Special Issue on

Machine Learning Methods for High-Level Cognitive Capabilities in Robotics

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Recent advances in machine learning techniques, including deep learning and hierarchical Bayesian modeling, are providing us with new possibilities to integrate high-level and low-level cognitive capabilities in robotics. On the one hand, it became clear that such learning methods are indispensable to create robots that can effectively deal with uncertainty while acting smartly in the real world. On the other hand, no matter how powerful the method is, a simple application of a single algorithm cannot cope with the tremendous complexity of all the learning spaces and problems.

This special issue focuses how to create and accelerate the synergies of low and high-level cognitive capabilities to develop a robust and adaptive intelligence that can deal with real-world problems. Papers on the state-of-the-art machine learning methods that contribute to modeling sensory-motor and cognitive capabilities in robotics are welcome, including, but not limited to the following topics:

- Multimodal communication   - Emergence of communication
- Concept formation   - Language acquisition
- Human-robot collaboration   - Deep learning for robotics
- Learning motor skills and segmentation of time-series information
- Probabilistic programing and reasoning in robotics
- Bayesian modeling for high-level cognitive capabilities

Submission: The full-length manuscript (either PDF file or MS word file) should be sent by **March 31, 2018** to the office of Advanced Robotics, the Robotics Society of Japan through the homepage of Advanced Robotics (http://www.rsj.or.jp/ar/submission). Sample form of the manuscript as well as the Instruction for Authors is available at the homepage. Also, send another copy to **Tetsunari Inamura (<u>inamura@nii.ac.jp</u>)** for submission confirmation.