Call For Papers

WSEAS TRANSACTIONS ON SYSTEMS

Special Issue on Modeling and Control of Integrated Bio-systems

I. AIM AND SCOPE

Philosophy of integrated bio-systems springs from the holistic approach to the processes in the nature and society. The term "integrated bio-system" is introduced to describe the role of resources and information signals of mutually connected phenomena in the complex biological systems. Examples of integrated bio-systems can be found in field of biomedicine, in biotechnology and microbial ecology, in ecology as matter of sustainable development. Brilliant example in biomedicine is the research and the mathematical model of Nobel laureates Hodgkin and Huxley. Bio-impulses influence on the cells excitability in the human organism is presented in the models of Connor–Stevens, Morris–Lecar, Bertram–Sherman, FitzHugh–Nagumo and Traub. In biotechnology are studied processes of living organism's its survival depends on continued power flow. Chemical reactions, responsible for the structure and the organism's functions are directed to utilization of power from substrates, supplied by food. This energy, obtained from substrates, serves for biochemical reactions of organisms and as a material substance for synthesis of new molecules, cell structures and cells. Integrated bio-systems in ecology are oriented to the sustainable development of modern industry. They make functional connections between agriculture, aquaculture, food processing, waste management, water use, and fuel generation.

Integrated bio-systems belong to the nonlinear multi-factorial systems, in which the interconnections between mutually connected variables and subsystems are not well studied. The aim of the special issue of our Journal is oriented to the modeling, inferential measurements and model-based control of enumerated phenomena.

II. TOPICS COVERED

Authors are invited to submit their original and unpublished work in the areas including (but not limited to) the following:
- Theoretical studies algorithms;
- Development of new mathematical models of integrated bio-systems and approaches of inferential measurements of hard-to-measure variables and model-based control schemes;
- Design of residual-based generators for improving the predicted output variables;
- Convincing applications in field of biomedicine, biotechnology, microbial ecology and ecology for sustainable development;
- Modeling of cell structures and phenomena as "collaborative intelligence", "symbol intelligence", "quorum sensing" and "quorum quenching", related to the collective decision making in the biological systems;
- Comparative research of processes in the integrated bio-systems related to the similar processes in human society;
- Group decisions in the integrated bio-systems compared with the approaches implemented in communications and for coordination the behavior of autonomous robot swarms;
- Modeling the three-dimensional structures of proteins;

- Mathematical investigations of gene expressions.

III. IMPORTANT DATES
- March 15, 2012: Submission deadline
- May 15, 2012: Notification of the first-round review
- May 30, 2012: Revised submission due
- June, 2012: Final notice of acceptance/reject

IV. SUBMISSION
Manuscripts should be prepared according to the formatting instructions of available at WSEAS Transactions on Systems at http://www.worldses.org/journals/systems/index.html Manuscripts submitted to the Special Issue on Modeling and Control of Integrated Bio-systems are to be submitted following the standard submission process and notifying the Guest Editors as well. All submitted manuscripts will be reviewed using the standard procedure that is followed for regular submissions.

V. GUEST EDITORS
Svetla Vassileva
Dept. Integrated Systems
Institute of System Engineering and Robotics (ISER)
Bulgarian Academy of Sciences
Sofia, Bulgaria
email: vasileva@icsr.bas.bg , svassileva@yahoo.com

Filippo Neri
Dept. of Computer Science
University of Naples
Naples, Italy
email: nerifil@gmail.com