

Natalio Krasnogor

Title: A Gentle Introduction to Executable Biology

Abstract:

The leveraging of today's unprecedented capability to manipulate biological systems by state-of-the-art computational, mathematical and engineering techniques, may profoundly affect the way we approach the solution to pressing grand challenges such as the development of sustainable green energy, next generation healthcare, etc. The conceptual cornerstone of Synthetic Biology a field very much on its infancy- is that methodologies commonly used to design and construct non-biological artefacts (e.g. computer programs, airplanes, bridges, etc) might also be mastered to create designer living entities. Computational methods for modeling in Synthetic Biology consist of a list of instructions detailing an algorithm that can be executed and whose computation resembles the behavior of the biological system under study. This computational approach to modelling biological systems has been termed executable biology. In this talk I will describe current approaches for the automated generation and testing of executable biology models for synthetic biology.