Errata to A. L. Custódio, J. F. A. Madeira, A. I. F. Vaz, and L. N. Vicente, **Direct multisearch for multiobjective optimization**, SIAM Journal on Optimization, 21 (2011) 1109-1140

1. Page 1112, Lines (-1)–(-7): "For the purposes of the search step, we say that the point x improves y in the j–th component of the objective function if $f_j(x) < f_j(y) - \bar{\rho}(\alpha)$ (where α is a step size parameter). When considering the poll step, the point $x + \alpha d$ improves y in the j–th component of the objective function if $f_j(x + \alpha d) < f_j(y) - \bar{\rho}(\alpha\|d\|)$ (where d is a direction used in polling around x). When $\bar{\rho}(\cdot)$ is a forcing function requiring this improvement or decrease results in the imposition of a sufficient decrease condition."

   Corrected version: Let $D(L)$ be the set of points dominated by L and let $D(L; a) \supset D(L)$ be the set of points whose distance in the ℓ_∞ norm to $D(L)$ is no larger than $a > 0$. For the purposes of the search step, we say that the point x is nondominated if $F(x) \notin D(L; \bar{\rho}(\alpha))$. When considering the poll step, the point $x + \alpha d$ is nondominated if $F(x + \alpha d) \notin D(L; \bar{\rho}(\alpha\|d\|))$ (where d is a direction used in polling around x). When $\bar{\rho}(\cdot)$ is a forcing function requiring this improvement or decrease results in the imposition of a sufficient decrease condition.

2. Page 1113, Lines 19–22 and Lines 28–31: "Call $L_{filtered}$ = `filter(`L_k`,`L_{add}`)` to eliminate dominated points from $L_k \cup L_{add}$. Remove from the filtered list any new nondominated point that has not improved at least one component of the objective function of one of the points in L_k."

   Corrected version: Call $L_{filtered}$ = `filter(`L_k`,`L_{add}`)` to eliminate dominated points from $L_k \cup L_{add}$, using sufficient decrease to see if points in L_{add} are nondominated relatively to L_k.

3. The sentence in Lines (-11)–(-8), Page 1114 must be removed.

4. Page 1118, Lines 7–8: "*The objective function components of F are bounded below in $L(x_0)$.*"

   Corrected version: The objective function components of F are bounded below and above in $L(x_0)$.

5. Page 1121, Lines 16–21: "Since $\{x_k\}_{k\in K}$ is a refining subsequence, for each $k \in K''$, $x_k + \alpha_k d_k$ does not dominate x_k. Thus, for each $k \in K''$ it is possible to find $j(k) \in \{1, \ldots, m\}$ such that $f_{j(k)}(x_k + \alpha_k d_k) - f_{j(k)}(x_k) + \bar{\rho}(\alpha_k\|d_k\|) \geq 0$ (from the fact that $k \in K$ is not successful we also know that $x_k + \alpha_k d_k$ has not improved any of the components of the objective function of any of the points in L_k and such point could had been x_k, and thus we need to incorporate the term $\bar{\rho}(\alpha_k\|d_k\|)$)."

   Corrected version: Since $\{x_k\}_{k\in K}$ is a refining subsequence, for each $k \in K''$, $x_k + \alpha_k d_k$ is not nondominated relatively to L_k. Thus, for each $k \in K''$ it is possible to find $j(k) \in \{1, \ldots, m\}$ such that $f_{j(k)}(x_k + \alpha_k d_k) - f_{j(k)}(x_k) + \bar{\rho}(\alpha_k\|d_k\|) \geq 0$.

6. Page 1138, Lines (-10)–(-5): "At each successful iteration, all the points added to the iterate list decrease by ρ_* the value of one of the objective function components of one of the points in the list. On the other hand, if a point is removed from the list it is because it has been dominated by another. Thus, since the number of components of the objective function is finite, one of the components must be decreased (by ρ_*) an infinite number of times which contradicts Assumption 4.1."

   Corrected version: At each successful iteration, any new point added to the current iterate list will define a hypercube of length no smaller than ρ_* in the set of points nondominated by those in the iterate list, where it will be later impossible to generate a new point. This and the fact that the number of successful iterations is infinite contradict Assumption 4.1.

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