

# On Job-Insertion for the Blocking-Job-Shop and its Application to the SBB Challenge

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The SBB challenge is a timetable generation problem, which can be interpreted as a blocking-job-shop scheduling problem. In the blocking-job-shop, unlike the classical job-shop, the N1 neighbour of a given solution is generally not feasible. Gröflin, Klinkert & Bürgy developed a method, conceptually based on the insertion of a single job (a SBB train) into a schedule, which recovers the feasibility of N1 neighbours. In the present master thesis, multiple ways to improve the computational efficiency of that method are developed. The most remarkable improvement relies on the insight that a sequence of graph searches follow a ‘nested’ structure and can all be combined. The method is adopted to the additional constraints of the SBB challenge.

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