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EDITORIAL

Renewal of the Major Fields from New Generation Computing Vol. 36 (2018)

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This journal has been seeking for new computational paradigms stemming from the cross-fertilization of various research fields and leading to key technologies enabling us to build more complex and intelligent systems. To achieve this goal, it had been focusing on seven research areas: *Programming and Semantics*, *Learning*, *Data Mining, Social Computing*, *Cognitive Computing, Control Theory of Bio- and Nano-systems*, *and Bio/Nano/Molecular Computing and Engineering*.

From this volume, Masayuki Numao and Yutaka Matsuo succeed Masami Hagiya and Kazunori Ueda in the position of Editor-in-Chief and Associate Editor, respectively. The editorial board is now discussing reorganization of its research areas to strengthen the role of journal while maintaining its tradition as well as referring to current trends of the related research fields. As its first step, we decided to set up the new area: *Skill Science and Philosophy* to concentrate the area *Learning* in the traditional fields in machine learning. The description of these two major fields follows this introduction.

We sincerely hope that these two research areas will make the journal further contribute to new computing paradigms and computational intelligence.

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Learning

Machine Learning is now an established area with many successful applications in the real world. New Generation Computing has treated it as a core from the beginning. The new area editor continues to welcome papers on all types of machine learning, from theoretical and practical points of view. Note that, however, a simple report on trivial application of some established methods or tools to a (new) domain is not welcome, unless it makes a valuable discovery.

Specific topics of interest include, but not limited to:

- Foundations and Models of Learning,
- Computational Learning Theory,
- Grammatical Inference,
- Inductive Logic Programming,
- Statistical Learning Methods,
- Bayesian Networks,
- Reinforcement Learning.

Area Editor Ayumi Shinohara
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Skill Science and Philosophy

This year, in 2018, a new area "Skill Science and Philosophy" starts in New Generation Computing. This area aims at scientific explorations and philosophical discussions of human embodied skills.

The basic view of body in this area is that the reality of body for its owner is composed of the dual aspects; its appearance observable objectively, and an existence that can be felt internally. Therefore, to raise issues on and discuss embodied skills, not only objective observation, i.e., so-called "scientific" examination, of what the body does and how it moves, but also subjective observation, i.e., from the first-person's viewpoints, of how the body relates to the environment are necessary.

Another aspect of embodied skills is that, in some phases, especially as people learn in a trial-and-error fashion, they generate intentions and goals about how to move the body. It is not that the movements of body become fixed and stable without any deliberate thoughts. Therefore, to examine embodied skills, especially in discussions on how people learn skills, even self-reference of what awareness, questions, intentions, and goals set the basis for objectively observable moves serves as indispensable data.

We argue that it is by integration of those multiple methodologies that cognitive modelling and philosophical discussions of embodied skills become possible.

Domains of embodied skills are diverse; sports skill, knowledge in school classes, communication skill in social contexts, "kansei", and values in everyday life, and so on.

We welcome submission of a wide area of research papers. Examples of research topics are listed below, but are not limited to:

- Cognitive modelling on learning of embodied skills and knowledge, in sports, communication contexts, or school classes.
- Modelling and phenomenological discussion of formation of "kansei" and value in life.
- Development of methods of measuring and analyzing body movements.
- Methodologies of coaching and tutoring of embodied skills.
- Cognitive modelling of co-evolution of body and language.
- Philosophical discussion of symbol grounding and symbol generation.
- Modelling and discussions from the viewpoints of systems theory.

Area Editor Masaki Suwa
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