平成 24 年度 第 3 回 統合知能メカトロシステム講演会・見学会

<div align="right">主催：計測自動制御学会中部支部</div>

日時：2012 年 10 月 22 日（月）10:30～12:00

会場：岐阜大学　ベンチャー・ビジネス・ラボラトリー　会議室

　http://www1.gifu-u.ac.jp/~hmec/contents/access.html

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所属：

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講演題目：

DYNAMICS OF HYBRID SYSTEMS by GRAPH THEORY and the ORTHOGONALITY PRINCIPLE. APPLICATIONS IN the ROBOTICS

講演内容：

　　The work treats the modeling of a hybrid systems aiming to use their dynamic equations as a base of further control low synthesis with application in robotics. The system analysis has to be done for the functions describing the system dynamics. The last ones are obtained using the graph theory and the energy conservation law which mathematical record is the Orthogonality principle. The energy has two fundamental characteristics - energy flow and energy potential. The power flow variables are called "through" ones and the power potential variables - "across" ones. The component physical characteristics are expressed by relation of its across and through variables, described by mathematical equation which is called terminal equation. Other main class equations are the connection equations. Their role is to describe the transformations of energy from one kind into another. That reflects to equations describing the connection of corresponding across and through variables. Another important characteristic of every system is its topology. It can be described by graph called general system graph. The across and through variables induce the orientation of the graph edges. And the system topological characteristics are described by two groups of equations - the cutset and circuit ones. The four groups of equations ? the cutset, cirquit, terminal and connection ones, are used in the orthogonality principle and after development in accordance with the method's algorithm the dynamic equations of motion are obtained.

　　As applications in robotics a model of a rehabilitation system for a leg with 5 DoF, chopsticks robot and medical drilling robot are presented.

[申込先・問い合せ]

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