

Handling Dynamic Behaviors in Environments via the Evolutionary Transfer Optimization Technique

Developing evolutionary transfer optimization (ETO)-based methods has become a novel trend in solving the dynamic multi-objective optimization problems, which dedicate to fully using the history searching experiences so as to accelerate the convergence in new environment. However, those ETO-based methods always suffer the challenge of negative transfer, and to overcome this issue, a hierarchical response system and a multi-strategy adaptive selection mechanism have been proposed, which alleviate the negative transfer from the aspects of "when to transfer" and "how to transfer", respectively. In particular, the former quantifies the environmental changes to make response, and the latter introduces the kernel mean matching method to match the data distribution so as to promote effective knowledge transfer. This report will give in-depth discussions on the motivation and effectiveness of the proposed methodologies, which inspires more thoughts on how to overcome the bottleneck of negative transfer.