Studies on Realistic Solutions to Theoretically Hard Problems

2001 Fiscal Year Final Research Report Summary

Studies on Realistic Solutions to Theoretically Hard Problems

Research Project

Project/Area Number

10205207

Research Category

Grant-in-Aid for Scientific Research on Priority Areas (B)

Allocation Type

Single-year Grants

Research Institution

Japan Advanced Institute of Science and Technology

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Project Period (FY)

1998 – 2000

Keywords

Algorithm / Computational Geometry / Asymptotic analysis

Research Abstract

In this study we have been engaged in several problems which were thought to be computationally Hard within the traditional framework of asymptotic analysis popular in the theory of algorithms. More concretely, we have studied the problem of designing optimal dot patterns for printing and that of clustering. For the former problem, we have noticed that the discrepancy theory can be applied to the problem. The discrepancy theory has been rigorously studied and is full of important theoretical results. Combining it with the notion of matching in the graph theory, we have succeeded in improving the performance of the solutions obtained. Since we also had satisfactory experimental results, we intend to submit the result to some journal. For the problem of clustering, we have applied an algorithmic approach to image query system On image database with good experimental results that exceed results by traditional Approaches. We are planning to summarize the results in a paper to be submitted to some International journal in near future.

Research Products (6 results)

All Other

All Publications

[Publications] S.C.Nandy, T.Harayama, T.Asano: "Dynamically maintaining the widest k-dense corridor"Theoretical Computer Science. 255. 627-639 (2001)

[Publications] T.Asano, N.Katoh, T.Tokuyama: "A Unified Scheme for Detecting Fundamental Curves in Binary Edge Images"Computational Geometry:Theory and Applications. 18. 73-79 (2001)

[Publications] T.Asano, D.Z.Chen, N.Katoh, T.Tokuyama: "Efficient Algorithms for Optimization-based Image Segmentation"International Journal of Computational Geometry and Applications. 11,2. 145-166 (2001)

[Publications] S. C. Nandy, T. Harayama, T. Asano: "Dynamically maintaining the widest k-dense corridor"Theoretical Computer Science. 255. 627-639 (2001)

[Publications] T. Asano, N. Katoh, and T. Tokuyama: "A Unified Scheme for Detecting Fundamental Curves in Binary Edge Images"18. 73-79 (2001)

[Publications] T. Asano, D. Z. Chen, N. Katoh, and T. Tokuyama: "Efficient Algorithms for Optimization-based Image Segmentation"11, 2. 145-166 (2001)

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