



ICSB 2011 Workshops and Tutorials

Workshop 1

Saturday, August 27, 2011: 14.30 – 19.00 h

BIOLOGICAL CAD3

Workshop Homepage: <http://www.dmi.unict.it/nicosia/icsb2011/index.html>

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Purpose and background

The workshop will focus on state of art potentialities of Machine Learning-Optimization (MLO) methodologies. In particular, the aim of the workshop is to facilitate discussions and scientific interchange at the edge of the emergence of general-purpose modeling methodology for the robust design of synthetic biochemical pathways. The workshop we propose is clearly rooted in synthetic and systems biology, and given the wide range of application areas, it is directed to a general audience of ICSB. Although the workshop could represent the convergence of different fields, ranging from engineering, mathematics and inductive logic, the organizers will give preferential attachment to methodologies centered on different concepts of biological local and global robustness, sensitivity analysis, model-order reduction, reverse-engineering and multi-objective optimization, which generate a remarkably refined specification of biological robustness. The biological CAD is directly inspired from Electronic Design Automation research field, and is aimed at designing manufacturable molecular biological parts, for instance pathways and networks. One of the striking aspects in this workshop is the close link between the machine learning area and the modeling. Other important aspects are the methodological cross-field and the application area cross- field.

Topics:

- * Metabolic engineering
- * Pathway optimization
- * Integration of pathway
- * Dynamic modeling of metabolic systems