Informationer om projekt af typen Bachelorprojekt:

Studerende:	Silas Thule Mackrill(224758)
Dansk titel:	Visualisering og evaluering af arbejdsprincipperne af naturinspirerede metaheuristikker for optimering
Engelsk titel:	Visualizing and Evaluating the Working Principles of Nature-inspired Optimization Metaheuristics
Forklaring/indhold(DK):	se den engelske beskrivelse
Forklaring/indhold(UK):	Nature-inspired metaheuristics such as evolutionary algorithms, simulated annealing and ant colony optimization are often applied to hard optimization problems. The aim of this project is to develop a framework that implements and visualizes the working principles of nature-inspired metaheuristics for the solution of combinatorial optimization problems, most notably the traveling salesperson problem (TSP). As a minimum, the framework should allow for the following: Search spaces: bit strings and permutations (corresponding to TSP tours) Nature-inspired algorihms: simulated annealing, an evolutionary algorithm, an ant colony optimization algorithm Problems: benchmark functions OneMax and LeadingOnes selected TSP instances from the TSPlib library (comopt.ifi.uni-heidelberg.de/software/TSPLIB95/) Visualize the constructed solutions for two-dimensional TSP instances Extract key figures from a run of a metaheuristic such as best-so-far fitness, running time, number of function evaluations etc. The framework should be flexible, modular and extensible so that other problem classes, metaheuristics and visualizations can be added. Different metaheuristics should be evaluated w.r.t. their appropriateness for given optimization problems as part of the project.
ECTS Point:	15
Startdato:	2025-03-01
Afslutningsdato:	2025-06-13
Institut:	Institut for Matematik og Computer Science
Samarbejdsinstitutter:	Intet samarbejdsinstitut
Samarbejdsvirksomheder:	(Ikke angivet)
Projekt udføres i:	Danmark
Antal måneder i udlandet:	(Ikke udfyldt)

Vejleder(e):	Carsten Witt (cawi@dtu.dk)
Vejleder (ekstern):	(ingen eksterne vejledere på projektet)
Eventuelle kommentarer til Afd. for Udd. og Studerende	Den studerende tager sideløbende kurser i et omfang på 10 ECTS.