2
Chairs: Manuela Zude-Sasse, *Leibniz-Institut für Agrartechnik und Bioökonomie*
   Lav Ramchandra Khot, *Washington State University, USA*

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   Abhilash K. Chandel, Washington State University, USA
   Lav R. Khot, Washington State University, USA
   Claudio O. Stöckle, Washington State University, USA
   R. Troy Peters, Washington State University, USA
   Steve Mantle, Washington State University, USA

Friday, November 6

SESSION 1.7 - Special Session on Innovative Robotics Solutions and Autonomous Tasks in Agriculture - PART 2

Room: Virtual Room #1
Chairs: Lorenzo Marconi, *University of Bologna, Italy*
        Dario Mengoli, *University of Bologna, Italy*

309 **Convolutional Neural Networks for Detection of Storage Disorders on 'Abbé Fétel' pears**
Alessandro Bonora, University of Bologna, Italy
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Kustrim Bresilla, University of Bologna, Italy
Luca Corelli Grappadelli, University of Bologna, Italy
Gianmarco Bortolotti, University of Bologna, Italy
Luigi Manfrini, University of Bologna, Italy

SESSION 2.7 - Special Session on Sensors, Instruments and Methodologies for Beverage Quality Assessment
Room: Virtual Room #2
Chairs: Domenico Di Caro, *Spring Off s.r.l., Italy*
Consolatina Liguori, *University of Salerno, Italy*

314 **Characterization of the main physico-chemical parameters in three styles of craft beer**
Loredana Liguori, University of Salerno, Italy
Giovanni De Francesco, University of Perugia, Italy
Giuseppe Perretti, University of Perugia, Italy
Donatella Albanese, University of Salerno, Italy

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Salvatore Dello Iacono, University of Salerno, Italy
Adriana Erra, Birring start-up innovativa s.r.l., Italy
Antonio Pietrosanto, University of Salerno, Italy
Domenico Di Caro, Spring Off s.r.l., Italy
Consolatina Liguori, University of Salerno, Italy

323 **Impedimetric label – free immunosensor for rapid detection of Ochratoxin A in beer and wine**
Francesca Malvano, University of Salerno, Italy
Donatella Albanese, University of Salerno, Italy
Roberto Pilloton, University of Salerno, Italy

SESSION 3.7 - Special Session on Agricultural Meteorology for Water Resilience in Agroecosystems
Room: Virtual Room #3
Chairs: Filiberto Altobelli, *CREA, Italy*
Anna Dalla Marta, *University of Florence, Italy*
Giulio Castelli, *University of Florence, Italy*

328 **Ploovium: a decision support system for increasing water use efficiency of irrigated crops**
Andrea Martelli, Soonapse s.r.l. (SME), Italy
Filiberto Altobelli, Research Centre for Agricultural Policies and Bioeconomy, Italy
Anna Dalla Marta, University of Florence, Italy
Marco Ciarletti, Soonapse s.r.l. (SME), Italy

333 **Performance of different rice varieties under drip irrigation**
Stefano Monaco, Council for Agricultural Research and Economics, Italy
Paolo Bottazzi, Terre Regionali Toscane, Italy
Filiberto Altobelli, Council for Agricultural Research and Economics, Italy

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Lorenzo Villani, University of Florence, Italy
Giulio Castelli, University of Florence, Italy
Francesco Sambalino, MetaMeta Research, The Netherlands
Lucas Allan Almeida Oliveira, Federal University of Viçosa, Brazil
Elena Bresci, University of Florence, Italy

SESSION 1.8 - General Session - PART 2
Room: Virtual Room #1

Chairs: Annachiara Berardinelli, *University of Trento, Italy*
Sihem Dabbou, *University of Trento, Italy*

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Marco Sozzi, University of Padova, Italy
Enrico Bernardi, University of Padova, Italy
Ahmed Kayad, University of Padova, Italy
Francesco Marinello, University of Padova, Italy
Davide Boscaro, Council for Agricultural Research and Economics-Research Centre for Viticulture and Enology, Italy
Alessia Cogato, University of Padova, Italy
Franco Gasparini, University of Padova, Italy
Diego Tomasi, Council for Agricultural Research and Economics-Research Centre for Viticulture and Enology, Italy

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Gaia Codeluppi, University of Parma, Italy
Antonio Cilfone, University of Parma, Italy
Luca Davoli, University of Parma, Italy
Gianluigi Ferrari, University of Parma, Italy