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The Interdisciplinary Synergy Between Computer Engineering and Mathematics

Authors : Mitat Uysal, Aynur Uysal

Abstract : Computer engineering and mathematics share a deep and symbiotic relationship, with mathematics providing the foundational theories and models for computer engineering advancements. From algorithm development to optimization techniques, mathematics plays a pivotal role in solving complex computational problems. This paper explores key mathematical principles that underpin computer engineering, illustrating their significance through a case study that demonstrates the application of optimization techniques using Python code. The case study addresses the well-known vehicle routing problem (VRP), an extension of the traveling salesman problem (TSP), and solves it using a genetic algorithm.

Keywords : VRP, TSP, genetic algorithm, computer engineering, optimization
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