Computational Study of Non-linear Great Deluge for University Course Timetabling

Abstract

The great deluge algorithm explores neighbouring solutions which are accepted if they are better than the best solution so far or if the detriment in quality is no larger than the current water level. In the original great deluge method, the water level decreases steadily in a linear fashion. In this paper,we conduct a computational study of a modified version of the great deluge algorithm in which the decay rate of the water level is non-linear. For this study, we apply the non-linear great deluge algorithm to difficult instances of the university course timetabling problem. The results presented here show that this algorithm performs very well compared to other methods proposed in the literature for this problem. More importantly, this paper aims to better understand the role of the non-linear decay rate on the behaviour of the non-linear great deluge approach.