

To Provide a Baseline Algorithm for Team Forming: K Team-Forming

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Abstract: In recent studies, some researchers were eager for the answer of how to group a perfectly dream team. There are various grouping methods, e.g. random assignment, homogeneous grouping with personality or achievement and heterogeneous grouping with personality or achievement [2], were proposed. Some researchers [3] have compared the performance of some teams, they were formed through some grouping method, with other teams formed via random assignment, but the results were not consistent. Sometimes there are no significant difference and then surprisingly have significant difference in other studies [3, 4]. Why the results were not consistent? In my point of view, the random assignment by instructor or manager could not be reproduced, some instructors would put some students in a team perfectly via their experiences, and some algorithms would match students perfectly but in chance teams assigned by instructor also good enough. This phenomenon would stay continuance until a baseline algorithm is to be proposed as a base of comparison. Based on the above discussions, I want to propose an easy and non-perfect team-forming algorithm that could be used by other researchers to compare with. This algorithm called "K team forming algorithm," which could group K students in a team with several students' personal characteristics or performances. Author would show the source code, which could be executed in MATLAB 6.x, and the performance of this algorithm in this proposal.

K Team-Forming Algorithm

This algorithm was revised from K Means clustering algorithm[1] by author. In K Means clustering algorithm, it put closer data points into one of the K cluster by distance measure. In K team-forming algorithm, also it put K similar students into a homogeneous team by distance measure used by K Means clustering algorithm.

Performance of K team-forming algorithm

Author has applied this algorithm to cluster 3 students into a team from 9 students (3 teams) to 90 students (30 teams) and generated students' characteristics from 1 to n ($9 \leq n \leq 90$). The variance of each perfect team should equal to 1 then the total variance equal to number of teams. The Fig. 1 showed this algorithm do not always perfectly cluster teams, so this algorithm would perfectly be used as a baseline algorithm and the team-forming strategy could be reproduced in each experiment.

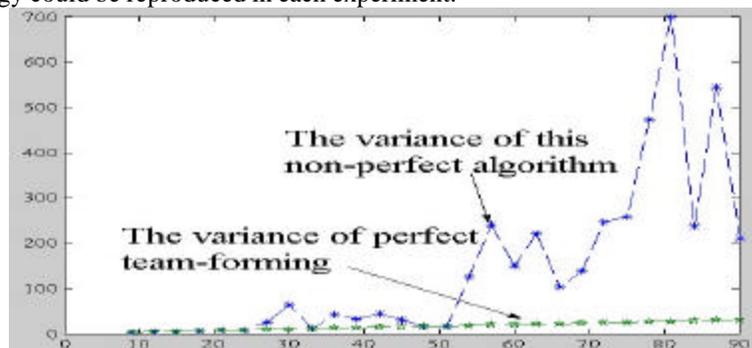


Fig. 1 The performance of K team-forming algorithm

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