Resumo da Semana

Resum

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System and Information Engineering

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Resumo da semana

1. Leitura do artigo “Are all sub-problems equally important? Resource allocation in decomposition-based multiobjective evolutionary Algorithms”
   - Implementado com adaptacoes!
2. Proposta: implementar islands como MOEA/D com diversas configuracoes de parametros.
   - Leitura de diversos alguns poucos artigos sobre paralelizacao do MOEA/D - problemas com escalabilidade e/ou nenhuma melhoria na qualidade das solucoes.

Proposal

1. **Period of interaction** Several (N) MOEA/D running in parallel with different parameters.
    - Which parameters? Sensitivity Analysis!
2. "Migration": Synchronously choose the the best configuration, how? Hypervolue, IGD? Other EMOA metrics?
3. Define the next populations (N) from the big group of pareto sets of the several MOEA/Ds. Next slide.
4. Input this new populations (N) to the several (N) MOEA/Ds (with different parameters then before?). Go to 1.

Best configuration

3. Randomly.
4. Dual populations (external population).
   - Store the visited non-dominated solutions with a weight vector, and then add/remove sub-problems given crowded/sparse regions by adjusting the weight vector, Qi et al. [2014].
   - Stored the non-dominated solutions such that the Hyper Volume is maximized, Jiang et al. [2016].
   - External population is updated using non-dominates sorting and crowding distance <- NSGA-II. Also it is used to guide the allocation of computational resources to a sub-problem given its contribution, Cai et al. [2015].

Xinye Cai, Yexing Li, Zhun Fan, and Qingfu Zhang. An external archive guided multiobjective evolutionary algorithm based on decomposition for combinatorial optimization. *IEEE Transactions on Evolutionary Computation*, 19(4):508–523, 2015.

Siwei Jiang, Liang Feng, Dazhi Yang, Chen Kim Heng, Yew-Soon Ong, Allan NengSheng Zhang, Puay Siew Tan, and Zhihua Cai. Towards adaptive weight vectors for multiobjective evolutionary algorithm based on decomposition. In *Evolutionary Computation (CEC), 2016 IEEE Congress on*, pages 500–507. IEEE, 2016.

Yutao Qi, Xiaoliang Ma, Fang Liu, Licheng Jiao, Jianyong Sun, and Jianshe Wu. Moea/d with adaptive weight adjustment. *Evolutionary computation*, 22(2):231–264, 2014.