

行政院國家科學委員會專題研究計畫 期中進度報告

網路可靠度與有效性的研究(1/3)

計畫類別：個別型計畫

計畫編號：NSC92-2213-E-002-057-

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執行單位：國立臺灣大學數學系暨研究所

計畫主持人：張鎮華

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Midterm Report for the National Science Council Project
Project Title: Reliability and Efficiency of Networks (1/3)
Project Number: NSC 92-2113-E-002-057
Project Duration: August 1, 2003 to July 31, 2004
Project Investigator: Gerard Jennhwa Chang
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This is the first year of the whole project, which is for three years from August 1, 2003 to July 31, 2006. During this year, our results are on diagnosability of multiprocessor systems and locally connected spanning trees. Two papers are finished. The first one was submitted to a journal, and currently under revision. The second one needs a minor modification, and will be submitted to a journal in a month. Below are the list and the abstracts of these papers.

- [132] G.-Y. Chang, **G. J. Chang** and G.-H. Chen, “Diagnosability of regular networks,” submitted. (NSC92-2213-E002-057 and NCTS) (TPDS-0202-1003)
- [144] C.-C. Lin, **G. J. Chang** and G.-H. Chen, “Locally connected spanning trees of proper circular-arc graphs,” (NSC92-2213-E002-057 and NCTS)

[132] Diagnosabilities of regular networks

In this paper, we study diagnosabilities of multiprocessor systems under two diagnosis models: the PMC model and the comparison model. In each model, we further consider two different diagnosis strategies: the precise diagnosis strategy proposed by Preparata *et al.* and the pessimistic diagnosis strategy proposed by Friedman. The main result of this paper is to determine diagnosabilities of regular networks with certain conditions, which include several widely used multiprocessor systems such as variants of hypercubes and many others.

[144] Locally connected spanning trees of proper circular-arc graphs

A locally connected spanning tree of a graph G is a spanning tree T of G such that all neighbors of v in T induce a connected subgraph of G for every vertex $v \in V(G)$. The purpose of this paper is to give a linear-time algorithm for finding a locally connected spanning tree of a proper circular-arc graph.