

SCIENTIFIC REPORTS

OPEN

Erratum: Simultaneous silence organizes structured higher-order interactions in neural populations

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Scientific Reports 5:9821; doi: 10.1038/srep09821; published online 28 April 2015; updated on 09 October 2015

This Article contains typographical errors.

In the Results section under subheading ‘Simultaneous silence and HOIs of hippocampal neurons’

“The parameters $\{\theta_i, \theta_{ij}\}$ were adjusted to fit these statistics.”

should read:

“The parameters $\{\theta_i, \theta_{ij}\}$ were adjusted to fit these statistics.”

In the Results section under subheading ‘Simultaneous silence is a ubiquitous feature of HOIs’

“By expanding the SS term into the standard HOI-coordinates, we obtain

$$\theta_0 \prod_i (1 - x_i) = \theta_0 - \theta_0 \sum_i x_i + \theta_0 \sum_{i < j} x_i x_j - \theta_0 \sum_{i < j < k} x_i x_j x_k + \theta_0 \sum_{i < j < k < l} x_i x_j x_k x_l.”$$

should read:

“By expanding the SS term into the standard HOI-coordinates, we obtain

$$\theta_0 \prod_i (1 - x_i) = \theta_0 - \theta_0 \sum_i x_i + \theta_0 \sum_{i < j} x_i x_j - \theta_0 \sum_{i < j < k} x_i x_j x_k + \theta_0 \sum_{i < j < k < l} x_i x_j x_k x_l - \dots.”$$

In the Result section under subheading ‘Alternating signs of HOIs predicted by SS’, equation (2)

$$p_{\text{hHOI}}(x_1, \dots, x_{10}) \sim \exp \left[\sum_i \theta_i x_i + \sum_{i_1 < i_2} \theta_{i_1 i_2} x_{i_1} x_{i_2} + \sum_{k=3}^{10} \bar{\theta}_k \sum_{i_1 < \dots < i_k} x_{i_1} \dots x_{i_k} \right],$$

should read:

$$p_{\text{hHOI}}(x_1, \dots, x_{10}) \sim \exp \left[\sum_i \theta_i x_i + \sum_{i_1 < i_2} \theta_{i_1 i_2} x_{i_1} x_{i_2} + \sum_{k=3}^{10} \bar{\theta}_k \sum_{i_1 < \dots < i_k} x_{i_1} \dots x_{i_k} \right],$$

In the Methods section under subheading ‘A dichotomized gaussian (DG) model’;

“The binary output of the i -th neuron ($i = 1, \dots, N$) is given by $X_i = 1$ if $u_i > 0$ or $X_i = 0$ if $u_i \leq 0$, where $u = (u_1, u_2, \dots, u_N)'$ is drawn from a multivariate Gaussian distribution with mean $\gamma = (\gamma_1, \gamma_2, \dots, \gamma_N)'$ and a covariance matrix Λ whose diagonal is 1 as $u \sim \tilde{N}(\gamma, \Lambda)$.”

should read:

“The binary output of the i -th neuron ($i = 1, \dots, N$) is given by $X_i = 1$ if $u_i > 0$ or $X_i = 0$ if $u_i \leq 0$, where $u = (u_1, u_2, \dots, u_N)'$ is drawn from a multivariate Gaussian distribution with mean $\gamma = (\gamma_1, \gamma_2, \dots, \gamma_N)'$ and a covariance matrix Λ whose diagonal is 1 as $u \sim N(\gamma, \Lambda)$.”

In addition,

“The correlation coefficient between 2 output neurons is given by $c_{\text{out}} = \eta_2 - \eta_1^2 / \eta_1(1 - \eta_1)$.”

should read:

“The correlation coefficient between 2 output neurons is given by $c_{\text{out}} = (\eta_2 - \eta_1^2) / [\eta_1(1 - \eta_1)]$.”

In addition,

“The probability that exactly m neurons are active and $N-m$ neurons are inactive is given”

should read:

“The probability that exactly m neurons are active and $N-m$ neurons are inactive is given by”

In addition,

“The signal for detecting the input correlation is given by $\partial E \frac{[F_{\text{obs}}(m)]}{\partial c_{\text{in}}}$ and”

should read:

“The signal for detecting the input correlation is given by $\frac{\partial E [F_{\text{obs}}(m)]}{\partial c_{\text{in}}}$ and”



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