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，<u>第 105 回システム制御研究会</u>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 30 年 9 月 7 日（金）17:30 ～ 19:00
- 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
- 共催：第 2 回生体情報研究会

- 講演者：Dr. Ivo Bukovsky, Associate Professor

  (Dept. Intelligent Biomedical Systems Engineering, Tohoku University Graduate School of Biomedical Engineering)
- 演題：Data processing and modeling in mechanical and biomedical systems
- 講演要旨：

  The talk will briefly review some of our recent research achievements in:
    - Complexity in mechanical and biomedical systems
    - Prediction and data driven modeling of complex dynamical systems via Higher Order Neural Units (HONUs) and supervised learning algorithms
    - Adaptive signal processing (the concept of Learning Entropy)

  and then the talk will briefly discuss the actual research issues and objectives of mutual interest that currently include:
    - Development of Complex Valued Higher Order Neural Units (CV-HONUs)
    - Data driven approximation (modeling) of nonlinear dynamical systems via polynomial neural architectures (HONU) for:
        ◦ novelty detection for data with concept drift, industrial data, and evaluating the health of mechanical/medical devices and constructions
        ◦ nonlinear adaptive control for industrial processes and mechanical and mechatronical systems
    - Research of stability of nonlinear dynamical system:
        ◦ BIBO a BIBS stability of recurrent HONUs and their adaptive control loops
        ◦ study of new concepts for stability (G-plane approach)
    - Dimensionality reduction, sensor selection and relevant data processing via
        ◦ multiscale method for configuration of input data for MIMO systems
        ◦ autoencoders and unsupervised methods

  In the end it can be concluded that the methods and techniques that we research have the aim to contribute to the merge of (Big) Data, (Big) Knowledge and inter-domain Transfer Learning for efficient data-and-knowledge-driven intelligent biomedical and industrial systems.

- 問合せ先：東北大学大学院工学研究科 技術社会システム専攻

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以上