

CURRICULUM VITAE

Sanpawat Kantabutra

Assistant Professor of Computer Science
The Theory of Computation Group, Department of Computer Science
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EDUCATION:

- Doctor of Philosophy (Theoretical Computer Science)** Tufts University, USA, 2001
Dissertation: Efficient Representation of Cluster Structure in Large Data Sets
Advisor: Dr. Alva L. Couch
- Master of Science (Computer Engineering)** Syracuse University, USA, 1996
Thesis: The D Language -- C++ with Extensions of Safety
Advisor: Dr. James Fawcett
- Bachelor of Art (Accounting)** Chiang Mai University, Thailand, 1991

EMPLOYMENTS:

- 2009** Secretary and Member of the Department Chair Search Committee
- 2008-present** Royal Golden Jubilee Scholar of the Thailand Research Fund
- 2008-present** Member of the Faculty of Science Committee on Graduate Studies, Faculty of Science, Chiang Mai University, Thailand
- 2009-present** Member of the Department Executive Committee, Department of Computer Science, Faculty of Science, Chiang Mai University, Thailand
- 2008-09** Elected Member of the Department Executive Committee, Department of Computer Science, Faculty of Science, Chiang Mai University, Thailand
- 2007-present** Chair of the Ph.D. Program Executive Committee, Department of Computer Science, Faculty of Science, Chiang Mai University, Thailand
- 2004-present** Assistant Professor, Department of Computer Science, Faculty of Science, Chiang Mai University, Thailand
- 2001-04** Lecturer, Department of Computer Science, Faculty of Science, Chiang Mai University, Thailand
- 2004-06, 2006-present** Member of the Graduate Studies Committee, Department of Computer Science, Faculty of Science, Chiang Mai University, Thailand
- February-May 2007** Visiting Assistant Professor, School of Computing, Armstrong Atlantic State University, Savannah, Georgia, USA
- 2005-07, 2009-present** Member of the Faculty of Science Committee on Research and International Relations, Faculty of Science, Chiang Mai University, Thailand
- 2005-07** Deputy Department Chair on Research, Department of Computer Science, Faculty of Science, Chiang Mai University, Thailand

HONORS AND AWARDS:

- Two Royal Golden Jubilee Ph.D. Scholarships, Thailand Research Fund, October 2008-October 2011, October 2009-October 2012 (The second person in Thailand to earn such an honor in the field of Computer Science since the initiation of the program in 1998.)
- Erdős number is at most 3.
- Royal Thai Government Scholarship for a Ph.D. Study, 1997-2001
- Full Tuition Scholarship Award for Academic Excellence, Fall 1998, Department of Electrical Engineering and Computer Science, Tufts University, USA

PROFESSIONAL ACTIVITIES:

- Referee for the Following Journals
 - *IEEE Transactions on Pattern Analysis and Machine Intelligence*
 - *IEEE Signal Processing Letters*
 - *IEEE Transactions on Systems, Man and Cybernetics*
 - *ECTI Transactions*
 - *Chiang Mai Journal of Science*
- Referee for the Following Conferences
 - *the 7th IEEE International Conference in Electrical Engineering/Electronics, Computer, Telecommunications, and Information Technology (ECTI-CON10)*, May 19-21, 2010, Chiang Mai, Thailand
 - *the Conference on Knowledge and Smart Technologies*, July 24-25, 2009, Chonburi, Thailand
 - *the First International Conference on Networked Digital Technologies*, July 28-31, 2009, Ostrava, Czech Republic
 - *the 6th International Joint Conference on Computer Science and Software Engineering (JCSSE09)*, May 13-15, 2009, Phuket, Thailand
 - *the 6th IEEE International Conference in Electrical Engineering/Electronics, Computer, Telecommunications, and Information Technology (ECTI-CON09)*, May 6-9, 2009, Pattaya, Thailand
 - *the 9th ACIS/IEEE International Conference on Software Engineering, Artificial Intelligence, Networking, and Parallel/Distributed Computing (SNPD2008)*, August 6-8, 2008, Phuket, Thailand
 - *the 5th International Joint Conference on Computer Science and Software Engineering (JCSSE08)*, May 7-9, 2008, Kanchanaburi, Thailand
 - *the 5th IEEE International Conference in Electrical Engineering/Electronics, Computer, Telecommunications, and Information Technology (ECTI-CON08)*, May 14-17, 2008, Krabi, Thailand
 - *the 4th Kasetsart University-Kamphaeng Saen Campus Conference*, Kasetsart University, December 6-7, 2007, Kamphaeng Saen, Nakhon Pathom, Thailand
 - *the 22nd International Symposium on Computer and Information Sciences (ISCIS07)*, Middle East Technical University, November 7-9, 2007, Ankara, Turkey
 - *the National Computer Science and Engineering Conference (2001-present)*
 - *the Northeastern Computer Science and Engineering Conference*
- Program Committee Member for the Following Conferences
 - *the 4th International Conference on Software and Data Technologies (ICSOF2009)*, July 26-29, 2009, Sofia, Bulgaria
 - *the 10th ACIS/IEEE International Conference on Software Engineering, Artificial Intelligence, Networking, and Parallel/Distributed Computing (SNPD2009)*, May 27-29, 2009, Daegu, Korea
 - *the 2009 International Conference in Software Engineering and Computer Systems (ICSECS'09)*, October 19-21, 2009, Universiti Malaysia Pahang, Malaysia
 - *the 9th ACIS/IEEE International Conference on Software Engineering, Artificial Intelligence, Networking, and Parallel/Distributed Computing (SNPD2008)*, August 6-8, 2008, Phuket, Thailand
 - *the 2003 National Workshop on Cluster Computing*, Asian Institute of Technology, Bangkok, Thailand

- Chairs of the Technical Sessions for the Following Conferences
 - *the RGJ Seminar Series LXVI : PhD-RGJ in Computer Science, Information Technology, and Computer Engineering*, December 9, 2009, Khon Kaen, Thailand
 - *the 9th ACIS/IEEE International Conference on Software Engineering, Artificial Intelligence, Networking, and Parallel/Distributed Computing (SNPD2008)*, August 6-8, 2008, Phuket, Thailand
 - On Data Mining and Knowledge Discovery
 - On Service-Oriented Computing and Software Specification and Architecture
 - On Mobile/Wireless/Ad-hoc Networks
 - *the 5th IEEE International Conference in Electrical Engineering/Electronics, Computer, Telecommunications, and Information Technology (ECTI-CON08)*, May 14-17, 2008, Krabi, Thailand
 - On Algorithms and Computational Theory
 - *the 2004 IEEE TENCON Conference*
 - *the 2003 ISCIT Conference*
 - *the 2002 ISCIT Conference*
- Initiator of Academic Cooperation between Armstrong Atlantic State University, USA, and Chiang Mai University, Thailand
- Initiator of Academic Cooperation between National Dong Hwa University, Taiwan, R.O.C., and Chiang Mai University, Thailand
- Group Leader and Founder of [The Theory of Computation Group](#), Chiang Mai University
- Fulbright Foundation Coordinator for Bringing Professor Raymond Greenlaw to Thailand, 2006
- Local Organization Chair of *the 2004 Asian Computing Conference (ASIAN'04)*, Chiang Mai University

RESEARCH INTERESTS:

- Design and Analysis of Algorithms
- Algorithm Complexity and Intractability
- Parallel Algorithms and Architectures
- Graph Theory and Algorithms
- Combinatorics

BOOK SECTION:

“A Mobility Model for Studying Wireless Communication” in *Roaming Securely in 802.11 Networks* by Raymond Greenlaw and Paul Goransson, Elsevier Science and Technical Book Group, xxviii + 414 pp.

BOOK CHAPTER:

“Introduction to Clustering: Algorithms and Applications” in *Dynamic and Advanced Data Mining for Progressing Technological Development (Editors: Dr. A. B. M. Shawkat Ali and Dr. Yang Xiang)*, Raymond Greenlaw and **Sanpawat Kantabutra**, 30 Pages, IGI Global, USA, In Press.

MANUSCRIPTS UNDER PREPARATION FOR JOURNALS:

1. **S. Kantabutra** and S. Vittayakorn, “NC Algorithms for the K -Centers Related Problems”.
2. **S. Kantabutra** and P. Longani, “The Complexity of the Grid Wireless Mobility Model”.

JOURNAL AND CONFERENCE PUBLICATIONS:

1. G. Agnarsson, R. Greenlaw, and **S. Kantabutra**, “The Complexity of the Evolution of Graph Labelings”, **Thai Journal of Mathematics**, the Mathematical Association of Thailand, Thailand, In Press, 2009. (Indexed in the AMS MathSciNet and Zentrablatt MATH)
2. W. Techaploog and **S. Kantabutra**, “Graph Relabeling with Privileged Edge Labels,” **Proceedings of the 6th IEEE International Conference in Electrical Engineering/Electronics, Computer, Telecommunications, and Information Technology (ECTICON2009)**, May 6-9, 2009, Pattaya, Thailand. (Acceptance Rate: ~65 % out of 459 Papers, Indexed in IEEE Explore)

3. **S. Kantabutra** and P. Longani, "The Complexity of the Grid Wireless Mobility Model," **Proceedings of the 9th IEEE/ACIS International Conference on Software Engineering, Artificial Intelligence, Networking, and Parallel/Distributed Computing (SNPD2008)**, August 6-8, 2008, Phuket, Thailand. (Acceptance Rate: ~34 % out of 470 Papers, Indexed in EI, INSPEC, or DBLP)
4. G. Agnarsson, R. Greenlaw, and **S. Kantabutra**, "The Complexity of the Evolution of Graph Labelings," **Proceedings of the 9th IEEE/ACIS International Conference on Software Engineering, Artificial Intelligence, Networking, and Parallel/Distributed Computing (SNPD2008)**, August 6-8, 2008, Phuket, Thailand. (Acceptance Rate: ~34 % out of 470 Papers, Indexed in EI, INSPEC, or DBLP)
5. G. Agnarsson, R. Greenlaw, and **S. Kantabutra**, "The Graph Relabeling Problem and Its Variants," **Proceedings of the 5th IEEE International Conference in Electrical Engineering/Electronics, Computer, Telecommunications, and Information Technology (ECTICON2008)**, May 14-17, 2008, Krabi, Thailand. (Acceptance Rate: ~56 % out of 480 Papers, Indexed in IEEE Explore)
6. S. Vittayakorn, **S. Kantabutra**, and C. Tanprasert, "The Parallel Complexities of the K -Medians Related Problems," **Proceedings of the 5th IEEE International Conference in Electrical Engineering/Electronics, Computer, Telecommunications, and Information Technology (ECTICON2008)**, May 14-17, 2008, Krabi, Thailand. (Acceptance Rate: ~56 % out of 480 Papers, Indexed in IEEE Explore)
7. P. Longani and **S. Kantabutra**, "Time-Optimal User Communication and Source Reachability Algorithms in a Two-Dimensional Grid Wireless Mobility Model," **Proceedings of the 5th IEEE International Conference in Electrical Engineering/Electronics, Computer, Telecommunications, and Information Technology (ECTICON2008)**, May 14-17, 2008, Krabi, Thailand. (Acceptance Rate: ~56 % out of 480 Papers, Indexed in IEEE Explore)
8. **S. Kantabutra**, "The Complexity of Label Relocation Problems on Graphs," **Proceedings of the 8th Asian Symposium on Computer Mathematics (ASCM2007)**, December 15-17, 2007, National University of Singapore, Singapore. (Acceptance Rate: ~55 % out of 65 Papers)
9. W. Yaothanee and **S. Kantabutra**, "Embedding of a Mesh in a Completely Overlapping Network with Latency Hiding," **Proceedings of the 11th National Computer Science and Engineering Conference (NCSEC2007)**, November 19-21, 2007, Bangkok, Thailand.
10. R. Greenlaw and **S. Kantabutra**, "On the Parallel Complexity of Hierarchical Clustering and CC-complete Problems," **Complexity**, Wiley, New Jersey, USA, In Press, 2007. (Impact Factor 1.051)
11. **S. Kantabutra** and J. Chawachat, "On Embedding of a Hypercube in a Completely Overlapping Network", **Journal of the Theory of Computing Systems**, Springer-Verlag, New York, USA, 2007. (Journal Ranking in Top 22.44%, Impact Factor 1.02)
12. R. Greenlaw and **S. Kantabutra**, "A Mobility Model for Studying Wireless Communication," **Proceedings of the 15th International Conference of Forum for Interdisciplinary Mathematics on Interdisciplinary Mathematical and Statistical Techniques (IMST 2007)**, May 20-23, 2007, Shanghai, P. R. China. (Invited Paper)
13. R. Greenlaw and **S. Kantabutra**, "On the Parallel Complexity of Hierarchical Clustering and CC-complete Problems," **Proceedings of the 4th Annual Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology International Conference (ECTI-CON 2007)**, May 9-12, 2007, Chiang Rai, Thailand.
14. R. Winit, **S. Kantabutra**, and S. Rattanaudomsawat, "Time-Optimal Graph Algorithms for Finding Adjacent and Non-Adjacent Nodes on a Completely Overlapping Network," **Proceedings of the 4th Annual Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology International Conference (ECTI-CON 2007)**, May 9-12, 2007, Chiang Rai, Thailand.
15. S. Rattanaudomsawat and **S. Kantabutra**, "Comparison-Based Sorting Algorithm with Some Constraints," **Proceedings of the 2005 Joint Computer Science and Software Engineering Conference (JCSSE'2005)**, November 17-18, 2005, Chonburi, Thailand.

16. **S. Kantabutra**, W. Jindaluang, and P. Techa-angkoon, "It's Elementary, My Dear Watson: Time-Optimal Sorting Algorithms on a Completely Overlapping Network", **Lecture Notes in Computer Science**, Editor: Yi Pan et al., Vol:3758, Springer-Verlag, 2005. (Acceptance Rate: ~16 % out of ~650 Papers, Impact Factor 0.402)
17. J. Chawachat and **S. Kantabutra**, "On Near-Optimal Embedding of Hypercube in Completely Overlapping Network and Its Scalability", **Proceedings of the First Northeastern Computer Science and Engineering Conference (NECSEC 2005)**, March 31 - April 1, 2005, Khon Khaen, Thailand.
18. **S. Kantabutra** and C. Bunkhumpornpat, "Two Birds With One Stone: A Similarity-Guaranteed Clustering Algorithm and Its Search Tree", **Proceedings of the 2004 IEEE TENCON Conference**, November 21-24, 2004, Chiang Mai, Thailand. (Indexed in IEEE Explore)
19. **S. Kantabutra**, P. Kornpitak, and C. Naramittakapong, "Dynamic Clustering-Based Round-Robin Scheduling Algorithm", **Proceedings of the Third International Symposium on Communications and Information Technology (ISCIT 2003)**, September 03-05, 2003, Hatyai, Songkhla, Thailand.
20. **S. Kantabutra**, C. Naramittakapong, and P. Kornpitak, "Pipelined K-means Algorithms on COWs", **Proceedings of the Third International Symposium on Communications and Information Technology (ISCIT 2003)**, September 03-05, 2003, Hatyai, Songkhla, Thailand.
21. **S. Kantabutra**, "Representation of Ψ -clusters", **Proceedings of the International Conference on Computer Science and Its Applications (ICCSA 2003)**, July 01-02, 2003, San Diego, California, USA.
22. **S. Kantabutra**, " Ψ -clustering Algorithms", **Proceedings of the Second International Symposium on Communications and Information Technology (ISCIT 2002)**, October 23-25, 2002, Pattaya, Chonburi, Thailand.
23. **S. Kantabutra** and A. L. Couch, "Parallel K-means Clustering Algorithm on NOWs", **NECTEC Technical Journal**, Vol. 1, No. 6, January 2000. (This work has so far been cited internationally 35 times and was cited in the United States Patent 7039638)

TECHNICAL REPORTS:

- **S. Kantabutra**, "Approximation Algorithms for the Representative Points Problem of Clusters," Theory of Computation Group, Chiang Mai University, 2006

RESEARCH STUDENT SUPERVISION:

- 8 undergraduate students; among them,
 - Kaewkarn Siritwitayakorn continued her graduate studies at Oxford University in the United Kingdom.
 - Rasika Winit continued her graduate studies at Tufts University in the United States.
 - Sirion Vittayakorn won a research fund from the Thai Scientific Talents Supporting Project of the National Science and Technology Development Agency and is now working on her Ph.D. at Brown University in the United States.
- 8 Master students; among them,
 - Chengchai Naramittakapong won a Ph.D. scholarship from Mahanakorn University of Technology and is now at Kasetsart University.
 - Chumphol Bunkhumpornpat won a Ph.D. government scholarship and is now at Chulalongkorn University.
 - Jakarin Chawachat won a Ph.D. government scholarship and is now at Kasetsart University.
 - Wattana Jindaluang won a Ph.D. government scholarship and is now at Kasetsart University.
 - Prapaporn Techa-angkoon won a government scholarship for a Ph.D. study in the United States and is now at Michigan State University.
 - Sirion Vittayakorn won a government scholarship for a MS/Ph.D. study in the United States.

- 1 PhD student;
 - Pattama Longani won a Ph.D. grant from the Royal Golden Jubilee PhD program and is currently working toward her Ph.D. at Chiang Mai University. She is also the first RGJ PhD student in Chiang Mai University to be bestowed the Excellent Research Award in Computer Science from the Thailand Research Fund.

COURSES TAUGHT:

Graduate Level:

- Theory of Computation
- Design and Analysis of Algorithms
- Parallel Algorithms and Architectures
- Mostly NP-Completeness (with Professor Phillip Rogaway)
- Advanced Algorithms
- Artificial Intelligence
- Distributed Systems

Undergraduate Level:

- Parallel Computing
- Computer Architecture
- Ethics for Computer Professionals
- Data Communication
- Theory of Computation
- Fundamentals of the Internet and World Wide Web

LECTURE NOTES:

- Parallel Computing (in Thai), Department of Computer Science, Faculty of Science, Chiang Mai University
- Quantitative Computer Architecture (in Thai), Department of Computer Science, Faculty of Science, Chiang Mai University
- Design and Analysis of Algorithms (in Thai), Department of Computer Science, Faculty of Science, Chiang Mai University

INVITED TALKS:

- “The Complexity of the Grid Wireless Mobility Model”, Department of Computer Engineering, Faculty of Engineering, *Chiang Mai University, Thailand*, September 10, 2008
- “On the Parallel Complexity of Hierarchical Clustering and CC-complete Problems” in *the 18th National Workshop on Uninet Network and Computer Applications*, Chiang Mai University, *Thailand*, January 9-12, 2008
- “Computer Science and Research Areas in Computer Science”, Department of Computer Science, School of Information Technology, *Mae Fah Luang University, Thailand*, June 18, 2007
- “Approximation Algorithms for the Representative Points Problem of Clusters,” Department of Computer Science and Information Engineering, *National Chung Cheng University, Taiwan, R.O.C.*, September, 2006
- “On the Parallel Complexity of Hierarchical Clustering and CC-complete Problems,” Department of Computer Science and Information Engineering, *National Dong Hwa University, Taiwan, R.O.C.*, September, 2006
- “Approximation Algorithms for the Representative Points Problem of Clusters,” Department of Computer Science and Information Engineering, *Shih Hsin University, Taiwan, R.O.C.*, September, 2006
- “Cluster Computing as a Tool in Theoretical Computer Science”, National Workshop on Cluster Computing 2003 (NWCC2003), *Asian Institute of Technology, Bangkok, Thailand*, March 10, 2003

INVITED VISITING PROFESSORSHIP:

- Department of Computer Science, School of Computing, Armstrong Atlantic State University, Savannah, Georgia, USA, March – May 2007.
 - ❖ Teaching Two Courses: Theory of Computation and Introduction to the Internet and World Wide Web
 - ❖ Research: Mobility Model in Wireless Network and Complexity of the K -Medians Problem

RESEARCH FUNDS:

- Royal Golden Jubilee Ph.D. Scholarship, S. Kantabutra, ~2,000,000 bahts, Thailand Research Fund, October 2009-October 2012.
- Royal Golden Jubilee Ph.D. Scholarship, S. Kantabutra, ~2,000,000 bahts, Thailand Research Fund, October 2008-October 2011.
- “The Parallel Complexity of the Label Relocation Problems on Graphs”, S. Kantabutra, 27,000 bahts, Faculty of Science Research Fund, Chiang Mai University, 2008.
- “The Parallel Complexity of Medians Replacement in K -Medians,” with S. Vittayakorn, 65,000 bahts, Thai Scientific Talents Supporting Project, National Science and Technology Development Agency, 2007.
- “Overlay Networks Verification and Its Complexity”, with W. Jindaluang, 40,000 bahts, Faculty of Science Research Fund, Chiang Mai University, 2006.

LANGUAGES: Equally Fluent in English and Thai languages

REFERENCES:

Associate Professor Alva L. Couch
Department of Computer Science, Halligan Hall,
#246, 161 College Avenue, Tufts University,
Medford, Massachusetts 02155, USA

Professor Raymond Greenlaw
Department of Computer Science, School of
Computing, Armstrong Atlantic State University,
11935 Abercorn Street, Savannah, Georgia
31419-1997, USA

Professor Phillip Rogaway
Department of Computer Science, Kemper Hall of
Engineering, #3063, One Shields Avenue,
University of California, Davis, California 95616-
8562, USA