# Biologically inspired optimization methods

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## Errata

**p. 16**
Reads:
... returning to the left panel of Fig. 2.4 ...
Should read:
... returning to Fig. 2.4 ...

**p. 17**
Reads:
... new iterate $\mathbf{x}_j$ ...
Should read:
... new iterate $\mathbf{x}_{j+1}$ ...

**p. 20, Algorithm 2.2**
Reads:
...$\mathbf{x}_j - \eta_j \nabla f(\mathbf{x}_j) \equiv \phi(\eta_j)$...
Should read:
...$\mathbf{x}_j - \eta_j \nabla f(\mathbf{x}_j) \equiv \mathbf{x}_{j+1}$...

Later in Algorithm 2.2, there is a reference to the function $\phi(\eta_j)$. This function is defined in Eq. (2.19), p. 17.

**p. 35, Sect. 3.1, line 3**
Reads:
... the both ...
Should read:
... both ...

**p. 54, Eq. (3.23)**
Reads:
... $g' \leftarrow \psi(g)$ ...
Should read:
... $g \leftarrow \psi(g)$ ...

**p. 76, line 5 of Fig. 3.20**
Reads:
5,1,5,1
Should read:
5,1,1,5

Here, the error is in the interpretation of the (encoded) instruction. In Fig. 3.19, I use the second gene as the destination register, and the third and fourth genes as the two operands. In the case of the $>$ operator, there is no destination register. Thus, the second gene (not the fourth) should be ignored. The range of both operand indices should be $[1, 6]$.

**p. 109**
Reads:
... where $\tau_{ij}^{[b]} = 1/D_b$ ...
Should read:
... where $\Delta\tau_{ij}^{[b]} = 1/D_b$ ...

**p. 126, Eq. (5.16)**
Reads:
... $c_1 + c_2 < 4$ ...
Should read:
... $c_1 + c_2 \leq 4$ ...

However, even after this change, the text might be a bit confusing. In applications, one typically takes $c_1 = c_2 = 2$, which works fine since velocities are restricted. Looking at the theoretical results for PSO (see Appendix B), however, one can prove that (in the absence of velocity restrictions) the particle positions remain bounded only if $c_1 + c_2 < 4$.

**p. 173**
Reads:
... $f(\mathbf{x}^*)$ cannot be a local minimum ...
Should read:
... $\mathbf{x}^*$ cannot be a local minimum ...

(The same misprint occurs a second time, on the final line of the proof). If $\mathbf{x}^*$ is a minimum, $f(\mathbf{x}^*)$ is referred to as *the value of $f$ at the minimum.*

**p. 194**
Reads:
... **variance** of $f$ ...
Should read:
... **variance** of $X$ ...