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1006-94-223 **Gopal Lakhani*** (lakhani@cs.ttu.edu), Department of Computer Science, Texas Tech University, MS 3104, Lubbock, TX 79409. *Encoding an arbitrary collection of image edges.*

This note presents a lossless compression algorithm for coding image edges. Our curve building program scans given bi-level image and captures each edge as a chain of image grid points. To code all edges collectively, our encoder considers two problems: 1) coding of the starting points, and 2) coding of the remaining points of edges. It first solves a traveling salesperson problem, which gives an optimal ordering of all edges. Then it encodes each edge by giving its start point, a trace of all remaining points, and an end-of-edge marker. The start point is coded either by giving its displacement from one of the two terminal points of the previous edge or by coding a dummy path from the last point of the previous edge, depending on which method generates fewer code bits. This note also presents a modification to the well-known chain difference algorithm. An advantage of our algorithm is that its output can be encoded using two different entropy coding methods. The first method uses LZW and it suits better for wiggly edges. The second method uses run-length based coding and it suits better for straight-line segments.

Results are given for five natural images and the coding rate is compared with JBIG. (Received February 15, 2005)