A note on “A comparative evaluation of assembly line balancing heuristics”

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Abstract SALBP-1 is the assembly line problem most represented in the literature. Many exact and heuristic procedures have been designed to solve it, and several papers comparing them have been published. Since Ponnambalam et al. (Int J Adv Manuf Technol 15:577–586, 1999) is often referred, it is worth noting that the definition of “positional weight” given there is not right, since it does not coincide with that was originally published in Helgeson and Birnie (J Ind Eng 12(6):394–398, 1961). This implies that the conclusions in Ponnambalam et al. (Int J Adv Manuf Technol 15:577–586, 1999) should be revised.

Keywords Assembly line balancing · Heuristics · Positional weight

Assembly lines are a very common element in production systems and they give rise to a variety of problems. Among them, that named by Baybars [3] SALBP-1 is the most dealt with (see [4]), and many exact and heuristic procedures have been proposed in the literature to solve it ([5]), with the consequence that several studies comparing these procedures have come out.

In [1], a comparative evaluation is presented of six assembly line balancing heuristics for solving SALBP-1. One out of these six heuristics is the well-known one due to Helgeson and Birnie [2], also known as the positional weight (PW) method. The PW is defined in [1], p. 578, as the “time of the longest path from the beginning of the operation through the remainder of the network”.

Since its publication in the journal in 1999, many researchers have consulted the paper, as multiple references bear witness. Therefore, it is worth pointing out that the aforementioned definition of the PW is not right, since on page 395 of the original paper by Helgeson and Birnie [2], it is said that the PWs, for each task (or “unit of work”), are calculated “by adding together the time values for the specific work unit and all work units that must follow it”.

Therefore, the computational experiment reported in [1] and the conclusions drawn from it should be revised, at least partially; otherwise, they could not be used as a starting point for future developments.

References

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