Balanced academic curriculum: Looking for an optimal solution with metaheuristics and functional programming

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Abstract
The curriculum design is quite a challenge in the academy, mainly because it requires an adequate distribution of content for the development of the expected professional competencies regarding the available time, the necessary academic load, and their gradual progress in the higher educational institutions. Considering the above, the main objective of this work is to present and exemplify a computational solution to minimize the cost of designing curriculum plans using bio-inspired algorithms to automate and reduce errors in such a process. Specifically, the purpose of this research focuses on solving the Curriculum Mesh Balancing (BACP) problem through metaheuristic optimization based on the behavior or algorithm of fireflies and the use of functional programming in the Haskell lang curricular meshes, rolling of curricular meshes, metaheuristics; firefly algorithm, functional programming in Haskell programming language. The firefly algorithm will be applied to a set of test instances to demonstrate its effectiveness. According to the obtained results, this proposal allows the efficient gathering of solutions to the problem under study.