DSpace@IISERMohali (/jspui/)

Please use this identifier to cite or link to this item: `http://hdl.handle.net/123456789/926`

Title:	Reversibility of Evolution: A Simulation and Mathematical Approach
Authors:	S, Parvathy (/jspui/browse?type=author&value=S%2C+Parvathy)
Keywords:	Mathematical Approach Computational approach Classical evolutionary models evolutionary models
Issue Date:	22-Aug-2018
Publisher:	IISERM
Abstract:	Evolution is the change in the characteristics of a population with successive generations. When selection is imposed to the population, some individuals reach sexual maturity at higher rates or produce more number of offspring proportional to their fitness values. We focus on one aspect of evolution: its reversibility. The great evolutionist Stephen Jay Gould describes the experiment "replaying life's tape" to talk on the notion of reversibility. A series of papers by Henrique Teotonio and Michael R.Rose addresses reverse evolution from an experimental point of view. Evolution is reversible if the traits observed in a population goes back to their ancestral state. In this project, the question "Is evolution reversible?" has been addressed using simu- lation. The fitness of a genotype is varied in a sinusoidal manner (fitness values come back to their initial value in some generations) and we see how does the slow rate of change of fitness and fast rate of change of fitness affect the course of evolution and its reversibility. We also build a mathematical model of evolution to predict how the frequencies accross generations would be. It has been seen that either evolution is reversible or frequency of alleles follows a decreasing trend. The Fourier basis considered to build the model is not the right choice as the operator that maps the fitness function to the frequency function is not linear.
URI:	http://hdl.handle.net/123456789/926 (http://hdl.handle.net/123456789/926)
Appears in Collections:	MS-13 (/jspui/handle/123456789/914)

Files in This Item:

File	Description	Size	Format

MS13020.pdf (/jspui/bitstream/123456789/926/4/MS13020.pdf)	1.7 MB	Adobe PDF	View/Open (/jspui/bitstream/123456789/926/4/M

Show full item record (/jspui/handle/123456789/926?mode=full)

(/jspui/handle/123456789/926/statistics)