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Finding a fuel-efficient vessel route using minimization methods

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The article presents the results of an attempt to solve the problem of finding the optimal route for a vessel. The vessel moves under the risk of collision with moving objects. Optimality is determined by the vessel's fuel consumption and arrival at the destination on time. To numerically determine the optimality of the path, a functional depending on the route is used. The solution to the route construction problem is to find the minimum of the functional. The article presents the results of solving this problem using various methods for finding the minimum. To determine the value of the functional, a program is used that allows the user to uniquely build a route and determine its optimality based on the values of a number of parameters. The algorithm for solving the problem is implemented in the Python programming language. To determine the value of the functional in the solution search program, a request is sent to the route construction program via sockets. The article compares the results of various minimum search methods applied to this problem.

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