

Pattern Recognition in Computer-Aided Systems for Transformation of Mathematical Figures into Tactile Graphics

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Abstract

A computer-aided system for transformation of mathematical figures into tactile graphics is useful for the visually impaired when they learn mathematics and science. To develop such a system, a study of mathematical figure recognition techniques is needed. It is natural to assume that (1) a mathematical figure includes characters and mathematical formulas to explain lines or curves that are graphical expressions of functions or relations, and (2) graphs are sometimes drawn using broken lines. Under these assumptions, this paper discusses methods of (1) separating a mathematical figure into the character components and the graph components, and (2) extracting each character string and mathematical formula.