

Curriculum Vitae

Zhi-Hong Chen
Department of Computer Science
Butler University, Indianapolis, IN 46208
(317)-940-6540 (office) e-mail:chen@butler.edu

Education:

Ph.D. in Mathematics, Wayne State University, U.S.A. December, 1991
Specified in Graph Theory, Algorithms, and Discrete Mathematics
M.A. in Computer Science, Wayne State University, U.S.A. (1993)
Specified in Image processing and pattern recognition
M.S. in Mathematics, South China University of Technology, China 1985
B.S. in Mathematics, South China University of Technology, China 1982

Professional Experience:

Professor, Department Computer Science and Software Engineering
Butler University, Spring 2006
Associate Professor, Department Computer Science and
Software Engineering
Butler University, Spring 1999-2006
Visiting Scholar, Department of Mathematics
Hong Kong Baptist University, January-June 2000
Assistant Professor, Department of Mathematics and Computer Science
Butler University, Fall 1993-Spring 1999
Visiting Faculty, Argonne National Laboratory, U.S.A. May 94-August 94
Software Engineer, Engineering Technology Association
Michigan, July 92-August 93
Instructor, Department of Mathematics
Wayne State University, May 1986-August 1993
Instructor, Department of Mathematics
South China Institute of Technology, P. R. China (1982)

Other Professional Activities:

Referee for following journals:

Journal of Graph Theory (1989---2005)
Journal of Graphs and Combinatorics (1994, 1995, 2006, 2007)
Ars Combinatoria (1994, 1995, 2003, 2006)
Discrete Mathematics (1996--2007)
Applied Mathematics Letters (2007)
International Journal of Computational Geometry & Applications (1997)
Network (2004)

Reviewer 1) for the Zentralblatt fur Mathematik/Mathematics Abstracts (1994-present)
2) John Simon Guggenheim Memorial Foundation (2003)
3) West Virginia University Senate Research Grant (2001, 2005)

Judge for Indiana Student Software Awards Competition (2001, 2002)

Ph.D Committee Member: Serve as an external member of a Ph.D committee
at the Department of Mathematics, West Virginia University, 2002

Professional Organizations:

American Mathematical Society
Fellow of the Institute of Combinatorics and its Applications
Computing Machinery's Special Interest Group:
SIGACT (Algorithms & Computer Theory)
SIGGRAPH LIFE (Computer Graphics)
IEEE: The Institute of Electrical and Electronics Engineers, Inc

Languages:

English, Chinese (Mandarin, and two other dialects)

Grants and Awards:

1. Education and Training of Computer Science, Software Engineering, and IT in China, 2004, (\$8700.00) Freeman foundation
2. Scholarships for Computer Science and Software Engineering, 2001-2005
(\$199,500) (with P. Henderson, J. Sorenson, P. Linos) National Science Foundation, CSEMS Scholarships
3. Summer Faculty Research Participation Grant: 1994 (\$12,800)
Argonne National Laboratory, Sponsored by U. S. Department of Energy
4. HRI Faculty Grant:1993-1994 \$20,000 (Amos Carpenter & Jonathan Sorenson)
Sept. 1993-May 1994
5. Butler University Academic Grant:
 - Research in Computational Geometry and Graph Theory, 1994--1995, (\$3,500.00)
 - Network Survivability and Eulerian subgraphs, 1996 \$4,150.00
 - Network Density and Reinforcement Problems, 1998 (\$4,250.00)
 - Dynamic Matching and Recognition Problems in Graph Theory, 1999 (\$3,500.00)
 - Density Graphs and Fault-Tolerant Networks, 2001 (\$3,500.00)
 - Problems in Graph Theory and Graph Drawing, 2002 (\$3,200.00)
 - Problems in Graph Theory 2003 (\$4000)
 - Recognition Problems in Graph Theory and Thomassen Conjecture 2005 (\$5808)
 - Problems in Graph Theory and Self-stabilizing algorithms, 2006 (\$3800)
6. Butler Instructional Development Grant:
 - Web Design and Development 1999 (\$800.00)
 - Foundations of Computer Science I, 2001 (\$2,000.00)
 - Algorithm and Data Structure, 2002 (\$2000.00)
7. LAS College Faculty Award, December 1998, Butler University

Invited Talks and Lectures:

- Qinghua University, P.R. China December 15, 2006
- Beijing Institute of Technology, P. R. China, December 7-22, 2006
- Chongqing Technology and Business University, P. R. China, December 2—6, 2006,
- Indiana State University, Indiana, October 25, 2006
- JiNan University, Guangzhou, P.R. China, June 15, 2005
- FuZhou University, Fuzhou, P.R. China, May 12-16, 2004
- Cuangzhou University, P.R. China, May 22, 2004
- West Virginia University, Morgantown, West Virginia, April 18, 2002
- JiNan University Guangzhou, P.R. China, December 5, 2001-January 6, 2002, sponsored by the P. R. China Educational Commission, and the Oversea Chinese Commission
- South China University of Technology, Guangzhou, China, December 20--26, 2001
- West Virginia University
Morgantown, West Virginia, April 15, 2001
- South China Normal University
Guangzhou, P.R. China, December 28, 2000
- JiNan University
Guangzhou, P.R. China, December 26, 2000
- Hong Kong Baptist University
Hong Kong, February 18, 2000
- Institute of Systems Science
Academia Sinica, P. R. China, July 10-20, 1998

- South China University of Technology
Guangzhou, P.R. China, June 20-28, 1998
- Wuhan Urban Construction Institute
Wuhan, P.R. China, June 13--25, 1996
- Central China Normal University
Wuhan, P.R. China, June 24, 1996
- Argonne National Laboratory, Illinois, U.S.A. (August 94)

Research Interests:

Graph Theory, Computational Geometry, Computer Vision, Computer Graphics, Applications of discrete mathematics in computer science, Applications of Graph Theory in Software Engineering

Publications:

1. Edge connectivities for spanning trails with prescribed edges, (accepted) *Ars Combinatoria* (2009)
2. Hamilton-connected indices of graph, *Discrete Mathematics* (accepted 21 June 2008)
3. Collapsible graphs and reductions of line graphs , *Discrete mathematics* 309 (2009) 3173-3184
4. The Hamiltonian Index of Graphs, *Discrete Mathematics*, 309 (2009) 288–292
5. An s-Hamiltonian Line Graph Problem, *Graphs and Combinatorics* **23**, 241-248 (2007)
6. Reinforcing the number of disjoint spanning trees, *Ars Combinatoria* (accepted 2006)
7. Spanning Eulerian Subgraphs in claw-free graphs, *Journal of Combinatorial Math. And Combinatorial Computing*, 59 (2006), 165--171.
8. Spanning Trails Containing Given Edges, (with W.Q. Luo) *Discrete Mathematics* 306 (2006) 87--98
9. Eulerian subgraphs in 3-edge-connected graphs and Hamiltonian Line Graphs, (with H.-J. Lai etc), *J. of Graph Theory* (2003) 308--319.
10. A Tool For understanding Multi-language Program Dependencies, (with Panos Linos, etc), 11th International Workshop on Program Comprehension, May 10--11 2003 IEEE, 64—72
11. Nowhere Zero Flows in the Line Graphs, (with H.-J. Lai) *Discrete Math* 230 (2001) 133-141
12. Even subgraphs of a graph, (with H.-J. Lai) *Combinatorics, Graph Theory, and Algorithms*, Edited by Y. Alavi, D.R. Lick, and A. Schwenk, New Issues Press, Vol I (1999) pp. 221-226
13. Connectivity of cycle matroids and bicircular matroids, (with H.-J. Lai) *Ars Combinatoria*, 52 (1999), 239-250
14. Supereulerian graphs, Independent sets, and Degree-Sum Conditions *Discrete Math.*, 179(1998) 73-87
15. Supereulerian graphs and the Petersen Graph II, (with H.-J. Lai) *Ars Combinatoria*, 48(1998) pp. 271-282
16. Fan-Type Conditions for Collapsible Graphs *Ars Combinatoria*, 50(1998), pp. 81-95
17. A degree condition for spanning eulerian subgraphs *Journal of Graph Theory*, Vol. 17, No. 1, 5-21(1993) (MR 94a:05134)
18. Spanning closed trails in graphs *Discrete Mathematics*, 117(1993) 57-71 (MR 94c:05044)
19. Collapsible graphs and Matchings, (with H.-J. Lai) *Journal of Graph Theory*, Vol. 17, No. 5, 597-605(1993) (MR 95a:05082)
20. Supereulerian graphs and the Petersen graph *Journal of Combinatorial Math. And Combinatorial Computing* 9 (1991) 79-89 (MR 92b:05058)
21. On hamiltonian line graphs *Ars Combinatoria* 33 (1992), pp. 289-294 (MR 93d:05099)
22. On extremal nonsupereulerian graphs with clique number m *Ars Combinatoria* 36(1993), pp. 161-169 (MR 94i:05057)

23. Nonsupereulerian graphs with large size, (with P. A. Catlin)
Graph Theory, Combinatorics, Algorithms, & Applications, Y. Alavi, F. R. K. Chung, R. L. Graham, and D. F. Hsu Eds., SIAM (1991) 83-95 (MR 92i:05138)
24. The arboricity of random graphs, (with P. A. Catlin)
Graph Theory, Combinatorics, Algorithms, & Applications, Y. Alavi, F. R. K. Chung, R. L. Graham, and D. F. Hsu Eds., SIAM (1991) 119-124 (MR 92k:05115)
25. On the edge arboricity of a random graph, (with P. A. Catlin and E. M. Palmer)
Ars Combinatoria 35-A(1993), pp. 129-134 (MR 94m:05170)
26. Nowhere-zero flows in some regular graphs, (with H.-J. Lai, H.-Y. Lai and G.Q. Weng)
Congressus Numerantium 97(1993), pp. 205-208 (MR 95b:05085)
27. Cycles in Line Graphs, (with H.-J. Lai),
Congressus Numerantium, 105(1994) pp. 129-133 (MR 97a:05130)
28. Reduction techniques for supereulerian graphs and related topics--a survey, (with H.-J. Lai)
Combinatorics and Graph Theory 95 Vol. 1 (Eds by Ku, Tung-Hsin), World Scientific, Singapore, pp. 53-69 (MR 98h:05126)
29. The size of graphs with clique number m and without nowhere-zero 4-flows
Discrete Mathematics, 163 (1997) 247-249 (MR 97k:05108)
30. The Higher Order Edge-Toughness of a Graph and Truncated Uniformly Dense Matroids
Journal of Combinatorial Mathematics and Combinatorial Computing, 22 (1996), pp.157-160 (MR 97i:05063)
31. Jackson's conjecture on eulerian subgraphs, (with H.-J. Lai, H.-Y. Lai and G.Q. Weng)
Combinatorics, Graph Theory, Algorithms and Applications (Beijing, 1993), 53-58, (eds. by Alavi et al), (MR 95k:05111)
32. Generalized matroid packings and coverings, (with H.-J. Lai, Y.-Q. Kuang)
Congressus Numerantium, 127 (1997), pp. 155-160
33. Group Coloring and Group Connectivity of Graphs, (with H.-J. Lai)
Congressus Numerantium, 134 (1998), pp.123-130
34. Scrubwoman Edith Meets W.R. Hamilton, (with Jeremiah Farrell, and Thomas Rodgers)
Wordways, The Journal of Recreational Linguistics, Vol. 32, Number 1 (1999), pp. 69-74

Presentations:

1. The arboricity of random graphs.
The 2nd International Conference in Graph Theory, Combinatorics, Algorithms & Applications, San Francisco, CA July 23-28, 1989
2. Supereulerian graphs, collapsible graphs and the Petersen graph.
The 14th Midwest Graph Theory Meeting, Western Michigan University, September 23, 1989
3. Spanning Eulerian Subgraphs.
The 21st Southeastern International Conference on Combinatorics, Graph Theory & Computing. Florida Atlantic University, February 12-16, 1990
4. On degree conditions for hamiltonian line graphs.
The 16th Midwest Graph Theory Meeting. Wayne State University, October 6, 1990
5. On hamiltonian line graphs.
The 21st Midwest Graph Theory Conference, Ball State University, October 30, 1993
6. Spanning Eulerian Subgraphs Involving Distances.
The 25th Southeastern International Conference on Combinatorics, Graph Theory & Computing, Florida Atlantic University, March 7-11, 1994
7. From Hamiltonian Graphs to Hamiltonian Line Graphs.
The 22nd Midwest Graph Theory Meeting. Saginaw Valley State University, Michigan, May 14, 1994
8. Reduction Techniques for Supereulerian Graphs and Related Topics.
Summer School and International Conference on Combinatorics, Hefei, China, May 25--June 5, 1995
9. On the size of graphs without nowhere-zero 4-flows.
The 10th Carbondale Combinatorics Conference, Southern Illinois University at Carbondale, October 18-21, 1995

10. Even subgraphs of a graph.
Graph Minors and Eulerian Subgraphs workshop at Western Michigan University, June 1--June 3, 1996
11. Reinforcing the number of disjoint spanning trees. The Eighth Quadrennial International Conference at Western Michigan University, June 2-- June 5, 1996
12. On the number of disjoint spanning trees.
The International Symposium on Combinatorics and Applications, The NanKai Institute of Mathematics, NanKai University in China, June 28--June 30, 1996
13. A min-max theory on the reinforcing the number of disjoint spanning trees. The 26th Midwest Graph Theory Meeting, Alma College, Michigan, October 26, 1996
14. The Number of Dense Subgraphs.
The 27th Midwest Graph Theory Conference, University of Wisconsin Oshkosh, May 9-10, 1997
15. Nowhere Zero Flows in Line Graphs
The 28th Midwest Graph Theory Conference, Eastern Michigan University, October 24-25, 1997
16. On Strongly Reduced Graphs.
The 29th Midwest Graph Theory Conference, Michigan State University, May 15-16, 1998
17. Graphs of diameter two and collapsible graphs,
AMS Meeting, University of Nevada, Las Vegas, Nevada, April 9-11, 1999
18. On Hamiltonian Index and the Diameter of a Graph
The Tenth Graph Theory Conference in China, Yantai University, August 9--13, 1999
19. On the Diameter of a graph
The 32rd Midwest Graph Theory Conference, Indiana University Purdue University at Fort Wayne, October 29-30, 1999
20. Nowhere Zero Flows in the Line Graphs
International Conference on Graph Theory and its Applications, May 26 -- 30, 2000, Nanjing Normal University, Nanjing, China
21. Circuits in 3-Edge-Connected Graphs and Hamiltonian Line Graphs
The Second Pacific Rim Conference on Mathematics, January 3--January 8, 2001, Institute of Mathematics, Academia Sinica, Taipei, Taiwan
22. Fault-Tolerant Ring Networks and Hamiltonian Connected Line Graphs, Graph Theory Conference and Workshop, DaLian University of Technology, China, July 19-23, 2001
23. An s -Hamiltonian Line Graph Problem
The 36th Midwest Graph Theory Conference, Oakland University, Michigan, October 13, 2001
24. Spanning Eulerian Subgraphs Containing Given Edges, ICM 2002-SCC, Hebei Normal University, China, August 16-19, 2002
25. Eulerian Subgraph and Edge-connectivities, MIGHTY XXXV, Illinois State University, Normal, IL, September 27-28, 2002
26. Eulerian Subgraphs containing given vertices or edges, AMS 2003 Spring Central Section Meeting, Indiana University, Bloomington, Indiana, April 4--6, 2003
27. Spanning Eulerian subgraphs in Claw-free graphs, AMS 2005 Spring Section Meeting, Western Kentucky University, March 19, 2005
28. Spanning Eulerian subgraph with or without given edges, 2005 International conference on graph theory and combinatorics and the third cross-strait conference on graph theory and combinatorics, Zhejiang Normal University, JinHua P. R. China, June 25- 30 2005
29. Spanning Eulerian subgraphs with maximum degree 4. 2006 International conference on graph theory and combinatorics, NaKai University, P. R. China, August 15--19, 2006
30. Problems of s -Hamiltonian graphs and Fault-Tolerant Networks, Indiana State University, Indiana, October 25, 2006
31. Eulerian subgraphs of a graph, International Symposium on Graph Theory and Combinatorial Algorithms, Academy of Mathematics and System Science, Beijing, China July 1-3 2007
32. *Eulerian Subgraphs and Related Problems, at the 3rd national conference on Combinatorics and Graph Theory, ShangHai, P. R. China. July 14--21, 2008*
33. Reduced Graphs and Its application, Nankai University, P.R. China, July 29--Aug 1, 2009

Courses Taught:

1985---1993 (at Wayne State University, Michigan):

- Analytic Geometry and Calculus
- Algebra
- Probability and Statistics
- Finite Mathematics for the Social and Management Sciences
- Discrete Mathematics I & II
- Pre calculus

1993---Present (at Butler):

(Mathematics Courses)

- Operations Research
- Graph Theory and its Applications
- Introduction to Contemporary Mathematics
- Linear Mathematics and Calculus
- Linear Algebra
- Discrete Mathematics I & II

(Computer Science Courses)

- Pascal Programming
- Introduction to Computer Science and Programming
- Foundation of Computing
- Fortran Programming
- Computer Science I & II
- Programming Paradigms and Applications (Lisp \& C++ with OOP)
- Organization of Programming Languages
- Computer Graphics
- Theory of Computation
- Database Management
- Algorithms
- Visual Basic Programming (VB 5.0 & 6.0)
- Java Programming Language
- Data Structure and Algorithms
- Computer Graphics in Java
- Web Design and Development using FrontPage 98

(Others) Chinese

Committees and Activities at Butler University:

Holcomb Awards Committee, 2007

Information Management Council, Spring 2007

Science Olympiad Event Coordinator, Spring 1994, 1995, 1996, 1997, 1998 and 1999

Department Brochure Committee, 1993-1994

Department Scholarship Committee, 1993-1995

Department News Letter Committee, 1993-1994

LAS Faculty Development Committee, 1994-1998

Faculty Assembly/Faculty Affairs Committee, 1994-1996

Community Service:

- Volunteer at the International Festival in Indianapolis (2001, 2002, 2003, 2004, 2005)

- Member of the board of Indianapolis Chinese Community Center, Inc (ICCCI) (2005–present)
- **Judge for Indiana Student Software Awards Competition (2001, 2002)**
- Serve as an assistant coach (soccer) for the Carmel Dad's Club
- Member of Indianapolis Chinese Choir (1996–present)
- Taught Chinese GongFu at the Chinese Culture Summer Camp organized by Indianapolis Chinese Community Center Inc, (ICCCI) and the Association of Family with Chinese Children (FCC) July 2005
- Taught/tutored middle and high school students math and computer science at Chinese Sunday School, ICCCI. (1999–2005)