

圖形演算法特論：<http://www.csie.ntu.edu.tw/~kmchao/tree07spr>

計算機概論：<http://www.csie.ntu.edu.tw/~kmchao/bcc07spr>

Course: Special topics on graph algorithms

Spring semester, 2007

Tuesday 10:20 - 13:10, 107 CSIE Building.

3 credits

Web site: <http://www.csie.ntu.edu.tw/~kmchao/tree07spr>

Instructor: [Kun-Mao Chao](#) (趙坤茂)

Prerequisites: Some basic knowledge on algorithm development is required. Background in approximation algorithms is welcome but not required for taking this course.

Coursework:

Two midterm exams (35% each; 4/10/2007 & 5/15/2007)

Oral presentation of selected topics or papers (20%)

Homework and class participation (10%)

Our classmates: [I](#) [II](#) [III](#) [IV](#) [V](#) [VI](#) [VII](#) [VIII](#) [IX](#) [X](#) [XI](#)

Class notes:

[Counting Spanning Trees](#)

[Minimum Spanning Trees](#)

[Shortest-Paths Trees](#)

[A note on a 2-approximation algorithm for the MRCT problem](#)

[A note on 15/8 & 3/2-approximation algorithms for the MRCT problem](#)

[A note on a polynomial time approximation scheme for the MRCT problem](#)

[Optimal Communication Spanning Trees](#)

[A 2-approximation algorithm for the SROCT problem](#)

[Steiner Minimal Trees](#)

[A note on eccentricities, diameters, and radii](#)

[A note on the uniform edge-partition of a tree](#)

Slides:

[First Class](#)

[Counting Spanning Trees](#)

[Minimum Spanning Trees](#)

Shortest-Paths Trees

Homework:

Class presentations:

1. Suggested number of team members: about 4
2. Each member is required to present in turn;
3. Revised slides should be sent to me one week after the presentation;
4. Questions in class are always welcome;

Selected papers for presentation:

- May 22, 2007

C Feremans, A Grigoriev, R Sitters.

[The geometric generalized minimum spanning tree problem with grid clustering,](#)

A Quarterly Journal of Operations Research, 2006

(吳郁君 游岳齊 林信仲 萬高維 楊劭文)

[Slides](#)

SC Chang, LC Chen, WS Yang.

[Spanning Trees on the Sierpinski Gasket,](#)

Journal of Statistical Physics, Vol. 126, No. 3, February 2007

(王煜樟 楊伍隆 洪智鐸)

- May 29, 2007

[Paulden, T. Smith, D.K.](#)

[From the Dandelion Code to the Rainbow code: a class of bijective spanning tree representations with linear complexity and bounded locality,](#)

IEEE TRANSACTIONS ON EVOLUTIONARY COMPUTATION, 108- 123,
2006

(王凱平 杞俊賢 莊謹譽)

[Slides](#)

Sang-Moon SOAK.

[A New Evolutionary Approach for the Optimal Communication Spanning Tree Problem,](#)

IEICE Transactions on Fundamentals of Electronics, Communications and

Computer Sciences, 2006 E89-A(10):2882-2893

(李振宇 陳麗徽 黃怡靜 洪嘉涓)

[Slides](#)

Prabha Sharma

[Algorithms for the optimum communication spanning tree problem](#)

Annals of Operations Research, Vol. 143, 203-209, 2006

(陳韋仰 朱韋妮 王鈞茹)

[Slides](#)

- June 5, 2007

Megha Ladha and Earl E. Swartzlander, Jr.

[Optimization of spanning tree adders,](#)

Proceedings of SPIE -- Volume 6313, 2006.

(曾俊雄 賴韋志 巫祈賢)

[Slides](#)

E Angel, E Bampis, L Blin, L Gourvès.

[Fair Cost-Sharing Methods for the Minimum Spanning Tree Game,](#)

Information Processing Letters, 2006

(邱冠凱 胡啟政 劉宗灝 文國煒)

[Slides](#)

- June 12, 2007

[L. Puerto](#), A.M. Rodriguez-Chia, [A. Tamir](#), D. Perez-Brito

[The bi-criteria doubly weighted center-median path problem on a tree.](#)

(吳佳欣 陳思佑 鄭仲鈞 高新綸)

[Slides](#)

R. Benkoczi, B. Bhattacharya, [A. Tamir](#)

[Collection Depots Facility Location Problems in Trees.](#)

(張經略 陳冠伶 李佳霖 王湘叡)

[Slides](#)

References (not required):

1. [Spanning Trees and Optimization Problems](#), by Bang Ye Wu and Kun-Mao Chao (2004), Chapman & Hall/CRC Press, USA.
2. Related journal and conference papers

Useful Links:

- [Special topics on graph algorithms, Spring 2004](#)
- [Special topics on graph algorithms, Spring 2005](#)
- [Special topics on graph algorithms, Spring 2006](#)
- [Handbook on Approximation Algorithms and Metaheuristics](#) (edited by Prof. Teo Gonzalez)