

# Merging of Bézier curves with box constraints

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## **Abstract**

In this paper, we present a novel approach to the problem of merging of Bézier curves with respect to the  $L_2$ -norm. We give illustrative examples to show that the solution of the conventional merging problem may not be suitable for further modification and applications. As in the case of the degree reduction problem, we apply the so-called restricted area approach – proposed recently in (P. Gospodarczyk, *Computer-Aided Design* 62 (2015), 143–151) – to avoid certain defects and make the resulting curve more useful. A method of solving the new problem is based on box-constrained quadratic programming approach.

*Keywords:* Bézier curve, merging, multiple segments, parametric continuity, quadratic programming, box constraints.

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