Development of Geometric Clustering Algorithms and Applications to VLSI Design

1990 Fiscal Year Final Research Report Summary

Development of Geometric Clustering Algorithms and Applications to VLSI Design

Research Project

Project/Area Number

01550295

Research Category

Grant-in-Aid for General Scientific Research (C)

Allocation Type

Single-year Grants

Research Field

計算機工学

Research Institution

Osaka Electro-Communication University

Principal Investigator

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Keywords

クラスタリング / 類似度行列 / 計増幾何学 / アルゴリズム / 幾何学的変換法 / 回路分割問題

Research Abstract

Grouping similar objects is called cluster analysis. There have been considered a lot of algorithms. When we formulate this problem as a problem in Graph Theory, it may often become NP-complete. Therefore, we rely on heuristic algorithms. In this research we first presented an algorithm for mapping objects into points in the plane so that similar objects are placed closely, based on Principal Coordinate Analysis. Then, applying Geometric Transform, points are mapped into lines. Using Topological Walk Algorithm developed in the research, we can examine all possible regions defined by those lines. This corresponds to examination of all possible partitions of those points in the dual plane. The idea was applied to Circuit Partitioning in VLSI design.

Research Products (6 results)

All Other

All Publications

[Publications] H.Umeo and T.Asano: "systolic Algorithms for Computational geometry Problems —A Survey" Computing. 41. 19-40 (1989)

[Publications] T.Asano,E.Lodi: "Solving Semi—Dynamic Geometric Problems" 電子情報通信学会 英文誌. E—73. 265-269 (1990)

[Publications] T.Asano,T.Tokuyama: "Algorithms fof Projecting Points to Give the Most Uniform Distribution with Applications to Hashing" Algorithmica.

[Publications] T.Asano,T.Tokuyama: "Circuit Partitioning Algorithms:Graph Model vs Geometry Model" International Jaurnal on Computational Geometry and Applications.

[Publications] T.Asano,L.J.Guibas,T.Tokuyama: "Walking on an Arrangement Topologically" SIAM Journal on Computing.

[Publications] 浅野 哲夫: "計増幾何学" 朝倉書店, 231 (1990)

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