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Correction: Multi-texture synthesis through signal responsive neural cellular automata

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Correction to: *Scientific Reports* https://doi.org/10.1038/s41598-025-23997-7, published online 17 November 2025.

The original version of this Article contained an error in Algorithm 3 where a line was omitted from the published version of the Article. Specifically, in the *Methodology* section under the subsection *multi-texture generation* in Algorithm 3 line 10: "ig ⇐ index of element with highest loss(batch)" was omitted.

The original Algorithm and accompanying legend appear below.

Require: The $pool\_size$ of nca states, the $number\_of\_epochs$ and $batch\_size$, the size of the texture h, w, n_h - the number of cells' state hidden channels, and n_g - the number of genome channels.

Ensure: The trained nca, the final pool.

1: $pool \Leftarrow init\_pool(pool\_size)$
2: $nca \Leftarrow init\_nca\_params()$
3: **for** $iteration \in range(0, number\_of\_epochs)$ **do**
4:     $batch \Leftarrow$ random pick $batch\_size$ elements from $pool$ ▷ States and corresponding genome indices
5:     $i_g \Leftarrow iteration\%n\_genomes$ ▷ Computes index of current genome
6:     **if** exists i_g genome in $batch$ **then**
7:         $worst_{i_g} \Leftarrow genome\_highest\_loss\_state(batch, i_g)$
8:     **else**
9:         $worst_{i_g} \Leftarrow highest\_loss\_state(batch)$
10:     **end if**
11:     $batch[worst_{i_g}].x \Leftarrow seed\_of\_genome(h, w, n_h, h_g, i_g)$
12:     $num\_steps \Leftarrow random(64, 90)$
13:     **for** $i \in range(0, num\_steps)$ **do**
14:         $batch.x \Leftarrow nca(batch.x)$
15:     **end for**
16:     $loss \Leftarrow compute\_loss(batch.x, target\_images(batch.y))$
17:     apply nca weights backpropagation
18:     $pool \leftarrow$ put updated individuals of $batch$ back in the pool
19: **end for**
20: **return** nca

The original Article has been corrected.