演算法與計算生物學實驗室　主持人：趙坤茂教授
Algorithms and Computational Biology Lab.　PI: Prof. Kun-Mao Chao

40 NTU CSIE
Amazing 40th Anniversary

- The Algorithms and Computational Biology Laboratory (ACB) was established in August, 2002. We are interested in all aspects of the design and analysis of combinatorial algorithms. In particular, we solve algorithmic problems arising in computational molecular biology and networking. For the past few years, we have been mostly focused on the design and analysis of efficient algorithms for analyzing sequences and trees. For sequences, we mainly work on problems related to biological sequence analysis (haplotype vs. genotype; tag SNPs; copy number variations; variant scoring schemes), and numerical sequence analysis (maximum-sum segments; maximum-average segments; other maximization criteria). For trees, we mainly work on some tree construction problems (evolutionary trees; minimum routing cost spanning trees), and tree exploring problems (tree edge partition; tree querying; swap edges). This has been a joyful and fruitful journey to us. Our ultimate goal is to reveal more properties related to sequences and trees, and fully utilize them to design practical algorithms for solving hard problems in that line of investigation.

- ACB's international collaborators include Tatsuya Akutsu (Kyoto University), Vineet Bafna (UCSD), Matthias Bernt (University of Leipzig), Ting Chen (USC), Hui-Hsien Chou (Iowa State), Xiaoqiu Huang (Iowa State), Jesper Jansson (Kyoto University), Tao Jiang (UC, Riverside), Giuseppe Lancia (University of Udine), Alban Mancheron (INRIA), Martin Middendorf (University of Leipzig), Pavel Pevzner (UCSD), R. Ravi (CMU), Takeyuki Tamura (Kyoto University), Eric Tannier (INRIA), Kui Zhang (University of Alabama), and Louxin Zhang (NUS).

- ACB's Books:
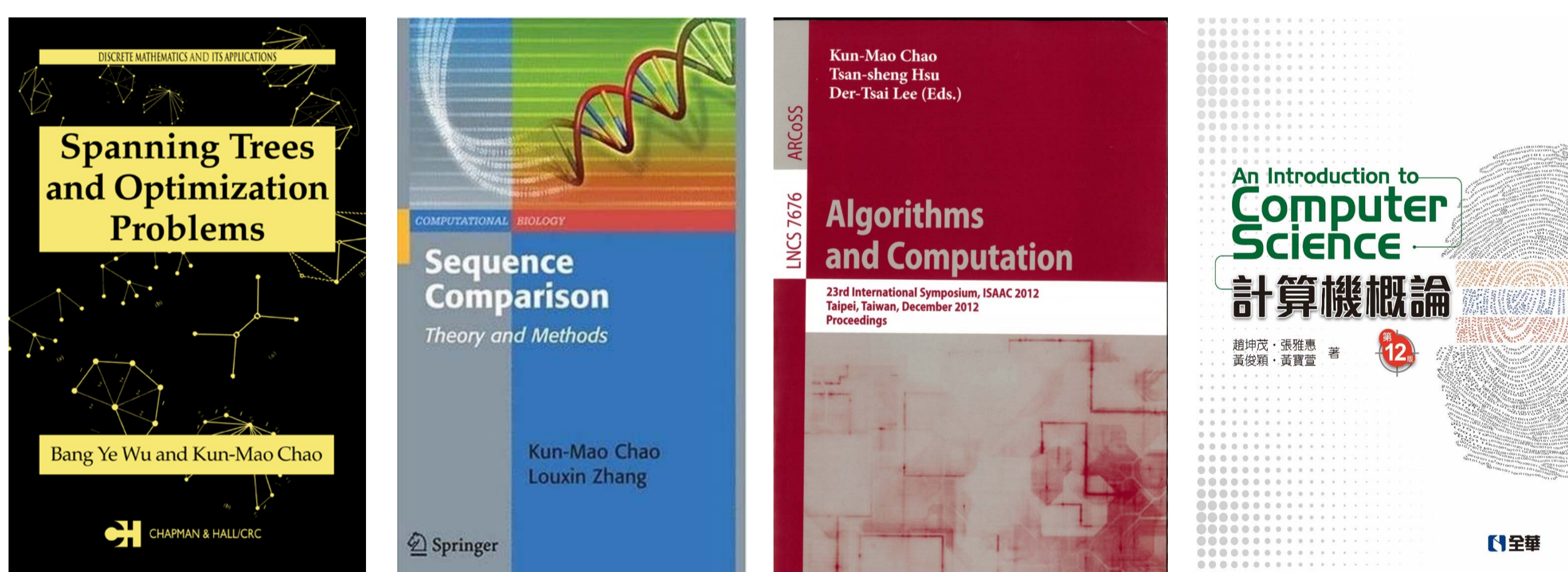
- ACB hosted ISAAC 2012.

- ACB's Ph.D. Alumni:
  - Yao-Ting Huang (2006)
    A Study on Some Optimization Problems Related to SNPs and Haplotypes
  - Hsiao-Fei Liu (2008)
    Constrained Searching and Ordering Problems on Sequences
  - Hung-Lung Wang (2008)
    Facility Location Problems on Tree Networks
  - Ming-Chiang Chen (2010)
    Optimization of Pixel Expansion in Visual Secret Sharing Schemes
  - Yi-Ching Chen (2010)
    Efficient Algorithms for the Constrained Longest Common Subsequence Problems
  - Cheng-Wei Luo (2010)
    Some Optimization Problems Related to Multiple Gene Duplications and Phylogenetic Tree Construction under the Gene Duplication Model
  - Kuan-Yu Chen (2011)
    Algorithms for Comparing Run-Length Encoded Strings without Decoding
  - Ping-Hui Hsu (2011)
    Incremental Sequence Comparison: Algorithmic Techniques and Applications
  - Rung-Ren Lin (2011)
    A Study of Efficient Keyword Search and Labeling Schemes for XML Documents
  - An-Chiang Chu (2012)
    Uniform Edge-Partition of a Graph
  - Chih-Hsin Lee (2013)
    Investigating the Long-Term Interaction among Pulmonary Tuberculosis and Chronic Noncommunicable Diseases with the Taiwan National Health Insurance Research Database
  - Wu-Lung Roger Yang (2013)
    Discovering Drug Treatment Using Drug Gene Expression Profiles and Disease Gene Signatures
  - Chia-Jung Chang (2014)
    Algorithms for Constructing and Characterizing Causal Networks
  - Wei-Yin Lin (2015)
    Finding Plurality Points in Euclidean Space
  - Yen-Wei Wu (2015)
    The Complexity and Algorithmic Results of Realizing a Popular Matching
  - Yu-Jen Liang (2016)
    Statistical Metabolomics Study

Dec. 1, 2004　　March 16, 2006　　May 15, 2009

March 19, 2013　　Nov. 26, 2013　　May 22, 2014

Dec. 10, 2015　　May 25, 2016　　June 6, 2017

ACB is Cool & Brilliant!