平成 28 年 8 月 10 日

関係各位

システム制御研究会
主査 吉澤　誠
幹事 杉田　典大

下記のとおり，**第 102 回システム制御研究会**を開催しますので多数ご来聴くださいますよう，ご案内申し上げます.

記

- 日時：平成 28 年 8 月 25 日（木）16:00 ～ 17:30
- 会場：東北大学青葉山キャンパス 電子情報システム・応物系 1 号館 5 階 530 セミナー室
  http://www.eng.tohoku.ac.jp/map/?menu=campus&area=d&build=10

- 講演者：Dr. Ivo Bukovsky, Associate Professor
  (Dept. Radiological Imaging and Informatics, Tohoku University Graduate School of Medicine)
- 演題：Higher Order Neurons and Supervised Learning for Prediction, Novelty Detection, and Control
- 講演要旨：

  Artificial polynomial neurons, i.e. Higher Order Neural Units (HONUs), with polynomial synaptic neural operation will be revised and their fundamental supervised learning algorithms will be explained. As for sample-by-sample adaptation, the Gradient Descent (GD), the Normalized Gradient Descent (NGD), and Recursive Least Squares (RSL) will be shown for static as well as for dynamic HONUs. As for the batch learning, Levenberg-Marquardt (L-M) and Resilient Backpropagation (RB) learning rules will be shown as for static and dynamic HONUs. Also, the Conjugate Gradient (CG) learning rule as a batch learning alternative to L-M for static HONUs will be introduced. The learning algorithms will be discussed in connotations to prediction, dynamic system identification and adaptive control with focus on respiration motion tracking control. In the end, the concept of new learning-system-based novelty detection algorithm called the Learning Entropy(LE) as a new cognitive information measure will be explained and briefly discussed.

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以上