



University
of Basel

Department of
Biomedical Engineering

Seminar Series **Robotics, Lasers and Beyond**

Lecture Room 14.03.002, Department Biomedical Engineering, Gewerbestrasse 14, Allschwil

Tuesday 10.03.2020, 11:00 – 12:30

Assistive Robots for Surgery from Micro- to Macroscale

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Abstract

While human interaction remains key to a caring treatment, medical robotics holds the potential to improve surgical processes through enabling scaling of forces and actuation, providing safe and individual treatments to patients, and allowing for efficient use of health care personnel and resources. Machine learning algorithms and standardization of processes can increase the quality of medical diagnosis and treatments, particularly when analyzing large quantities of data. Technical and robotic systems can thus support the medical staff in all steps of a medical process. This talk will introduce several assistive robotic systems for minimally invasive surgical procedures at different size scales. On one hand, wireless microrobots and steerable flexible robotic tools are discussed for medical applications that require delicate tissue handling. On the other hand, cognitive robotic surgeons and augmented reality support in the operation room are presented for application in laparoscopy and neurosurgery.

Curriculum:

Currently, Franziska Mathis-Ullrich is assistant professor at the Karlsruhe Institute of Technology and is head to the Health Robotics and Automation Lab (HERA).

Mechanical engineer by training, who specialized in Robotics, Franziska Mathis-Ullrich has focused on robot-assisted minimally invasive ophthalmic interventions throughout her doctoral studies at ETH Zurich. She has authored numerous publications that focus on the development of cutting-edge technology for ophthalmic interventions. For her work, she has received multiple awards and made it onto the prestigious Forbes "30 under 30" list (Europe). Franziska Mathis-Ullrich has gained practical experience in several international high-tech industries and research laboratories in Switzerland, Sweden, Australia and China. As co-founder of Ophthorobotics AG, she is highly passionate about the development and commercialization of the first system capable of performing a complete ophthalmic surgical procedure.