General Description

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Short description of the exhibit

This project is subdivided in five different "experiences": "Cellular automata", "Dynamical system", "Wator", "Temperature" and "Cartography".
Ci sono due tipi diversi di situazioni in cui un utente può trovarsi a utilizzare questi programmi.

● Individual exploration and experience: the programs are designed for the web: the user will interact with them directly, without an external guide and without a strong information about the mathematical background. In this case the aim of the programs is to give a piece of recreative information about the subjects and to provide a way to introduce these fields of studies.

● Guided tour: the programs can be used in an exhibition where the guides mediate the interaction between the user and the computer. The interface is still the same but the guides can use the program as a tool to talk deeply about the subjects. In "further informations" there is additional material, in the form of quiz, to suggest some of interesting points that the programs can highlight and some references.

The exibit is only digital. It can be launched on every computer that satisfies hardware and software requirements. In particular it can be launched directly from a website. In the case of a physical exhibition one can use interactive whiteboards (IWB) in order to allow users to have a major interaction.

Cartography

This animation shows different ways to project planet Earth on a map. You can trace your own route on the map and see how does it look on the globe. Try to trace the same route with different maps. You can also study two special route on the globe: the geodetics and the loxodromes.

Dynamical System

This interactive animation is about the Lotka-Volterra equations; a pair of first-order, non-linear, differential equations used to describe the evolution of a biological system. That seems difficult. Run the program and click on the graph. You will set an initial datum and see its evolution. Now think that the coordinate "x" is the amount of preys and the coordinate "y" is the amount of predators and try to describe the behaviour of the system.

Wator

This interactive animation is about a simulation of a world in which survives two species of animals: fishes and sharkes. You can choose the amount of animals you have at the initial time and the rules they will follow to survive (for example how long is the life of a fish?, when does a shark have a baby?). Click start and see how does the simulation evolve. Try to get a situation in which sharks and fishes can survive together without becoming extinct.

Temperatures

This interactive animation is about the use of basic statistical analysis. First of all give a look to the data using "View data", and try to describe the temperature trend. It is not an easy thing to do, as you can change the scale and the starting point. When you have a large amount of data, you can use means and other statistical tools. Use "Statistics" and try to do it. You will find different behaviours and see that giving prediction is not so easy.

Automata

This interactive animation can be use to study a linear cellular automaton. You can set the rules and choose the initial data. You will see on the screen the evolution of the automata. You can try to understand how does the evolution change if you change the rules. You will notice that little change in the initial data will give rise to big differences in the evolution.