
*Correction***Correction: Decision-making in diagnosing heart failure problems using basic rough sets****D. I. Taher¹, R. Abu-Gdairi², M. K. El-Bably^{3,*} and M. A. El-Gayar⁴**

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A correction on

Decision-making in diagnosing heart failure problems using basic rough sets

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In the original article [1], we introduced novel rough approximation operators inspired by topological structures to enhance the applicability of rough set theory through a general binary relation. The methods presented are rooted in the concept of “basic-minimal neighborhoods”, which builds upon the idea of a “basic-neighborhood”, first introduced by Abu-Gdairi et al. [2] as a counterpart to “initial neighborhoods” [3]. Interestingly, the same concept of “basic-neighborhoods” was also proposed in 2021 under the term “containment neighborhoods” in [4], where applications of rough sets were explored using the k -neighborhood space (k -NS) concept developed by Abd El-Monsef et al. [5]. However, this work did not thoroughly examine the related topological properties or methods for constructing associated topologies. El-Gayar et al. [6] later extended the concept of “basic-neighborhoods” by introducing four distinct types of neighborhoods and examining their topological structures. They also explored methods for constructing related topologies and applied these concepts to decision-making in economic contexts. Furthermore, the term “initial-neighborhoods”

was subsequently referred to as “subset neighborhoods” in 2022 in [7]. This correction includes a citation for “basic-neighborhoods” in Definition 3.1, further strengthening the conceptual foundation of our study.

Definition 3.1. [4] Assume that \mathcal{R} is a binary relation on \mathcal{U} . Then, we define the following neighborhoods of $p \in \mathcal{U}$:

(i) basic $\langle r \rangle$ -neighborhood: $N_{\langle r \rangle}^b(p) = \{q \in \mathcal{U} : N_{\langle r \rangle}(q) \subseteq N_{\langle r \rangle}(p)\}$.

(ii) basic $\langle l \rangle$ -neighborhood: $N_{\langle l \rangle}^b(p) = \{q \in \mathcal{U} : N_{\langle l \rangle}(q) \subseteq N_{\langle l \rangle}(p)\}$.

(iii) basic $\langle i \rangle$ -neighborhood: $N_{\langle i \rangle}^b(p) = N_{\langle r \rangle}^b(p) \cap N_{\langle l \rangle}^b(p)$.

(iv) basic $\langle u \rangle$ -neighborhood: $N_{\langle u \rangle}^b(p) = N_{\langle r \rangle}^b(p) \cup N_{\langle l \rangle}^b(p)$.

The change has no material impact on the conclusion of this article. The original manuscript will be updated [1]. We apologize for any inconvenience caused to our readers by this change.

Conflict of interest

The authors declare that they have no conflicts of interest.

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