MACHINE LEARNING AND VISION FOR INDUSTRIAL APPLICATIONS

AUTUMN SCHOOL (Online)
October 18-22, 2021, Kristiansand, Norway

Machine learning and computer vision have the potential to significantly improve the automation and autonomy of many industrial applications (e.g. offshore, automotive, telecommunication, gaming and multimedia) by enhancing the operational performance, decreasing cost related to manual operations, increasing benefits, minimizing losses, optimizing productivity and improving safety and security. The goal of this Autumn School MALVIC is to bring together pioneering international scientists in machine learning and computer vision with both academia and practitioners from the industrial fields on a unique setting for the discussion and demonstration of practical, hands-on machine learning and vision research and development. Offshore industrial applications and industrial process scenarios are examples for the autumn school target.
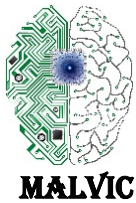
Early bird registration September 17th, 2021.
norceresearch.no/arrangementer/malvic21

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The Autumn School will partly take place in Kristiansand within the Norwegian Southern Riviera and partly as an online event.

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INVITED SPEAKERS

Guy Theraulaz: Collective Intelligence "the Ant Model"

Prof. Guy Theraulaz, CNRS Research Director, France. He is a world-leading expert in the study of collective intelligence and collective behaviors in animal and human groups. He is also a leading researcher in the field of swarm intelligence and computational biology, primarily studying social insects but also distributed algorithms, e.g. for collective robotics, directly inspired by nature.

Jürgen Schmidhuber: Modern Artificial Intelligence - 1980s-2021 and Beyond

Prof. Jürgen Schmidhuber, Scientific Director of IDSIA, Switzerland. He is a computer scientist most noted for his work in the field of artificial intelligence, deep learning and artificial neural networks. He is a co-director of the Dalle Molle Institute for Artificial Intelligence Research in Manno, in the district of Lugano, in Ticino in southern Switzerland.

René Vidal: Mathematics of Deep learning

Prof. René Vidal, Professor at JHU, USA, and Chief scientist at NORCE. He is the Herschel Seder Professor of Biomedical Engineering and the Inaugural Director of the Mathematical Institute for Data Science at The Johns Hopkins University. He has secondary appointments in Computer Science, Electrical and Computer Engineering, and Mechanical Engineering.

Thomas Bäck: Industrial Optimization and the Search for New Algorithms

Thomas Bäck, Professor at Leiden University (The Netherlands) and Chief Scientist at NORCE. He **is** head of the Natural Computing Research Group and Director of Education at the Leiden Institute of Advanced Computer Science (LIACS). He received his PhD in Computer Science from Dortmund University, Germany, in 1994. He has been Associate Professor of Computer Science at Leiden University since 1996 and full Professor for Natural Computing since 2002.

Horst Bischof: Understanding Activities in an Industrial Context

Prof. Horst Bischof, Professor, and Vice-Rector TU Graz, Austria, is vice rector for research and Professor at the Institute for Computer Graphics and Vision at the Graz University of Technology, Austria. He has more than 750 publications with notable works on object recognition, visual learning, on-line and life-long learning, motion and tracking, visual surveillance and biometrics and medical computer vision.

Daniel Cremers: Deep Visual SLAM

Prof. Daniel Cremers is Professor of Informatics and Mathematics at TU Munich and Germany. He is one of the leading experts in computer vision, machine learning & deep networks with focus on mathematical image analysis (segmentation, motion estimation, multiview reconstruction, visual SLAM). In December 2010 he was listed among "Germany's top 40 researchers below 40" (Capital). On March 1st 2016, Prof. Cremers received the Gottfried Wilhelm Leibniz Award, the biggest award in German academia.

Takeo Kanade:

Prof. Takeo Kanade, Professor, Carnegie Mellon University, USA, is a Japanese computer scientist and one of the world's foremorst scientists in computer vision. He has more than 300 publications and 20 patents and with notable works including Lucas-Kanade method, face detector, Tomasi-Kanade factorization method...etc.
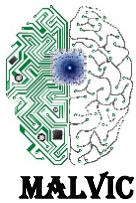
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Marius Leordeanu: Mining for Meaning. From Vision to Language

Prof. Marius Leordeanu, Professor, Politehnica University of Bucharest, is also a Senior Scientist of the Romanian Academy (IMAR). He holds a PhD from the Robotics Institute of CMU and Bachelor's in Computer Science and Mathematics in 2003, from Hunter College of the City University of New York.

Stefano Soatto: Learning Representations

Prof. Stefano Soatto**, Professor, UCLA, Director of Applied Science, Amazon AI,** is a professor of computer science with notable works in Computer Vision and Nonlinear Estimation and Control Theory. vision, sound, touch) to interact with humans and the environment.

Xin Yao: Ensemble Approaches to Class Imbalance Learning

Xin Yao**,** Chair Professor, Southern University of Science and Technology, Shenzhen, China. He is also a part-time Professor of Computer Science at the University of Birmingham, UK. His major research interests include evolutionary computation, ensemble learning and search-based software engineering. His work won the 2001 IEEE Donald G. Fink Prize Paper Award; 2010, 2015 and 2017 IEEE Transactions on Evolutionary Computation Outstanding Paper Awards; 2010 BT Gordon Radley Award for Best Author of Innovation (Finalist); 2011 IEEE Transactions on Neural Networks Outstanding Paper Award; and many other best paper awards. He received a prestigious Royal Society Wolfson Research Merit Award in 2012 and the IEEE CIS Evolutionary Computation Pioneer Award in 2013. He was recently selected to receive the 2020 IEEE Frank Rosenblatt Award.

Mathias Grundmann: Live Perception for Mobile & Web

Matthias Grundmann is a Research Director in Google Research working in the area of Computer Vision, Machine Learning and Computational Video. He is leading a vertical team of ~40 Research and Software Engineers with focus on Machine Learning solutions for Live Perception (low-latency, on-device and real-time). His team develops high-quality, cross-platform ML solutions (MediaPipe) driven by GPU/CPU accelerated ML inference (TFLite GPU and XNNPack) for mobile and web. Among the rich portfolio of technologies his team develops are solutions for hand and body tracking, high-fidelity facial geometry and iris estimation, video segmentation, 2D object and calibration-free 6 DOF camera tracking, 3D object detection, Motion Photos and Live Photo stabilization. Matthias received his Ph.D. from the Georgia Institute of Technology in 2013 for his work on Computational Video with focus on Video Stabilization and Rolling Shutter removal for YouTube. His work on Rolling Shutter removal won the best paper award at ICCP, 2012. He was recipient of the 2011 Ph.D. Google Fellowship in Computer Vision.

Fridtjof Stein: Looking Far Ahead … Perception Challenges in the Field of Autonomous Trucking

Dr. Fridtjof Stein is a senior scientist at Daimler truck within the field of perception. He works for about three decades at Daimler in the field of autonomous driving in public traffic including real-time vision especially in the fields of stereo vision, optical flow, object detection, and ground modeling in the automotive domain.

Gal Chechik: Practical talk
Gal Chechik, Nvidia.