JoNa 0.1

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1 - PROBLEM TO SOLVE

Blockchain, in the form in which we know it, goes forward in one direction only.
This means that at a given time t, only the next transaction that the program needs to perform can be executed.

2 - DEFINITION

A Neurachain, or Neural Blockchain, is a type of Blockchain in which each block is a neuron, which can contain a given number of synapses (three in this program).

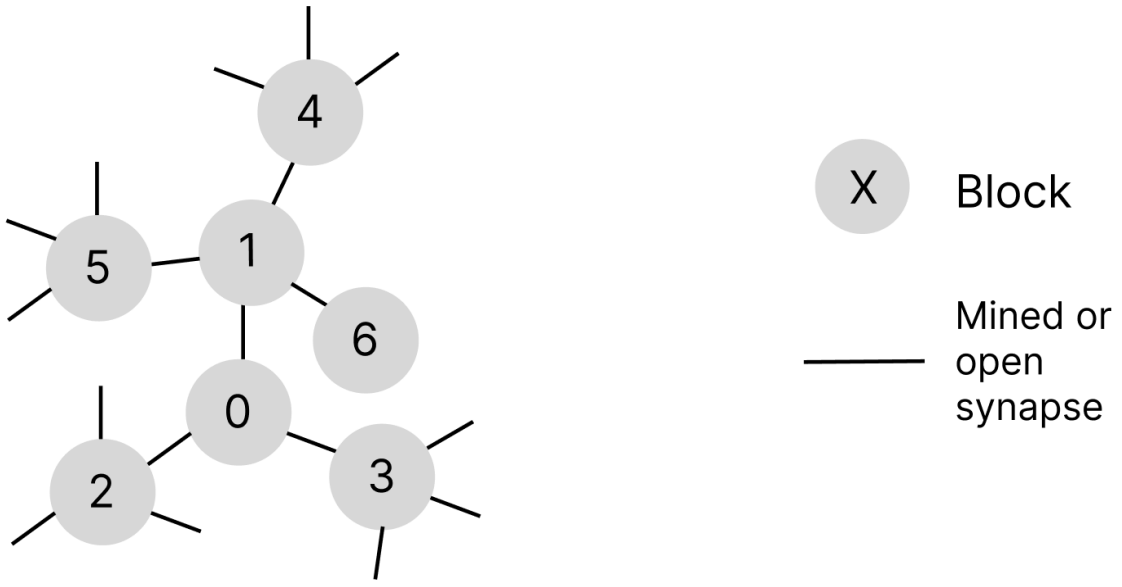
Each neuron contains the data of an information.

The synapses, when data is passed to them, can create another neuron.

They can be open or closed. If a synapse is closed, we save memory, but it cannot crate a block anymore.

At a given time, each open synapse has the capacity to create another block.

The start of a Neurachain can be represented like this:



3 - FUNCTIONING

Foreword:

JoNa 0.1 is a Neurachain in its simplest form.

The purpose of this program is to serve as a starting point for the development of complete Neurachains.

User wallets and their tokens can be stored in as many ways as the developers feel like implementing. In the current version of this program, only the part used to feed JoNa is implemented.

JoNa 0.1 simulates a basic banking system. The Neurachain is the network (SWIFT type), communicating with a bank 'x' represented by a safe containing the money, and a list of accounts (the wallets).

The security part is not implemented at all.

JoNa's operation is based on three different digital objects:

UserInput objects

Synapses

Neurons

A UserInput object contains the data passed by the user (in our case, the transaction information). It is by passing this object to a synapse that we allow it to create a neuron.

A synapse, as previously mentioned, can be open or closed. When it is open, we can send it a UserInput object, and mine a block. In this program, the synapses of a neuron are closed if there are more than two open synapses.

A block, when created, will save the data passed to the synapse.
The neuron then sends (in this program) the information of the transaction to the vault, which performs it, and then the result of the transaction to the concerned wallets.
Finally, the neuron initializes its synapses, and the Neurachain is updated.

4 - POSSIBILITIES

JoNa 0.1 is currently running around 700.000 transactions per second, until the memory allocated to the program is fully occupied, using Javascript. Once translated into C or C++, JoNa in its current form will therefore be able to perform 2 million transactions per second at least.

This implies that theoretically, a Neurachain, of which JoNa would be the starting point, could contain all the world's monetary transactions, offering the user a transaction delay undetectable to the human eye.