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Design Rule Checking for VLSI Circuits using a Cellular Computer. T.N.MUDGE, R.M.LOUGHEED, W.B.TEEL, University of Michigan —It is projected that by 1985 integration levels will approach one million devices. Systems of such complexity require computer assisted validation at many stages in the design procedure before being committed to silicon. An important class of design rule checks can be performed on bit map representations of the IC masks (1 bit/pixel) [1]. These checks can be characterized by neighborhood transformations on pixels. Efficient processing of such checks can best be done by a computer whose architecture is geared to cellular image processing. The Cytocomputer[2] is a special purpose real-time image processor based upon cellular automata concepts. It consists of a pipeline of identical nearest-neighbor processing stages controlled by an interactive interpreter. Our benchmarks show a small number of stages can perform the above design rule checks on multi-mask layouts an order of magnitude faster than a VAX-11/780.

1. C. M. Baker, Artwork Analysis Tools for VLSI Circuits, (M.S. Thesis) MIT, 1980.
2. R. M. Lougheed, et al., "Cytocomputers: Architectures for Parallel Image Processing," Proc. IEEE Workshop on Picture Data Description, 1980.

Presented by: R. M. Lougheed

Author's name: T. N. Mudge, R. M. Lougheed, W. B. Teel
Department of Electrical & Computer Eng.
University of Michigan
Ann Arbor
MI 48109

Author's signature: *T. N. Mudge*

T. N. Mudge