Third
Zurich Machine Intelligence in Clinical Neuroscience Symposium
Machine Vision, Robotics, and Beyond

Thursday, June 20th 2024

9:00 a.m. – 5:00 p.m. UTC +2 (Zurich)
3:00 a.m. – 11:00 a.m. UTC -4 (New York)
5:00 p.m. – 1:00 a.m. UTC +10 (Sydney)

Registration:
www.micnlab.com/symposium2024

Registration and participation (online or on-site) are completely free of charge! The event will be held in a hybrid format: **Online over Zoom** and at the University Hospital Zurich, Auditorium WEST U12. You will receive the Zoom link and further information in time and after registering using the abovementioned form. A recording of the symposium will be made available on the MICN Lab website (**www.micnlab.com**)

Director

Carlo Serra   Luca Regli   Victor Staartjes

Machine Intelligence in Clinical Neuroscience & Microsurgical Neuroanatomy (MICN) Laboratory
Department of Neurosurgery & Clinical Neuroscience Center
University Hospital Zurich, University of Zurich

Invited Faculty

Pierre-Alain Clavien (Zurich, CH)	Live	Akio Morita (Tokyo, JP)	Online
Antonio Di Ieva (Sydney, AU)	Online	Lennart Stieglitz (Zurich, CH)	Live
Miikka Korja (Helsinki, FI)	Live	Adrian Elmi Terander (Stockholm, SE)	Live
Philipp Fürnstahl (Zurich, CH)	Live	Nicole Lindenblatt (Zurich, CH)	Live
Seungjun Ryu (Daejeon, KR)	Live	Anand Veeravagu (Stanford, USA)	Online
Seong Yi (Seoul, KR)	Live	Pascal Jabbour (Philadelphia, USA)	Online
Tristan van Doormaal (Utrecht, NL)	Live	Vivek Buch (Stanford, USA)	Online

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Program

Time (UTC +1)	Title	Presenter	Institution
9:00 – 9:10	**Welcome**	Prof. Dr. Luca Regli PD Dr. Carlo Serra	MICN Lab, Neurosurgery University Hospital Zurich (CH)

Session I: Machine Vision: Foundations and Applications
Session Chair: **Prof. Dr. L. Regli** (Zurich, Switzerland)
Moderators: PD Dr. Carlo Serra, Dr. Victor Staartjes

Time (UTC +1)	Title	Presenter	Institution
9:10 – 9:30	Foundations Segmentation, Image Classification	Prof. Dr. Antonio Di Ieva	CNS Lab, Macquarie University, Sydney (AU)
9:30 – 9:50	Segmentation 1: Intracranial Hemorrhage	Prof. Dr. Miikka Korja	Helsinki University Hospitals (FI)
9:50 – 10:10	Radiomics: Early Detection of Intracranial Hemorrhage on X-Rays	Prof. Dr. Seungjun Ryu	Daejeon Medical Center Eulji University (KR)
10:10 – 10:30	Synthetic Imaging 1: Generating Synthetic CT from Biplanar X-Rays	Dr. Victor Staartjes	MICN Lab, Neurosurgery University Hospital Zurich (CH)
10:30 – 10:50	Machine Vision and Augmented Reality	Prof. Dr. Tristan van Doormaal	Utrecht Medical Center (NL)
10:50 – 11:00	Introduction of the Keynote Speaker	Prof. Dr. Luca Regli	MICN Lab, Neurosurgery University Hospital Zurich (CH)
11:00 – 12:00	*Keynote Session:* **History and Evolution of Robotics in Surgery**	**Prof. Dr. Pierre-Alain Clavien**	Professor Emeritus University of Zurich (CH)
	12:00 – 13:00 – **Lunch Break**		

Session II: Special Topic: Innovations in Robotics
Session Chair: **Prof. Dr. Seong Yi** (Seoul, Korea)
Moderators: PD Dr. Carlo Serra, Dr. Victor Staartjes

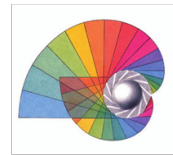| Time (UTC +1)	Title	Presenter	Institution
13:00 – 13:20	Robotics in Plastic Surgery	Prof. Dr. Nicole Lindenblatt	Department of Plastic Surgery University Hospital Zurich (CH)
13:20 – 13:40	Current Applications of Robotics in Spine	Prof. Dr. Anand Veeravagu	Department of Neurosurgery Stanford University Hospitals (US)
13:40 – 14:00	Developing a novel robot from "bench to bedside"	Prof. Dr. Seong Yi	Yonsei Sincheon Hospital Yonsei University (KR)
14:00 – 14:20	Robotic endovascular interventions – state of the art	Prof. Dr. Pascal Jabbour	Thomas Jeffersen University Hospital Philadelphia PA (US)
	14:20 – 14:40 – **Break**		

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Time (UTC +1)	Title	Presenter	Institution
Session III: The Beyond *Session Chair:* **PD Dr. Carlo Serra** (Zurich, Switzerland) *Moderators:* Prof. Dr. Luca Regli; Dr. Victor Staartjes			
14:40 – 15:00	SmartArm: Integration and validation of a versatile surgical robotic system for constrained workspaces	Prof. Dr. Akio Morita	Nippon Medical School, Tokyo (JP)
15:00 – 15:20	State-of-the-Art in Augmented Reality for Spine Surgery	Prof. Dr. Adrian Elmi Terander	Karolinska Institutet, Stockholm (SE)
15:20 – 15:40	Developing the surgeon-machine interface: using a novel instance-segmentation framework for intraoperative landmark labelling	Prof. Dr. Vivek P. Buch	Department of Neurosurgery Stanford University Hospitals (US)
15:40 – 16:00	AENEAS: Real-Time Anatomical Navigation and Surgical Roadmap Generation	PD Dr. Carlo Serra	MICN Lab, Neurosurgery University Hospital Zurich (CH)
16:00 – 16:20	Robotically assisted ultrasound reconstruction for spine surgery: from bench to bedside	Prof. Dr. Philipp Fürnstahl	Balgrist University Hospital Zurich (CH)
16:20 – 16:40	Deep Brain Stimulation in Paraplegia	Prof. Dr. Lennart Stieglitz	Department of Neurosurgery University Hospital Zurich
16:40 - 17:00	**Closing Remarks**	Prof. Luca Regli PD Dr. Carlo Serra	MICN Lab, Neurosurgery University Hospital Zurich (CH)