FACULTAD DE CIENCIAS EXACTAS Y TECNOLOGÍA

UNIVERSIDAD NACIONAL DE TUCUMÁN

El Departamento de Ciencias de la Computación organiza una Charla del Dr. Natalio Krasnogor (*)

Fecha: Jueves 22 de noviembre de 2012 a las 18 hs.

Lugar: Laboratorio de Suelos. Facultad de Ciencias Exactas y Tecnología. UNT

Título: **Biología Sintética Computacional y Modelos no Convencionales de Computación.**

En castellano, aproximadamente 60 minutos de duración.

Abstract
The decision making processes of a biological cell, e.g. a bacterium, often result in a variety of outputs such as the creation of more cells, chemotaxis, bio-film formation, antibiotic production, etc. It was recently shown that even the simplest of cells not only react to their environment but that they can even predict environmental changes. Synthetic Biology (SB) considers "the cell" to be a machine that can be built –from parts– in a manner similar to, e.g., computer programs, electronic circuits, airplanes, etc. and it has sought to co-opt biological cells abilities for nano-computation and nano-manufacturing purposes. In particular, synthetic biological programs that implement Boolean logic gates such as NOT gates and AND gates and other small-scale in vivo information processing tasks have been demonstrated in the laboratory. This talk introduces the concept of Computational Synthetic Biology as an unconventional computing platform that enables the formal specification of programs for individual living cells and the scaling up towards parallel multicellular computing systems. During the talk I will demonstrate how the proposed techniques have been used in practice (i.e. in the wet lab) to calculate in vivo Turing Patterns and what the current capabilities and limitations are.

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Natalio Krasnogor is Professor of Applied Interdisciplinary Computing in the School of Computer at the University of Nottingham where he leads the Interdisciplinary Computing and Complex Systems (ICOS) Research Group (http://icos.cs.nott.ac.uk)
Krasnogor's research activities lie at the interface of Computer Science and the Natural Sciences, e.g. Biology, Physics, Chemistry. In particular, he develops methodologies for transdisciplinary optimisation, modelling of complex systems and very-large datasets processing and he also carries out research on algorithmic living matter.
He was associate editor of the Evolutionary Computation journal and is founding technical editor-in-chief of the Memetic Computing journal.
Krasnogor won several evolutionary computation related awards, e.g., the best overall paper award at the 2007 IEEE Congress on Evolutionary Computation (CEC 2007), best paper awards in GECCO 2008 & 2010, Bronze prize at the 2007 "HUMIES" Awards for Human-Competitive Results produced by Genetic and Evolutionary Computation, Gold prize at the 2010 "HUMIES" edition and Silver at the 2012. He also won the 2010 ACM's Special Interest Group on Evolutionary Computation Impact Award for the most highly cited paper of those published in a GECCO proceeding 10 years earlier. Krasnogor's Synthetic Biology work attracted international media attention with interviews appearing The Register, Slashdot, New Scientist, Science Magazine, The Discovery Channel, CNN, etc.