<table>
<tr><td rowspan="2">cases</td><td>doc_1</td><td>doc_2</td><td>decision</td><td>id</td></tr>
<tr><td>
<table>
<tr><td>authors</td><td>Maximiliano Altamirano
Roberto Cortez
Matthieu Jonckheere
Lasse LeskelÃ¤</td></tr>
<tr><td>title</td><td>Persistence in a large network of locally interacting neurons</td></tr>
<tr><td>publication_date</td><td>2021-08-13 20:26:26+00:00</td></tr>
<tr><td>source</td><td>SupportedSources.ARXIV</td></tr>
<tr><td>journal</td><td>None</td></tr>
<tr><td>volume</td><td></td></tr>
<tr><td>doi</td><td></td></tr>
<tr><td>urls</td><td>http://arxiv.org/pdf/2108.06386v1
http://arxiv.org/abs/2108.06386v1
http://arxiv.org/pdf/2108.06386v1</td></tr>
<tr><td>id</td><td>id3991795243743126557</td></tr>
<tr><td>abstract</td><td>This article presents a biological neural network model driven by inhomogeneous Poisson processes accounting for the intrinsic randomness of synapses. The main novelty is the introduction of local interactions: each firing neuron triggers an instantaneous increase in electric potential to a fixed number of randomly chosen neurons. We prove that, as the number of neurons approaches infinity, the finite network converges to a nonlinear meanfield process characterised by a jump-type stochastic differential equation. We show that this process displays a phase transition: the activity of a typical neuron in the infinite network either rapidly dies out, or persists forever, depending on the global parameters describing the intensity of interconnection. This provides a way to understand the emergence of persistent activity triggered by weak input signals in large neural networks.</td></tr>
<tr><td>versions</td><td></td></tr>
</table>
</td><td>
<table>
<tr><td>authors</td><td>Maximiliano Altamirano
Roberto Cortez
Matthieu Jonckheere
Lasse LeskelÃ¤</td></tr>
<tr><td>title</td><td>Persistence in a large network of locally interacting neurons</td></tr>
<tr><td>publication_date</td><td>2021-08-13 00:00:00</td></tr>
<tr><td>source</td><td>SupportedSources.INTERNET_ARCHIVE</td></tr>
<tr><td>journal</td><td></td></tr>
<tr><td>volume</td><td></td></tr>
<tr><td>doi</td><td></td></tr>
<tr><td>urls</td><td>https://web.archive.org/web/20210820005731/https://arxiv.org/pdf/2108.06386v1.pdf</td></tr>
<tr><td>id</td><td>id-2460419395411124320</td></tr>
<tr><td>abstract</td><td>This article presents a biological neural network model driven by inhomogeneous Poisson processes accounting for the intrinsic randomness of synapses. The main novelty is the introduction of local interactions: each firing neuron triggers an instantaneous increase in electric potential to a fixed number of randomly chosen neurons. We prove that, as the number of neurons approaches infinity, the finite network converges to a nonlinear meanfield process characterised by a jump-type stochastic differential equation. We show that this process displays a phase transition: the activity of a typical neuron in the infinite network either rapidly dies out, or persists forever, depending on the global parameters describing the intensity of interconnection. This provides a way to understand the emergence of persistent activity triggered by weak input signals in large neural networks.</td></tr>
<tr><td>versions</td><td></td></tr>
</table>
</td><td>DUPLICATES</td><td>47</td></tr>
</table>