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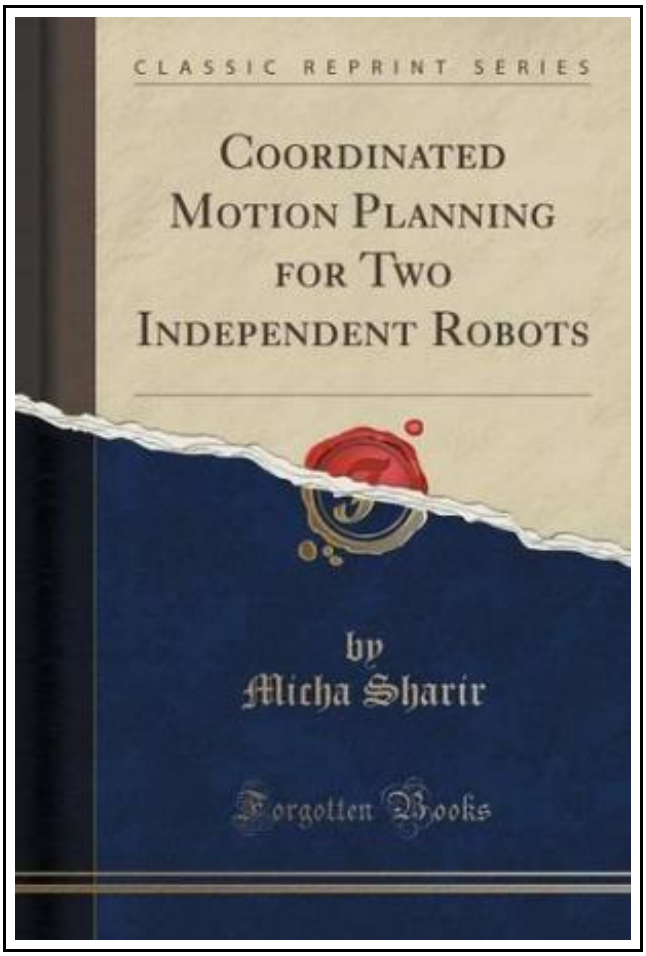

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Forgotten Books, United States, 2015. Paperback. Book Condition: New. 229 x 152 mm. Language: English . Brand New Book ***** Print on Demand *****.Excerpt from Coordinated Motion Planning for Two Independent Robots We present an 0(n2) algorithm for planning a coordinated collision-free motion of two independent robot systems of certain kinds, each having two decrees of freedom, which move in the plane amidst polygonal obstacles having a total of n corners. We exemplify our technique in the case of two planar Stanford arms, but also discuss the case of two discs or convex translating objects. The algorithm improves previous algorithms for this kind of problems, and can be extended to a fairly simple general technique for obtaining efficient coordinated motion planning algorithms. 1. Introduction In this paper we present a new approach to the design of efficient algorithms for coordinated collision-free motion planning for two independent robot systems moving amidst a collection of obstacles which they must avoid (and also avoid collision into one another). We exemplify our techniques in the case of two planar Stanford arms, where each arm is modeled as a line segment which can slide forward and backward through some fixed point, and can also rotate about that point; thus each arm has two degrees of freedom (sec Fig. I). The arms arc assumed to be moving in the plane amidst a collection of polygonal obstacles, having a total of n corners. This problem has been studied by Fortune, Wilfong and Yap [FWY], who present an 0(n3) algorithm for it. We present here an improved algorithm whose complexity is only 0(n2). This algorithm is a special case of a more general technique that we introduce here, and which can be applied to obtain efficient algorithms for various other coordinated motion planning problems. For example, we obtain...

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