
MODIFIED HUNGARIAN METHOD (MHM) IN OPTIMIZING COMPETENCY-PREFERENCES SCORES IN LECTURER-TO-COURSE ASSIGNMENT

Nur Syahirah Ibrahim¹, Adibah Shuib^{2*}, Zati Aqmar Zaharudin³

¹Faculty of Computer and Mathematical Sciences, Universiti Teknologi MARA (UiTM),
40450 Shah Alam, Selangor, Malaysia

¹Faculty of Computer and Mathematical Sciences, Universiti Teknologi MARA (UiTM)
40450 Shah Alam, Selangor, Malaysia

²Faculty of Computer and Mathematical Sciences, Universiti Teknologi MARA (UiTM)
Cawangan Negeri Sembilan, Negeri Sembilan, Malaysia

ABSTRACT

Efficient assignment of lecturers to courses is vital in educational institutions to ensure both faculty satisfaction and optimal course delivery. This paper proposes a Modified Hungarian Method (MHM) optimization model for the assignment of lecturer-to-course considering their competency and preference scores. Previous research predominantly employed the Hungarian method, with a limited exploration of the MHM optimization model. Furthermore, the combination of competency and preference-based lecturer-to-course has never been applied. In the field of assigning lecturers to courses, previous research often used the Hungarian method to solve balanced assignment problems, where the number of lecturers and courses is equal. However, studies addressing unbalanced assignments regarding assigning lecturers to courses are still lacking. This study focuses on tackling this unbalanced assignment issue, providing solutions for situations where the numbers do not align and solving it based on the competency and preferences of the lecturers. To enhance the formulation of the MHM model, this study presents a mathematical programming approach. The objective of this study is to maximize overall competency and preferences CP-MHM model in lecturer-to-course assignments. Competency and preferences data from Mathematics lecturers at UiTM Shah Alam were gathered via an online survey for undergraduate courses. Using these competency and preference scores as input, the CP-MHM model was implemented using MATLAB's `intlinprog` to produce an optimal assignment plan, restricting lecturers to a maximum of three courses. The optimal solutions of the CP-MHM model indicate which courses are best assigned to a particular lecturer, based on their competency and preference scores. The competency levels are assessed using three aspects namely knowledge, skills, and teaching motivation. This research improves educational planning by providing a useful tool for assigning lecturers to courses in realworld situations. A key part of our study is combining the assignment process with the MHM algorithm to handle these multidimensional inputs effectively. By considering both lecturer preferences and competencies, as well as the available courses, our model aims to boost teaching quality, reduce mismatches, and enhance overall academic performance.

Keywords Competency · Preferences · Higher Education Institutions · Lecturers-to-Courses · Assignment · Mathematical Programming · Modified Hungarian Method

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*Corresponding Author's E-mail: abc@hbv.edu.tr

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