



12.09.2022

Program at a glance:

14.09.2022 (Wed)		15.09.2022 (Thu)		16.09.2022 (Fri)	
Registration (8:00 – 8:45)				Guided tour of the monastery (08:30 – 09:30)	
Opening ceremony (8:45 – 9:00)					
Plenary session (9:00 – 9:45) <i>Aula maior</i>		Plenary session (9:00 – 9:45) <i>Aula maior</i>		TC meeting (invited only) (08:30 – 09:30)	
Coffee break (9:45 – 10:00)		Coffee break (9:45 – 10:00)		Track A7 (09:30 – 10:30) Process Control of Harvesting Machines	
Track A1 (10:00 – 12:00) Robotics and Navigation in Agriculture and Forestry	Track B1 (10:00 – 12:00) Image Processing with Neural Networks in Agriculture 1	Track A4 (10:00 – 12:00) Modeling and Estimation in Horticulture and Greenhouses	Track B4 (10:00 – 12:00) Image Processing in Agriculture	Track B7 (09:30 – 10:30) Sensing and Estimation in Agriculture	
				Closing ceremony (10:30 – 10:45)	
Lunch break (12:00 – 13:00)		Lunch break (12:00 – 13:00)		Technical excursion (11:00 – 19:00)	
Track A2 (13:00 – 15:00) Positioning Technologies in Agricultural Vehicles	Track B2 (13:00 – 15:00) Image Processing with Neural Networks in Agriculture 2	Track A5 (13:00 – 15:00) Control and Automation in Horticulture and Greenhouses	Track B5 (13:00 – 15:00) Information Systems		
Coffee break (15:00 – 15:30)		Coffee break (15:00 – 15:30)			
Track A3 (15:30 – 17:00) Positioning and Navigation for UAV in Agriculture and Forestry	Track B3 (15:30 – 17:00) Sensing and Perception in Agriculture	Track A6 (15:30 – 17:00) Process Control of Agricultural Implements	Track B6 (15:30 – 17:00) Estimation and Modeling in Environment		
		Gala dinner (19:00 – 22:00)			

The conference proceedings will be distributed at the conference.

Day 1 – 14.09.2022, Wednesday

8:45 – 9:00 Opening ceremony

9:00 – 9:45 Keynote Presentation 1

Prof. Wouter Saeys, KU Leuven

Optical sensing technologies for smarter farming

10:00 – 12:00, Track A1: Robotics and Navigation in Agriculture and Forestry

10:00 – 10:30	Development of an electric vehicle robot for vineyards: Optimal route planning and a turning method on an irregularly shaped field Yoshitomo Yamasaki, Noboru Noguchi
10:30 – 11:00	Building a Robot Tractor Using Commercial Components and Widely Used Standards Juha Backman, Raimo Linkolehto, Madis Lemsalu, Jere Kaivosoja
11:00 – 11:30	Modeling of Tire Lateral Forces in Non-linear 6-DOF Simulations for Off-Road Vehicles Tabish Badar, Juha Backman, Arto Visala
11:30 – 12:00	Slip Detection and Control for Harvesting Machines Mirjan Heubaum, Philipp Münch, Giuliano Costantini, Tobias Peschke, Daniel Görges

10:00 – 12:00, Track B1: Image Processing with Neural Networks in Agriculture 1

10:00 – 10:30	Real-Time CNN-based Computer Vision System for Open-Field Strawberry Harvesting Robot Madis Lemsalu, Victor Bloch, Juha Backman, Matti Pastell
10:30 – 11:00	Detecting and Localizing Strawberry Centers for Robotic Harvesting in Field Environment Zixuan He, Manoj Karkee, Qin Zhang
11:00 – 11:30	Spatio-temporal Mapping of Cotton Blooms Appearance Using Deep Learning Vaishnavi Thesma, Canicius Mwitta, Glen Rains, Javad Mohammadpour Velni
11:30 – 12:00	A Data-Driven Monitoring System for the Early Pest Detection in the Precision Agriculture of Hazelnut Orchards Martina Lippi, Renzo Fabrizio Carpio, Mario Contarini, Stefano Speranza, Andrea Gasparri

13:00 – 15:00, Track A2: Positioning Technologies for Agricultural Vehicles

13:00 – 13:30	A vision-based navigation system for an agricultural autonomous tractor Sristi Saha, Tsuyoshi Morita, Ricardo Ospina, Noboru Noguchi
13:30 – 14:00	Ploughing Furrow Detection Based on 3D LiDAR Sensor Data Reinhold Poscher, Riikka Inkeri Soitinaho, Timo Oksanen
14:00 – 14:30	Positioning and Attitude determination for Precision Agriculture Robots based on IMU and Two RTK GPSs Sensor Fusion David Vieira, Rodolfo Orjuela, Matthias Spisser, Michel Basset
14:30 – 15:00	2D LiDAR based object detection and tracking on a moving vehicle Riikka Inkeri Soitinaho, Moll Marcel, Timo Oksanen

13:00 – 15:00, Track B2: Image Processing with Neural Networks in Agriculture 2

13:00 – 13:30	Trellis wire detection for obstacle avoidance in apple orchards Santosh Bhusal, Uddhav Bhattarai, Manoj Karkee
13:30 – 14:00	Improved ResNet Based Apple Leaf Diseases Identification Ruiou Ding, Yongliang Qiao, xianghai Yang, Honghua Jiang, Yunqi Zhang, Ziqi Huang, Dongwei Wang, Huixiang Liu
14:00 – 14:30	Semantic Image Segmentation with Deep Learning for Vine Leaf Phenotyping Petros Tamvakis, Chairi Kiourt, Solomou Alexandra, Ioannakis George, Nestoras Tsirliganis
14:30 – 15:00	Investigation of the added value of CycleGAN on the plant pathology dataset Bart van Marrewijk, Gerrit Polder, Gert Kootstra

15:30 – 17:00, Track A3: Positioning and Navigation for UAV in Agriculture and Forestry

15:30 – 16:00	LiDAR-odometry based UAV pose estimation in young forest environment Issouf Ouattara, Vesa Korhonen, Arto Visala
16:00 – 16:30	UAV-UGV Collaborative Localisation with Ambiguity Aversion by UAV Re-positioning A.H.T.E. De Silva, Jay Katupitiya, Andrey V. Savkin
16:30 – 17:00	Sensor optimization for altitude estimation of spraying drones in vineyards Thomas Severin, Dirk Söffker

15:30 – 17:00, Track B3: Sensing and Perception in Agriculture

15:30 – 16:00	Practical use of Deep Learning Based Daily Stem Elongation Measurement of Tomato Plants in Two Commercial Greenhouses Seitaro Toda, Tastuya Higuchi, Tetsutaka Sakamoto, Takeru Kanoh, Naomichi Fujiuchi, Kotaro Takayama
16:00 – 16:30	Determining fresh tomato weight using depth and rgb images from an AR headset Tim Daalen van, Joseph Peller, Jos Balendonck
16:30 – 17:00	Canopy Density Estimation of Apple Trees Paudel Achyut, Manoj Karkee, Joseph R. Davidson, Cindy Grimm

Day 2 – 15.09.2022, Thursday

09:00 – 09:45 Keynote Presentation 2

Prof. Claus Sorensen, Aarhus University

Operations research for agricultural field operations

10:00 – 12:00, Track A4: Modeling and Estimation in Horticulture and Greenhouses

10:00 – 10:30	Persistent Monitoring for Indoor Farming using Static and Mobile Sensors Karlis Priandana, Made Widhi Surya Atman, Azwirman Gusrialdi
10:30 – 11:00	State Estimation of Pest Populations subject to Intermittent Measurements Nicolas Bono Rossello, Luca Rossini, Stefano Speranza, Emanuele Garone
11:00 – 11:30	Nonlinear Observability Analysis and Joint State and Parameter Estimation in a Lettuce Greenhouse using Ensemble Kalman Filtering Sjoerd Boersma, Simon Van Mourik, Bolai Xin, Gert Kootstra
11:30 – 12:00	Irrigation control by mimicry Jose Maria Manzano, Jorge Bareiro, Gabriela Belén Cáceres Rodríguez, Jose R. Salvador, Pablo Millan Gata

10:00 – 12:00, Track B4: Image Processing in Agriculture

10:00 – 10:30	Dimensionality Reduction of High-throughput Phenotyping Data in Cotton Fields Amanda Rose Issac, Himani Yadav, Glen Rains, Javad Mohammadpour Velni
10:30 – 11:00	Early Detection of Toppling Susceptibility in Tulip Using Spectral Imaging Selwin Hageraats, Gerrit Polder, Sjoerd van Vilsteren, John Trompert, Jeroen Wildschut
11:00 – 11:30	Stereo-vision solution for measuring Plant Area Index in high tunnel crops Alejandro Tapia Córdoba, Luis Orihuela Espina, James Brian Romaine, Jose R. Salvador
11:30 – 12:00	A Drone-based Prototype Design and Testing for Under-the-canopy Imaging and Onboard Data Analytics R. Oliver Zanone, Tairan Liu, Javad Mohammadpour Velni

13:00 – 15:00, Track A5: Control and Automation in Horticulture and Greenhouses

13:00 – 13:30	Robust sample-based model predictive control of a greenhouse system with parametric uncertainty Sjoerd Boersma, Cong Cong Sun, Simon Van Mourik
13:30 – 14:00	Deficit irrigation-based growth control of maize plants using hybrid model predictive / trellis decoding algorithm Lina Owino, Dirk Söffker
14:00 – 14:30	A hybrid dynamical systems approach to smart irrigation Riccardo Bertollo, Gabriela Belén Cáceres Rodríguez, Pablo Millan Gata, Mario Pereira, Luca Zaccarian
14:30 – 15:00	Economic model predictive control for interactions of water sources connected crop field Gabriela Belén Cáceres Rodríguez, Mario Pereira, Pablo Millan Gata

13:00 – 15:00, Track B5: Information Systems

13:00 – 13:30	Connecting agricultural robots and smart implements by using ISO 11783 communication Dimitrios S. Paraforos, Cristophe Aube, Loukas Athanasakos, Ioannis Avgoustakis, Suzanne Baron, Trim Bresilla, Spyros Fountas, Jochen Hemming, Panagiotis Karagiannis, Nikos Mylonas, Ard Nieuwenhuizen, Ferran Garcia, Tetiana Pavlenko, Alea Scovill, Galibjon Sharipov, Josep Vidal, Frits van Evert
13:30 – 14:00	Event Ontology about Wheat Cultivation Asya Stoyanova-Doycheva, Emil Doychev, Vanya Ivanova, Vladimir Valkanov
14:00 – 14:30	Approach for modeling and implementation of an intelligent system for livestock cattle on pastures Evgeni Valchev, Pencho Malinov, Todorka Glushkova, Stanimir Stoyanov
14:30 – 15:00	Semantic Knowledge for Autonomous Smart Farming Ganesh Ramanathan, Danai Vachtsevanou, Garcia Kimberly, Jeremy Lemee, Samuele Burattini, Kenan Bektas, Simon Mayer

15:30 – 17:00, Track A6: Process Control of Agricultural Implements

15:30 – 16:00	In-field Static Spread Pattern of a Centrifugal Spreader by Considering Field Topography Galibjon M. Sharipov, Andreas HeiB, Sulaymon Eshkabilov, Hans W. Griepentrog, Dimitrios S. Paraforos
16:00 – 16:30	Introducing Metrics to Analyse the Performance of Automatic Section Control for Agricultural Machines Samuel Brodie, Timo Oksanen
16:30 – 17:00	Condition Monitoring using Convolutional Neural Network in Agricultural Machinery - Use Case: Disc Mower Michael Jaumann, Ertug Olcay, Timo Oksanen

15:30 – 17:00, Track B6: Sensing and Estimation in Agriculture 1

15:30 – 16:00	Predicting equilibrium moisture contents of mushrooms by NARX neural network and first order kinetic modelling approaches Dimitrios Argyropoulos, Dimitrios S. Paraforos
16:00 – 16:30	Modeling and Simulation of Aquaculture Systems Sandra Viehöfer, Philipp Brauer, Dirk Söffker
16:30 – 17:00	Vector Field based Tracking of a Dynamic Wildfire Boundary with an UAV Licheng Feng, Jay Katupitiya

Day 3 – 16.09.2022, Friday

8:30 – 9:30, Guided Tour of Monastery

8:30 – 9:30, TC Meeting (invited only)

9:30 – 10:30, Track A7: Process Control of Harvesting Machines

09:30 – 10:00	Optimization of a Low Loss Strategy for Combine Harvester Based on Bayesian Network Yehong Liu, Dong Sun, xindong Ni, Shumao Wang, Xin Wang
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9:30 – 10:30, Track B7: Sensing and Estimation in Agriculture 2

09:30 – 10:00	Results on spatio-temporal estimation of temperature and soil moisture in La Colmena (Paraguay) Jose Maria Manzano, Luis Orihuela Espina, Erid Pacheco, Mario Pereira
10:00 – 10:30	3D Map Reconstruction of an Orchard using an Angle-Aware Covering Control Strategy Martina Mammarella, Cesare Donati, Takumi Shimizu, Masaya Suenaga, Lorenzo Comba, Alessandro Biglia, Kuniaki Uto, Takeshi Hatanaka, Paolo Gay, Fabrizio Dabbene

10:30 – 10:45, Closing Ceremony

11:00 – 19:00, Technical Excursion

See the handout for details.