1. “Multistep Prediction of Physiological Tremor for Surgical Robotics Applications” by Kalyana C. Veluvolu, Senior Member, IEEE, Sivanagaraja Tatinati, Sun-Mog Hong, Member, IEEE, and Wei Tech Ang, Member, IEEE

**Abstract** - Accurate canceling of physiological tremor is extremely important in robotics-assisted surgical instruments/procedures. The performance of robotics-based hand-held surgical devices degrades in real time due to the presence of phase delay in sensors (hardware) and filtering (software) processes. Effective tremor compensation requires zero-phase lag in filtering process so that the filtered tremor signal can be used to regenerate an opposing motion in real time. Delay as small as 20 ms degrades the performance of human–machine interference. To overcome this phase delay, we employ multistep prediction in this paper. Combined with the existing tremor estimation methods, the procedure improves the overall accuracy by 60% for tremor estimation compared to single-step prediction methods in the presence of phase delay. Experimental results with developed methods for 1-DOF tremor estimation highlight the improvement.

**Keywords** -Autoregressive (AR), band limited multiple linear Fourier combiner (BMFLC), inertial sensors, Kalman filter, multistep prediction, physiological motion, tremor.

1. “Predicting the Long-Term Effects of Human-Robot Interaction: A Reflection on Responsibility in Medical Robotics” by Edoardo Datteri

**Abstract** - This article addresses prospective and retrospective responsibility issues connected with medical robotics. It will be suggested that extant conceptual and legal frameworks are sufficient to address and properly settle most retrospective responsibility problems arising in connection with injuries caused by robot behaviours (which will be exemplified here by reference to harms occurred in surgical interventions supported by the Da Vinci robot, reported in the scientific literature and in the press). In addition, it will be pointed out that many prospective responsibility issues connected with medical robotics are nothing but well-known robotics engineering problems in disguise, which are routinely addressed by roboticists as part of their research and development activities: for this reason they do not raise particularly novel ethical issues. In contrast with this, it will be pointed out that novel and challenging prospective responsibility issues may emerge in connection with harmful events caused by normal robot behaviours. This point will be illustrated here in connection with the rehabilitation robot Lokomat.

**Keywords** - Responsibility in medical robotics, Robo-ethics, Ethical issues concerning rehabilitation robotics, Liability in robotic-assisted surgery, Philosophy of science