A real application example of a control structure selection by means of a multiobjective genetic algorithm

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Abstract. Control problems are clear examples of multiobjective optimization. In this kind of problems a series of objectives, some of them opposed to each other, will be optimized in order to fit some design specifications.
Moreover, evolutionary algorithms have been shown to be ideal for the resolution of these kinds of problems because they work simultaneously with a set of possible solutions, thereby favoring convergence towards a global optimum. In this document we propose a way of dealing with the different objectives considered and a genetic-evolutionary algorithm that will enable some phases of the controller design to be automated.
Finally, an application example of the methods outlined will be applied to the design of a controller to reduce the sickness index on a high-speed ship.

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