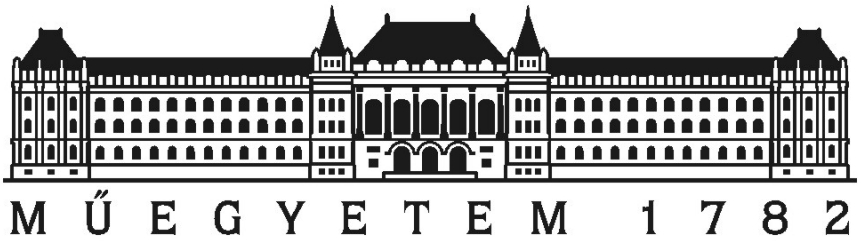

Evolutionary Algorithms

Homework

Fifth task

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1. Prove the following statement: *If we can find a Hamiltonian cycle in a digraph in polynomial time, then using this algorithm we can find a Hamiltonian cycle in a graph.*.

2. Let us suppose, that we use one of the four crossover operator (CX, OX, PMX, EX) for 9-long permutation pairs, the matching segment is the 4-7. positions if there is any. Is it possible, that that the two parents aren't identical, but the offspring is identical to one of the parents?

3. Consider 9-long permutations. Applying CX operator, the permutation pair is divided to cycles. Count the number of cycles for 106 random permutation pairs and make a histogram of the distribution of the number of cycles.

Bibliography

[1] Course Webpage
`http://math.bme.hu/ safaro/evolalgen.html`

[2] `https://tex.stackexchange.com/`