

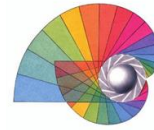


MICN Lab

**USZ** Universitäts  
Spital Zürich



University of  
Zurich <sup>UZH</sup>



**ETH**  
Eidgenössische Technische Hochschule Zürich  
Swiss Federal Institute of Technology Zurich

Second

# Zurich Machine Intelligence in Clinical Neuroscience Symposium

## *Machine Vision: Perspectives on the Future of Perception*

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**Thursday, January 20<sup>th</sup> 2022**

9:00 a.m. – 5:20 p.m. UTC +1 (Zurich)  
3:00 a.m. – 11:20 a.m. UTC -5 (New York)  
7:00 p.m. – 3:20 a.m. UTC +11 (Sydney)

[Click here to go to Registration!](#)

**Registration and participation are completely free of charge!** The event will be held in a hybrid format: **Online over Zoom** and at the Monakow Auditorium at the University Hospital Zurich. You will receive the Zoom link and further information in time and after registering using the abovementioned form. **On-site participation is restricted to employees of the USZ, UZH, and ETH, as well as invited guests.** A recording of the symposium will be made available on the MICN Lab website ([www.micnlab.com](http://www.micnlab.com))

### Director

Luca Regli

### Organizers

Ender Konukoglu   Victor Staartjes   Carlo Serra  
Machine Intelligence in Clinical Neuroscience (MICN) Laboratory  
Department of Neurosurgery & Clinical Neuroscience Center  
University Hospital Zurich, University of Zurich

### Invited Faculty

Ron Kikinis (Boston, MA, USA)  
Gabriel Zada (Los Angeles, CA, USA)  
Victor Yang (Toronto, ON, USA)  
Suman Saha (Zurich, CH)  
Simon Hecker (Zurich, CH)  
Antonios Thanellas (Helsinki, FI)  
Julius Kernbach (Aachen, DE)  
Marc Ungeheuer (Aachen, DE)

Tom Vercauteren (London, UK)  
Ingo Scholtes (Zurich, CH)  
Antonio Di Ieva (Sydney, AU)  
Colin Compas (Nashville, TN, USA)  
Gustav Burström (Stockholm, SE)  
Tristan van Doormaal (Zurich, CH)  
Christopher Rösel (Aachen, DE)  
Friedrich Reinhardt (Kuzik, NAM)



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## Machine Vision: Perspectives on the Future of Perception

### Program

Time (UTC +1)	Title	Presenter	Institution
9:00 – 9:10	<b>Welcome</b>	Prof. Luca Regli Dr. Carlo Serra	MICN Lab, Neurosurgery University Hospital Zurich (CH)
<b>Session I: Basics</b>			
<i>Session Chair: Prof. Victor X.D. Yang (Toronto, ON, Canada)</i>			
<i>Moderators: Victor Staartjes, Dr. Carlo Serra</i>			
9:10 – 9:40	Introduction to Supervised and Unsupervised Learning	Prof. Ingo Scholtes <small>Chair of Machine Learning for Complex Networks</small>	University of Würzburg (DE) University of Zurich (CH)
9:40 – 10:00	Handling Neuroimaging Data for Machine Learning	Dr. Antonios Thanellas	Helsinki University Hospital (FI)
10:00 – 10:20	Unsupervised Pattern Discovery in Large-Scale Imaging Data	Dr. Julius Kernbach	RWTH Aachen University Hospital (DE)
10:20 – 10:40	Computational Fractal-Based Analysis and Radiomics of Brain Tumors	Prof. Antonio Di Ieva	Computational NeuroSurgery (CNS) Lab, Macquarie University (AU)
10:40 – 11:10	Machine Vision for Wildlife Surveillance in Namibia	Marc Ungeheuer Christopher Rösel Dr. Friedrich Reinhardt	Wild Intelligence Lab RWTH Aachen University (DE) Kuzikus Reserve (NAM)
11:10 – 12:00	<b>Keynote Session: Current Applications of Machine Vision</b>	<b>Prof. Tom Vercauteren</b>	<b>King's College London (UK)</b>
12:00 – 13:00 - Lunch Break			
<b>Session II: Machine Vision</b>			
<i>Session Chair: Prof. Ender Konukoglu (Zurich, Switzerland)</i>			
<i>Moderators: Dr. Carlo Serra, Victor Staartjes</i>			
13:00 – 13:20	Autonomous Driving with Motorcycles	Dr. Simon Hecker	Aegis Rider (CH)
13:20 – 13:40	Spoofing Attack Detection	Dr. Suman Saha	Computer Vision Lab (CVL), ETH Zurich (CH)
13:40 – 14:00	Leveraging Federated Learning to Overcome the Challenges of Developing AI in Healthcare	Dr. Colin Compas	NVIDIA Corporation (USA)
14:00 – 14:50	<b>Keynote Session: History and Evolution of Machine Vision in Medical Imaging</b>	<b>Prof. Ron Kikinis</b>	<b>Harvard Medical School (USA)</b>
14:50 – 15:30 - Lunch Break			



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## Zurich Machine Intelligence in Clinical Neuroscience Symposium Machine Vision: Perspectives on the Future of Perception

Time (UTC +1)	Title	Presenter	Institution
<b>Session III: Clinical Applications of Machine Learning</b>			
<i>Session Chair: Prof. Luca Regli (Zurich, Switzerland)</i>			
<i>Moderators: Dr. Carlo Serra</i>			
15:30 – 15:50	Automated Intraoperative Anatomical Recognition	Victor Staartjes	MICN Laboratory, Neurosurgery University Hospital Zurich (CH)
15:50 – 16:20	Machine Learning in Pituitary Surgery	Prof. Gabriel Zada	University of Southern California (USA)
16:20 – 16:40	Combining Machine Learning and Augmented Reality	Prof. Tristan van Doormaal	Neurosurgery University Hospital Zurich (CH)
16:40 – 17:10	Hyperspectral imaging and machine learning during tumor surgery	Dr. Gustav Burström	Clinical Neuroscience Karolinska Institute (SE)
17:10 – 17:20	Closing Remarks	Prof. Luca Regli Dr. Carlo Serra	MICN Lab, Neurosurgery University Hospital Zurich (CH)