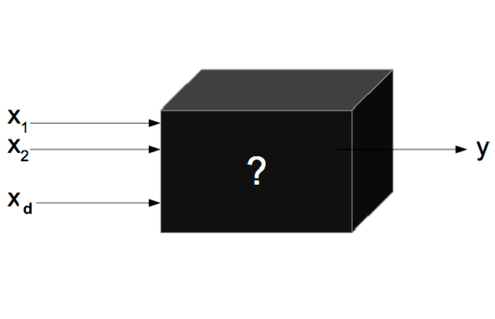
Bachelor Projects in Evolutionary Algorithms

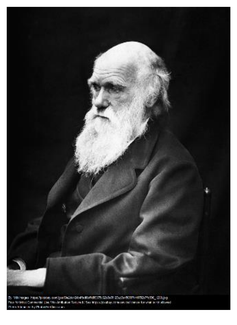
Section for Algorithms, Logic and Graphs

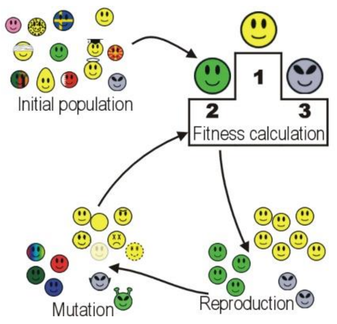
DTU Compute, October 2024

Frameworks for Evolutionary Algorithms and Heuristic Optimization

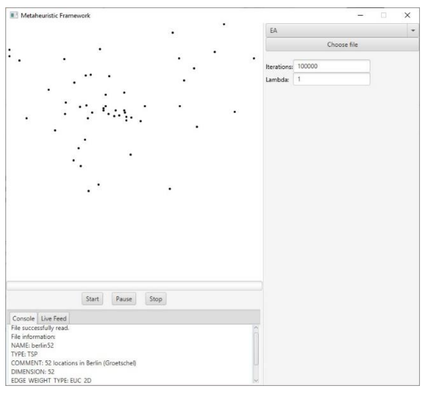
- **Evolutionary Algorithms (EA) can solve hard optimization problems and general black-box optimization problems using bio-inspired search operators**

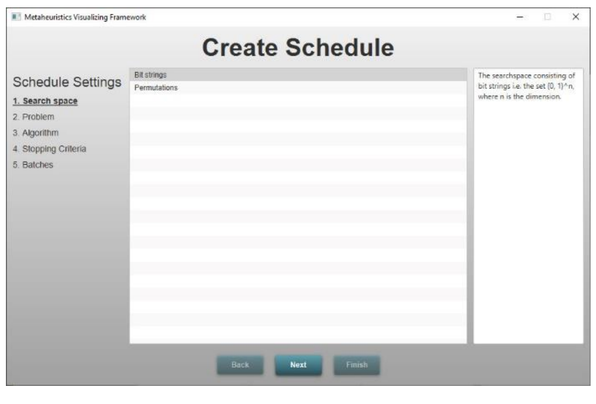


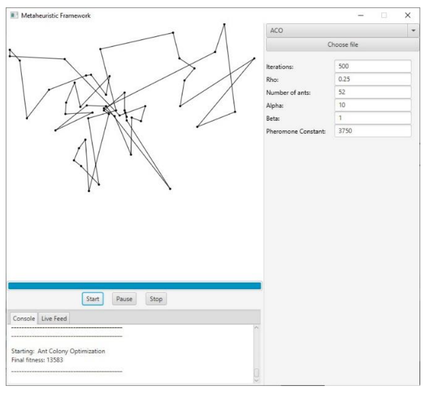


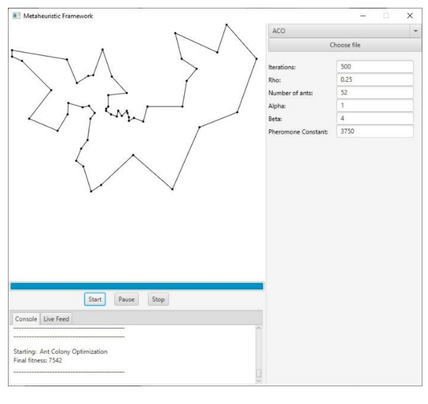


- **Implement, visualize and compare EAs on benchmark problems on bit strings and permutation problems (e.g. TSP, vehicle routing)**

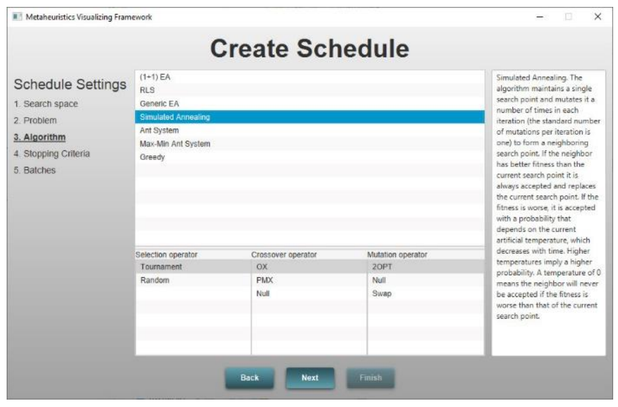


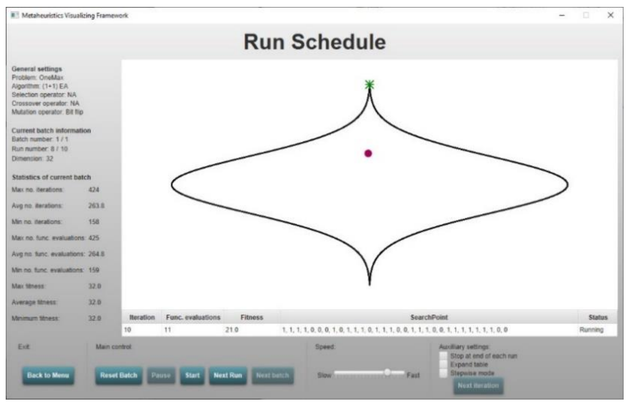




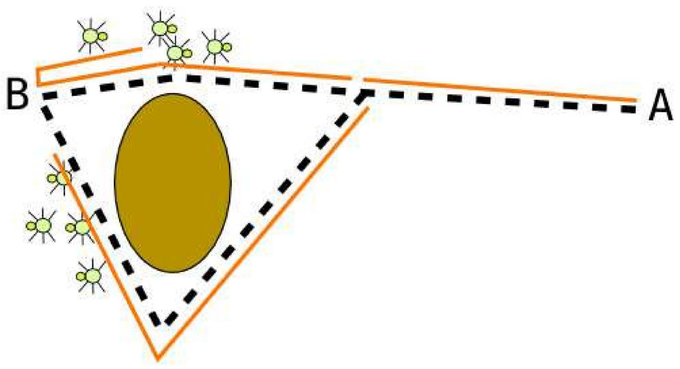


- **Develop an extensible framework for the implementation of and experimentation with different metaheuristics**





- **Add further heuristics such as Ant Colony Optimization and Simulated Annealing**



- **Extract statistical properties such as average running time, best-so-far fitness, …**

- **Required background: basic knowledge in algorithms (preferably also in metaheuristics, e.g., from course 02249), GUI prog., and software engineering**

- **Contact: Carsten Witt (cawi@dtu.dk)**

Credits:
- https://en.wikipedia.org/wiki/Portraits_of_Charles_Darwin
- https://commons.wikimedia.org/wiki/File:Heat-Treating-Furnace.jpg
- Screen shots from Emil Lundt Larsen's bachelor project from 2018: https://fulltext-gateway.cvt.dk/oafilestore?oid=5b45e5d35010df018032450b&targetid=5b45e5d35010df018032450d