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In this thesis, an off-line system for recognition of multiple-font printed Thai characters is described. The aim of the character recognition system is to recognize more than one font of printed Thai characters. Because of complicated structures and many similar curves of Thai characters, the method based on the structural analysis of their contours is proposed. In the thesis, Freeman chain code and directional differences of contour tracing are utilized to extract concavities and convexities of the contours of characters. Simple features of arc, such as length between adjacent +/- vertices are utilized to calculate the distance between each arc pair of an input character and a model in the Dynamic Programming mathching process. Then, the most similar arc pair is detected and utilized as standard for determining the matching of the next arc pairs. By applying DP matching, the distance between character portions and the distance between characters are calculated for the classification. The recognition method is applied to 3 fonts of printed Thai characters (1,030 character data), and a recognitic rate of 94.7% has been obtained.