

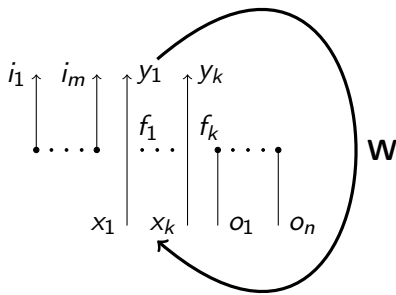
Neuromorphic visual computations in Processing

Mishka

<https://github.com/anhinga/fluid>

January 24, 2019 lightning talk at Processing Community Day

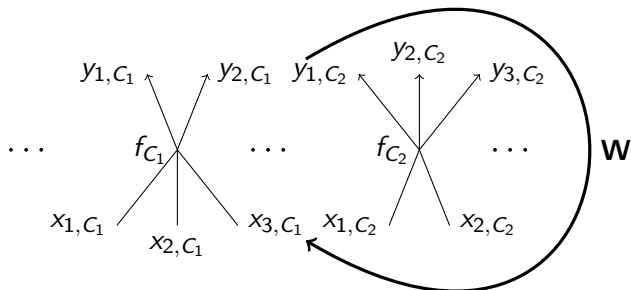
Recurrent neural networks



Run them one cycle per frame

Fits well with typical human brain waves frequencies

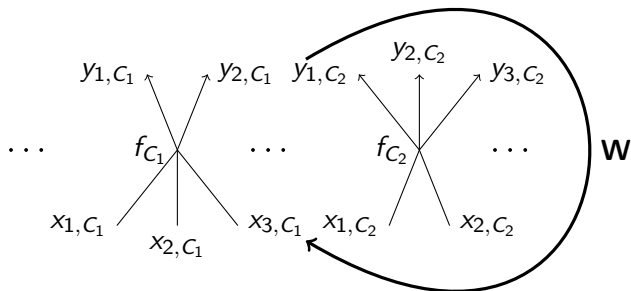
Dataflow matrix machines



Audio synthesis with unit generators is an example of hand-crafted and hand-tuned **high speed** neural nets.

Because these patches are slightly unusual (**hand-tuned, not trained**, with more sophisticated neurons) people usually don't realize that they are actually neural nets.

Dataflow matrix machines

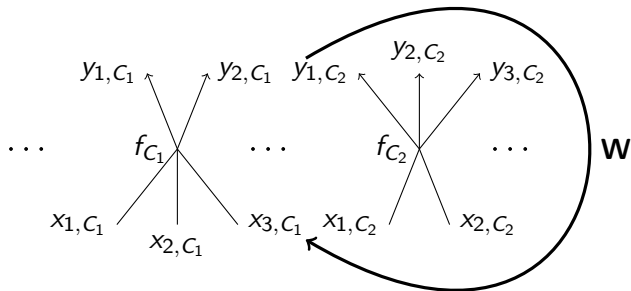


You can send images instead of numbers along the wires.

In fact, you can send any x, y, z , if you know how to add them with coefficients: for example, $0.4x + 0.2y + (1 - 0.6)z$.

And we can add together images with coefficients
(that's how VJs mix animations).

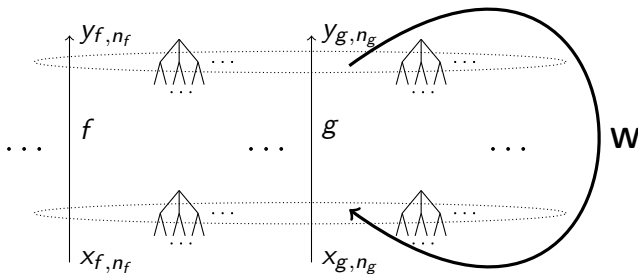
Dataflow matrix machines



So you can essentially synthesize animations via unit generators.

And you can have single neurons processing streams of images instead of streams of numbers.

Dataflow matrix machines in Quil and Clojure



Sister project: Quil-controlled dataflow matrix machines (Clojure):

<https://github.com/jsa-aerial/DMM>

[https://github.com/jsa-aerial/DMM/tree/master/examples/dmm/
quil-controlled](https://github.com/jsa-aerial/DMM/tree/master/examples/dmm/quil-controlled)

Links

Project Fluid: <https://github.com/anhinga/fluid>

Demos:

https://github.com/anhinga/fluid/tree/master/may_9_15_experiment

https://github.com/anhinga/fluid/tree/master/jun_28_15_experiment

https://github.com/anhinga/fluid/tree/master/jun_4_16_experiment

[https:](https://github.com/anhinga/fluid/tree/master/atparty-2018/game_of_afterlife)

[//github.com/anhinga/fluid/tree/master/atparty-2018/game_of_afterlife](https://github.com/anhinga/fluid/tree/master/atparty-2018/game_of_afterlife)