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Constrained Linear Quadratic Regulator: Continuous-Time Case

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Abstract: This paper deals with the linear quadratic regulator with constraints on the state and the input vectors. Such an optimization problem has a wide applications in industry like chemical and manufacturing industries. Our goal in this paper consists of developing an efficient numerical algorithm to solve such problem. Our technique relays on an iterative approach that uses the solution of the standard linear quadratic regulator as an initial guess for the optimal solution and then iteratively, the solution is improved by designing a controller that compensates for the violation of the constraints at each iteration. A numerical example is given to show the effectiveness of this algorithm.

Keywords: *Linear systems; linear quadratic regulator; constrained input; constrained state.*

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