



香港中文大學
The Chinese University of Hong Kong

Institute of Theoretical Computer Science and Communications

ITCSC Seminar

**Universal Rigidity and Edge Sparsification for Sensor Network
Localization**

By

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Abstract:

Owing to their high accuracy and ease of formulation, there has been great interest in applying convex optimization techniques, particularly that of semidefinite programming (SDP) relaxation, to tackle the sensor network localization problem in recent years. However, a drawback of such techniques is that the resulting convex program is often expensive to solve. In order to speed up computation, various edge sparsification heuristics have been proposed, whose aim is to reduce the number of edges in the input graph. Although these heuristics do reduce the size of the convex program and hence making it faster to solve, they are often ad hoc in nature and do not preserve the localization properties of the input. As such, one often has to face a tradeoff between solution accuracy and computational effort. In this talk, we introduce a novel edge sparsification heuristic that can provably preserve the localization properties of the original input. Our computational results show that the proposed approach can significantly reduce the computational and memory complexities of SDP-based algorithms for solving the sensor network localization problem. Moreover, it compares favorably with existing speedup approaches, both in terms of accuracy and solution time.

***** ALL ARE WELCOME *****

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