

Cohesion and Balance in a Human Resource Allocation Problem

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Abstract

Collaborative work appears between intelligent agents of different types. The problem discussed occurred when many construction workers were taken to Germany from Romania to work in construction projects. Managers have to make independent groups of workers from some categories, like carpenters, brick layers, etc. To discover their collaborative attitudes they use the scoring method, where every worker scores the others from different trades. The objectives are to form groups of workers with high compatibility value and to have a high compatibility value for the worst group, too. The problem becomes more interesting if software collaborative groups or specialized intelligent agents are involved. One has to prospect also the level of knowledge overlap between the trade groups of agents. This paper resumes to the problem of construction workers so as there is no overlap between the trades and the level of knowledge is not in the universe of discourse. We propose a Greedy and a genetic algorithm approach and we compare these methods.

Keywords: human resource allocation, genetic algorithm, minimax problem

1 Introduction

Our world proceeds toward team work. Nobody can perform good tasks alone on a long term. Nitchi in [1] considers the collaboration as an intelligent activity based on 3C (Communication, Coordination and Cooperation). Collaborative work in a group needs compatibility analysis. One can perform this with personality and aptitude tests, but also with the scoring method, where the group actors score each other. This paper proposes to take in consideration a real-life problem that came up when many construction workers were taken to Germany from Romania to work in construction projects [2]. A managerial problem was to distribute them in independently working groups. And the objectives were that those groups should be balanced and with high compatibility factors. The meaning of 'balanced' in this case is that the least fitted group should have a maximum value.

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