Special Session:

"Learning control for human-robot interaction in elderly care"

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Robotic systems have been used in many industrial areas, but its development in the socially-assistive robots in eldercare is still in the infant stage. It is estimated that by 2030, there will be over 1 billion elderly people who are over 60 years old around the world. Young people will not be able to stay at home and serve their older parents often as they have to go to work. Thus the use of assistive robots in eldercare will become necessary in the near future.

Traditional control systems used in robots that are mainly geared to the industrial manufacturing purpose are no longer effective in robots used in eldercare, since serving an elderly people requires more complicated motions and safety issues need to be taken into consideration as well while the robot is interacting with elderly. The robot requires more than just a position control, motion control, force control, or a trajectory planning. It also involves with combination of above and unexpected motion control. For example, in the process of assisting an elderly to walk around, if an elderly accidently falls, the robot needs to handle this unexpected motion and help to pick up the elderly. The purpose of this special session is to investigate the learning control and its application in human-robot interaction used in elderly care, and also to bring all researchers together to present the recent and latest advances and technologies in the field of learning control system design for elderly care robots in order to further summarise and improve the methodologies on this topic. Suitable topics include, but are not limited to, the following:

- Learning control design for elderly care robotics
- Control stability analysis of human-robot interaction
- Modelling of human-robot interaction
- Mechatronics-based control in robotics
- Advanced intelligent control development for elderly care robotics
- Methods and tools for learning control design
- Case studies from human-robot interaction