

Preface

Medical and Service Robotics are entering a phase of very vigorous growth. An—obviously incomplete—list of “hot” topics would include surgery robotics, assist devices, rehabilitation technology, surgical instrumentation, Brain–Machine Interface (BMI) as examples for medical robotics, autonomous cleaning, tending, logistics, surveying and rescue robots and elderly and healthcare robots as topics from service robotics.

A relatively small single-session workshop such as MeSRob, held for the third time in July 2014 at EPFL, cannot cover all these fields. It gives, however, with its 120 participants from a dozen countries, a representative snapshot of activities, especially in the three partner countries of the SCOPES funding scheme of the Swiss SNF, Romania, Serbia and Switzerland, along with a growing number of participants from Europe and Asia. Particularly promising is the fact that MeSRob 2015 is already well on track and will be held in July in Nantes, France. This is proof of the timely character and growing interest of the MeSRob topics. As a matter of fact, every large industrial robotics company is now entering the bio-medical market, the number of start-up companies in medical and service robotics is impressing and many are successful.

The topics presented at MeSRob 2014 can be classified into three topical parts:

- (1) Wearable, Assistive and Rehabilitation Devices (8 Chapters)
- (2) Surgical Robotics, Instrumentation, Biomechanical Modeling (6 Chapters)
- (3) Educational and Service Robotics (6 Chapters)

Far from claiming anything near a complete coverage of medical and service robotic topics, the papers presented here nevertheless give a good impression of current research directions and fields of interest. Most papers are strongly anchored on collaborations between technical and medical actors, engineers, surgeons and clinicians. The larger field of biomedical technology and rapid growth in service automation has clearly overtaken the “classical” industrial robotics and automatic control centered activity familiar to the older generation of roboticists. While this might be true for the application fields, more theoretical topics such as kinematics,

parallel link mechanisms and similar subjects now find new applications in biomechanics and biomedical robotics. At the same time, new transdisciplinary fields are emerging, e.g. intersections between psychology, psychiatry, cognitive neurosciences on one hand and robotics on the other hand. Brain-Machine interface and haptic interfaces will grow in importance. Many of these topics are relatively new and publications are under way or have been presented at keynotes, but are not yet mature enough for publication in these proceedings. We may however look forward to upcoming MeSRob workshops to report on an increasing number of submission in this direction.

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New Trends in Medical and Service Robots

Assistive, Surgical and Educational Robotics

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