SEEDS HackSciArt

SEED 04-IA

RESEARCHERS

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1. ESSENTIAL DIMENSION

(Objective descriptive information of the scientific seed)

NAME

"Viruses and machines"

KEYWORDS

Mathematics, Machines, Bio-inspired, Viruses

BRANCH

The area of Computer Science and Artificial Intelligence is usually part of the Computer Science branch, although it is also closely related to Logic and Mathematics.

ABSTRACT

Mathematical and computer concepts inspired by nature have resulted in creating new frontiers in solving real problems: neural networks, artificial intelligence, DNA-based computing, etc.

The COVID-19 pandemic has taught us, among many other things, that **viruses are a powerful biological structure to draw inspiration from**: what makes them so powerful? How can we abstract that power to mathematics?

METAPHOR

Viruses are simple in structure and size, what can we extract from them? What limits can encompass us in mathematics in the abstract sense of it? What problem limits can we bring closer with this?

PHASES OF THE USUAL SCIENTIFIC METHOD

I use nature-based computational models to solve problems.

1. We state a known mathematical problem.
2. We think about how to attack the problem using this model.
3. We compare with other known bio-inspired models.
4. Make a study of the solution to the problem or how we have approached it.
5. Extend the model with more bio-inspired ideas (hosts can reproduce, have an age, isolate...)

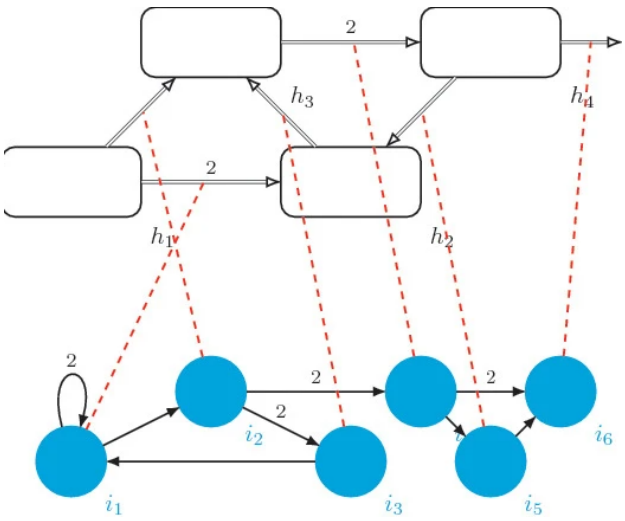
TOOLS

Classic blackboard, conventional computer, model simulators (software).

RESOURCES

1) 01_JournalPaper_Cell Report: “Basic arithmetic calculations through virus machines”: https://uses0.sharepoint.com/sites/ASTER2020/Documentos%20compartidos/Forms/AllItems.aspx?id=%2Fsites%2FASTER2020%2FDocumentos%20compartidos%2FASTER%5FCREATE%2FASTER%5FSEMILLAS%2FIA%5FSEMILLAS%2F%5FSEMILLAS%5FIA%5FCCIA%2FCCIA%5FGRUPO%5F14%5FFrancisoMARTIN%2F%5F14%5FFRANCISCO%20MARTIN%20paper%2Epdf&parent=%2Fsites%2FASTER2020%2FDocumentos%20compartidos%2FASTER%5FCREATE%2FASTER%5FSEMILLAS%2FIA%5FSEMILLAS%2F%5FSEMILLAS%5FIA%5FCCIA%2FCCIA%5FGRUPO%5F14%5FFrancisoMARTIN&p=true&ga=1

2)



3) We have some hosts (squares) that contain viruses and some channels between them, we send them with some instructions (circles).

2. ADDITIONAL DIMENSIONS

(The following sections add subjective information from the scientific seed, in order to inspire creatives in the creation of a SciArt work. Some of the sections may not have information if the researcher chose not to specify anything.)

SCIENTIFIC MOTIVATION

I have always been fascinated by mathematics, the power of abstraction that we humans have reached, what are the limits of this abstraction? And beyond that, which problems can we solve and which cannot? For this, machines have helped us a lot, which also leads me to wonder what their limits are if we are inspired by nature, more specifically by biological viruses that are now on everyone's lips.

I am intrigued by the complexity and depth of mathematics and how it transcends not only real applications or that are in nature, but basing ourselves on it will give us a giant leap within this field. I have always fallen in love with this field that seems to be talking about serious and complex things when really you are only speaking in a very human and universal language.

METAPHYSICS

Is there a problem that we never get to attack? Does nature have the answer?

ETHICS

And if the problems that we raise is nothing more than the formulation that we do to them?

COLORS

Green, white, cyan, sapphire.

SONIDOS

Mystery, the sound of typing on a keyboard, chalk strokes on the blackboard.

AROMAS

Sweet, oily, floral.

FLAVORS

Sweet, bitter.