

CURRICULUM VITAE

LIYU ZHANG

CONTACT INFORMATION

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EDUCATION

Ph.D., Computer Science, University at Buffalo, New York, 2007.
M.S., Computer Science, Fudan University, China, 2000.
B.S., Computer Science, Fudan University, China, 1997.

PROFESSIONAL EXPERIENCE

2015.9 – present **Associate Professor**, Department of Computer Science, University of Texas Rio Grande Valley (UTRGV).

2013.9 – 2015.8 **Associate Professor and Graduate Coordinator**, School of Engineering and Computational Science, University of Texas at Brownsville (UTB).

2007.9 – 2013.8 **Assistant Professor**, Department of Computer and Information Sciences (CIS), UTB.

2006.1– 2006.8 **Lecturer**, Department of Computer Science and Engineering, University at Buffalo.

2000.8– 2007.5 **Teaching Assistant**, Department of Computer Science and Engineering, University at Buffalo.

1998.7–2000.7 **Research Assistant**, Department of Computer Science, Fudan University, China.

1997.9–1998.6 **Teaching Assistant**, Department of Computer Science, Fudan University, China.

RESEARCH INTERESTS

- Computational Complexity
- Design and Analysis of Algorithms and their applications in Bioinformatics
- Cryptography and Computer Security Based on Computational Complexity and their applications in computer network

TEACHING

- **Interests:**
All courses in computer science and related courses in mathematics.
- **Courses Taught:**
Theory of Computation, Algorithm Analysis, Discrete Mathematics, Artificial Intelligence, Programming Languages (Java, C++, Lisp, Prolog, ML, etc), Database Management Systems, Operating Systems, Computer Architecture, Introduction to Computer Programming (Java), Introduction to Computer Science, Intermediate Computer Knowledge for Nonmajors.

AWARDED GRANTS

- Disjoint NP-pairs and Structural Properties of Complete Sets, **PI**, US National Science Foundation, 2012-2015, \$52,795.
- Future Teachers, Researchers and Engineers: Improving Retention and Success Rate of STEM Graduate Program through a Career-Oriented Approach, **Project Director**, US Department of Education, 2009-2014, \$2,595,038.
- Integrating Synchronous and Asynchronous Components into Graduate Curriculum to Improve Learning Effectiveness and Better Serve Students with Time Constraints, **co-Project Director**, US Department of Education, 2009-2011, \$240,376.
- Acquisition of Futuro: A Data Intensive and High Performance Computing Cluster, **Senior Personnel**, US National Science Foundation, 2009-2012, \$704,293.

PROFESSIONAL ACTIVITIES

- Conference Presentations and Participation
 1. Oral Presentation: Weak Mitoticity of Bounded Conjunctive and Disjunctive Autoreducible Sets, *15th Annual International Computing and Combinatorics Conference*, Qingdao, China, July 2-4, 2018.
 2. Session Chair and Poster Judge: *1st International Conference on Data Intelligence and Security*, South Padre Island, Texas, April 2018.
 3. Oral Presentation: Disjoint NP-pairs, College of Science, Mathematics and Technology Colloquium, University of Texas at Brownsville, March 29, 2013.
 4. Oral Presentation: Autoreducibility and Mototicity, Computational Complexity, *Theory Seminars of School of*

Computer Science and Technology, Fudan University, Shanghai, China, June 1st, 2012.

5. Oral Presentation: Separating NE from Some Nonuniform Nondeterministic Complexity Classes, *15th Annual International Computing and Combinatorics Conference, Niagara Falls, New York, July 13-15, 2009.*
 6. Oral Presentation: Autoreducibility and Mototicity in Computational Complexity, *VIB Seminars of Department of Computer and Information Sciences, University of Texas at Brownsville, Nov 8, 2007.*
 7. Oral Presentation: The Informational Content of Canonical Disjoint NP-pairs, *13th Annual International Computing and Combinatorics Conference, Banff, Alberta, July 16-19, 2007.*
 8. Oral Presentation: The Informational Content of Canonical Disjoint NP-pairs, *1st Western New York Theory Day, Rochester Institute of Technology, April 20, 2007.*
 9. Oral Presentation: Mitosis in Computational Complexity, *Annual Graduate Conference of Department of Computer Science and Engineering at University at Buffalo, April 13, 2007.*
 10. Oral Presentation: Disjoint NP-pairs, *Annual Graduate Conference of Department of Computer Science and Engineering at University at Buffalo, Feb, 2003.*
- Paper Reviewing
 1. *Journal of Information Security and Applications, 2018*
 2. *International Conference on Data Intelligence and Security, 2018.*
 3. *Journal of Computational Complexity, 2016.*
 4. *Journal of Computer and System Sciences, 2016.*
 5. *Mathematical Foundations of Computer Science Conference, 2014.*
 6. *International Computing and Combinatorics Conference, 2011.*
 7. *International Journal of Foundations of Computer Science, 2011.*
 8. *International Computer Science Symposium in Russia, 2009.*
 9. *Computability in Europe, 2008.*
 10. *Theory of Computing Systems, 2008.*
 11. *Information Processing Letters, 2007.*
 12. *Fundamenta Informaticae, 2006.*
 13. *Theoretical Computer Science, 2006.*

UNIVERSITY AND COMMUNITY SERVICE

- Dean's Council Member, College of Engineering and Computer Science, UTRGV, 2017 - present.
- Member of Various Departmental Committees, including Faculty Evaluation, Curriculum, Graduate, Search and

Inventory Committees, Department of Computer Science, UTRGV, 2015 - present.

- Senator, Faculty Senate, UTB, September, 2014 - August, 2015
- Coach, UTB Ocelot Team for International Collegiate Programming Contest, Oct, 2013 - June, 2014.
- Graduate Coordinator, School of Engineering and Computational Science, UTB, 2013 - 2015.
- Chair of Scholarship Committee, School of Engineering and Computational Science, UTB, 2011 - 2015.
- Member of Faculty Curriculum, Graduate and Search Committees, Department of Computer Science, UTB, 2007 - 2015.
- Member of Faculty Accreditation Committee, Department of CIS, UTB, 2009 - 2010.
- Judge, Rio Grande Valley Regional Science and Engineering Fair, 2008.
- Senator, Graduate Student Association, University at Buffalo, 2006-2007.
- President, Chinese Student and Scholar Association, University at Buffalo, 2002 - 2003.

AWARDS AND HONORS

- **Faculty Research Recognition**, College of Science, Mathematics and Technology, University of Texas at Brownsville, 2012-2013.
- **Exceptional Merit**, University of Texas System, 2010-2011.
- **Teaching Assistantship**, Department of Computer Science and Engineering at University at Buffalo, 2000-2007.
- **School of Engineering and Applied Science Award** for excellent graduate students, University at Buffalo, 2002-2003.
- **Schlumberger Scholarship** for outstanding graduate students, Fudan University, 1999.
- **Huazang Scholarship** for outstanding undergraduate students, Fudan University, 1996-1997.
- **Motorola Scholarship** for outstanding undergraduate students, Fudan University, 1995-1996.
- **People's Scholarship** for Academic Excellence for undergraduate students, Fudan University, 1993-1997, multiple times.

OTHER WORKING EXPERIENCE

- **Full-time Algorithm Designer and Developer.** Designing and developing programs for automatic email classification,

Cymfony Net Inc., 600 Essjay Road, Williamsville, NY 14221, (716)565-9114, May - August 2001.

- **Part-time Developer.** Developing Housing Software for the City Government of Shanghai, Gaoke Computer Technology Inc., Shanghai, China, August - October 1999.
- **Part-time Developer.** Embedding DES and RSA encryption into the networking system in the Shanghai Bank-Enterprise Networking Project, Shanghai, China, December 1997 - April 1998.
- **Part-time Algorithm Designer and Developer.** Designing and developing programs for visualization of embroidery designs, NuTec Corp., Shanghai, China, May - November 1997.

THESIS AND DISSERTATION

- Ph.D. Dissertation: **Disjoint NP-Pairs** (advisor Alan L. Selman)
- M.S. Thesis: **Some Aspects on Randomized Algorithms** (advisor Hong Zhu)

PUBLICATIONS

Note: Authors in all papers are listed alphabetically and are co-first authors, following the tradition of ACM SIGACT, unless otherwise specified.

- Journal Publications
 1. L. Zhang. Proof System Representations of Degrees of Disjoint NP-pairs. In *Information Processing Letters*, 111: 348-251, 2011.
 2. B. Fu, A. Li and L. Zhang. Separating NE from Some Nonuniform Nondeterministic Complexity Classes. In *Journal of Combinatorial Optimization*, 22(3): 482-493, 2011.
 3. C. Glaßer, A. Selman, and L. Zhang. The Informational Content of Canonical Disjoint NP-pairs. In *International Journal of Foundations of Computer Science*, 20(3):501-522, 2009.
 4. C. Glaßer, A. Selman, S., Travers, and L. Zhang. Non-mitotic Sets. In *Theoretical Computer Science*, 410(21-23):2011-2023, 2009.
 5. C. Glaßer, A. Pavan, A. Selman, and L. Zhang. Splitting NP-complete Sets. In *SIAM Journal on Computing* 37(5): 1517-1535, 2008.
 6. C. Glaßer, M. Ogiwara, A. Pavan, A. Selman, and L. Zhang. Autoreducibility, Mitoticity, and Immunity. In *Journal of Computer and System Sciences*, 73: 735-754, Elsevier, 2007.

7. C. Glaßer, A. Selman, and L. Zhang. Canonical Pairs of Proof Systems and Disjoint NP-pairs. In *Theoretical Computer Science*, 370: 60-73, Elsevier, 2007.
 8. C. Glaßer, A. Selman, S. Sengupta, and L. Zhang. Disjoint NP-pairs. In *SIAM Journal on Computing*, 33(6):1369-1416, 2004.
 9. L. Zhang, H. Zhu and P. Zhang. A Simple Randomized Algorithm for the Union of Sets Problem. *Chinese Journal of Software*, 11(12): 1587-1593, Science Press 2000, ISBN 1000-9825.
- Conference Publications
 1. L. Zhang, M. Quweider, L. Hansheng and F. Khan. Weak Mitoticity of Bounded Conjunctive and Disjunctive Autoreducible Sets. Accepted by the *24th International Computing and Combinatorics Conference*, 2018. (1st author)
 2. M. Quweider, H. Lei, L. Zhang and F. Khan. Managing Big Data in Visual Retrieval Systems for DHS Applications: Combining Fourier Descriptors and Metric Space Indexing, In *Proceedings 1st International Conference on Data Intelligence and Security*. April, 2018
 3. F. Khan, M. Quweider, M. Torres, C. Goldsmith, H. Lei, and L. Zhang. Block Level Streaming Based Alternative Approach for Serving a Large Number of Workstations Securely and Uniformly. In *Proceedings 1st International Conference on Data Intelligence and Security*. April, 2018
 4. L. Zhang, C Yuan and H. Kan. Probabilistic Autoreductions. In *Proceedings SOFSEM 2016: Theory and Practice of Computer Science*, Lecture Notes in Computer Science 9587, pages 418-429, Springer 2016.(1st author)
 5. B. Fu, A. Li and L. Zhang. Separating NE from Some Nonuniform Nondeterministic Complexity Classes. In *Proceedings 15th Annual International Computing and Combinatorics Conference*, Lecture Notes in Computer Science 5609, Springer, 2009.
 6. C. Glaßer, A. Selman, S. Travers and L. Zhang. Non-mitotic Sets. In *Proceedings 27th Foundations of Software Technology and Theoretical Computer Science*, Lecture Notes in Computer Science 4855, Springer 2007.
 7. C. Glaßer, A. Selman, and L. Zhang. The Informational Content of Canonical Disjoint NP-pairs. In *Proceedings 13th Annual International Computing and Combinatorics Conference*, Lecture Notes in Computer Science 4598, Springer 2007, ISBN 3-540-73544-1.
 8. C. Glaßer, A. Pavan, A. L. Selman and L. Zhang, Mitosis in Computational Complexity. In *Proceedings 3rd International Conference on Theory and Applications of Models of Computation*, Lecture Notes in Computer Science 3959, Springer 2006, ISBN 3-540-34021-1.

9. C. Glaßer, A. Pavan, A. Selman, and L. Zhang. Redundancy in Complete Sets. In *Proceedings 23rd Annual Symposium on Theoretical Aspects of Computer Science*, Lecture Notes in Computer Science 3884, Springer 2006, ISBN 3-540-32301-5.
10. C. Glaßer, M. Ogihara, A. Pavan, A. Selman, and L. Zhang. Autoreducibility, Mitoticity, and Immunity. In *Proceedings 30th International Symposium on Mathematical Foundations of Computer Science*, Lecture Notes in Computer Science 3618, Springer 2005, ISBN 3-540-28702-7.
11. C. Glaßer, A. Selman, and L. Zhang. Canonical Pairs of Proof Systems and Disjoint NP-pairs. In *Proceedings 30th International Symposium on Mathematical Foundations of Computer Science*, Lecture Notes in Computer Science 3618, Springer 2005, ISBN 3-540-28702-7.
12. C. Glaßer, A. Selman, S. Sengupta, and L. Zhang. Disjoint NP-pairs. In *Proceedings 18th IEEE Conference on Computational Complexity*, Aarhus, Denmark, July 7-10, 2003.
13. P. Zhang and L. Zhang. Dynamic Broadcast Paging. In *Proceedings 5th International Conference for Young Computer Scientists*, part I, August 17-20, 1999, Nanjing, China, International Academic Publishers.
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- Other Publications

1. C. Glaßer, M. Ogihara, A. Pavan, A. Selman and L. Zhang. Autoreducibility and Mitoticity. *ACM SIGACT News* 40(3):60-76, 2009.
2. C. Glaßer, A. Selman and L. Zhang. Survey of Disjoint NP-Pairs and Relations to Propositional Proof Systems in Oded Goldreich, Arnold L. Rosenberg and Alan L. Selman, editors, *Theoretical Computer Science - Essays in Memory of Shimon Even*, Lecture Notes in Computer Science 3895, Springer 2006, ISBN 3-540-32880-7.