

# Jiamou Liu

## Current Address:

Institut für Informatik  
Universität Leipzig  
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## Personal Data:

Date of Birth: February 24, 1983  
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Citizenship: China  
Permanent Residency: New Zealand

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## Research Interests

Finite model theory, algorithmic model theory, computable model theory, algorithms for graphs and games, automata on finite and infinite objects, logic and games,

## Employment

**PostDoc Fellow** June 2009 - December 2010  
Funded by the DFG research project GELO (Graphen mit entscheidbaren Logiken)  
Abteilung Algebraische und logische Grundlagen der Informatik (headed by Prof. Markus Lohrey)  
Institut für Informatik, Universität Leipzig, Leipzig, Germany

**Research Intern** February 2008 - May 2008  
Theory Group, Microsoft Research Asia, Beijing, China  
*Mentor:* Dr. Ting Zhang

## Education

**PhD** University of Auckland, New Zealand 2006 - *expected* June 2010  
*Subject:* Theoretical Computer Science  
*Thesis topic:* Topics on finite, automatic and computable model theory  
*Advisors:* Bakhadyr Khoussainov, Andre Nies

**Graduate student (non-degree)** Cornell University, USA  
August 2008 - December 2008  
August 2007 - December 2007  
August 2005 - December 2005

**Visiting scholar** February 2006 - May 2006  
Mathematics Department, National University of Singapore

**BSc(First Class Honours)** University of Auckland, New Zealand 2002 - 2005  
*Major:* Computer Science and Mathematics.

**Research Summer Scholar** November 2004 - February 2005  
Research School of Information Science and Engineering  
Australian National University, Canberra, ACT, Australia  
*Supervisor:* Assoc. Prof. Sylvie Thiébaux

**Mt Albert Grammar School** Auckland, New Zealand 2000 - 2001  
*New Zealand Bursary Examination:* Achieved Average A+

## Scholarship and Awards

<b>New Zealand International Doctoral Research Scholarship</b> Awarded by Education New Zealand	2006 - 2009
<b>Microsoft Research Asia Fellowship</b> Awarded by Microsoft Research Asia, Beijing, China	2007 - 2008
<b>Summer Research Scholarship</b> Awarded by the Australian National University	2004 - 2005
<b>Faculty of Science Summer Research Scholarship</b> Awarded by University of Auckland, New Zealand	2004 - 2005
<b>Senior Prize</b> Awarded by Department of Computer Science, University of Auckland	2004
<b>Distinction</b> Awarded by Department of Mathematics, University of Auckland	2003
<b>NZEST Scholarship Winner</b> John Williamson Scholarship, Mt Albert Grammar School, Auckland, New Zealand	2001
<b>First Prize, Auckland Mathematics Olympiad</b>	2000
<b>Prize (Top Award), Australian Mathematics Competition</b>	2000

## Teaching

### Substitute Lecturer

Multivariable Calculus (MATH1920), Cornell University	Fall 2008
Software Engineering Theory(SE211), University of Auckland	2008

### Tutor

Discrete Mathematics (COMPSCI225), University of Auckland	2009
Modeling and Computation(MATH161), University of Auckland	2007
Software Engineering Theory(SE211), University of Auckland	2007
Algorithms(CS320), University of Auckland	2007
Discrete Mathematics(CS1231), National University of Singapore	2006
University Mathematics I(MATH108), University of Auckland	2004 - 2006

### Marker

Software Engineering Theory(SE211), University of Auckland	2007
Modeling and Computation(MATH162), University of Auckland	2007
Mathematical Logic(MATH315), University of Auckland	2006
Algorithms(COMPSCI320), University of Auckland	2005
Principles of Programming(COMPSCI101), University of Auckland	2004
Algorithms and Data Structures(COMPSCI220), University of Auckland	2003 - 2004

### Others

Computer Lab Demonstrator, University of Auckland	2004 - 2006
Math Assistance Room Tutor, University of Auckland	2003 - 2006

## Publication

### Fully refereed papers in international journal

[1] B. Khossainov, J. Liu, M. Minnes, *Unary Automatic Graphs: An Algorithmic Approach*, in: the Journal of Mathematical Structures in Computer Science, 19:133-152. Cambridge University Press. 2009.

[2] B. Khoussainov, J. Liu, *On Complexity of Ehrenfeucht-Fraïssé Games*, in: Annals of Pure and Applied Logic, vol 161(3): 404-415, Elsevier. 2009.

[3] J. Liu, M. Minnes, *Deciding the Isomorphism Problem on Classes of Unary Automatic Structures*, in: Theoretical Computer Science. Elsevier. Accepted for publication.

### Papers submitted to international journals

[4] B. Khoussainov, J. Liu, I. Khaliq, *A Dynamic Algorithm for Reachability Games on Trees*. Submitted.

### Papers in international conferences and workshops

[5] B. Khoussainov, J. Liu, *On Complexity of Ehrenfeucht-Fraïssé Games*, in: Proceeding of the International Symposium on Logical Foundations of Computer Science(LFCS'07), New York, LNCS 4514:293-309, Springer. 2007.

[6] B. Khoussainov, J. Liu, M. Minnes, *Unary Automatic Graphs: An Algorithmic Approach*, in: Proceedings of the 5th International Conference of Theory and Applications of Models of Computation(TAMC'08), Xi'An, China, LNCS 4978:542-553, Springer. 2008.

[7] B. Csima, B. Khoussainov, J. Liu, *Computable Categoricity of Graphs with Finite Components*, in: Proceedings of the 4th Conference on Computability in Europe(CiE'08), LNCS 5028:139-148, Springer. 2008.

[8] J. Liu, T. Zhang, *Combining Dense Linear Order with Random Graphs*, in: Proceedings of CEDAR 2008, an affiliated workshop of IJCAR 2008, Sydney, Australia. 2008.

[9] J. Liu, M. Minnes, *Analysing Complexity in Classes of Unary Automatic Structures*, in: Proceedings of the 3rd International Conference on Language and Automata Theory and Applications (LATA'09), LNCS 5457:518-529, Springer. 2009.

[10] B. Khoussainov, J. Liu, I. Khaliq, *A Dynamic Algorithm for Reachability Games on Trees*, in: Proceedings of the 24th International Symposium of Mathematical Foundations of Computer Science (MFCS'09), LNCS 5734:518-529, Springer. 2009.

[11] D. Kuske, J. Liu, M. Lohrey, *The Isomorphism Problem on Classes of Automatic Structures*, in: Proceedings of the 25th IEEE Symposium on Logic in Computer Science (LICS'10). 2010. Accepted for publication.

[12] D. Kuske, J. Liu, M. Lohrey, *The Isomorphism Problem for  $\omega$ -Automatic Trees*, in: Proceedings of the 19th EACSL Annual Conferences on Computer Science Logic (CSL'10). 2010. Accepted for publication.

[13] B. Khoussainov, J. Liu, A. Gandhi, *An Algorithmic Study of Games Played on Trees with Back Edges*, submitted.

### Seminars and Talks

Department Seminar: *The Isomorphism Problem for  $\omega$ -Automatic Trees*  
May 2010, Universität Leipzig, Leipzig, Germany.

Department Seminar: *The Isomorphism Problem for Classes of Automatic Structures*  
October 2009, Universität Leipzig, Leipzig, Germany.

MFCS'09 Contributed Talk: *A Dynamic Algorithm for Reachability Games on Trees*  
August 2009, High Tatras, Slovakia.

CiE'09 Contributed Talk: *Dynamic Algorithms for Reachability Games*

- July 2009, Heidelberg, Germany.
- AAL'09 Contributed Talk: *The State Complexity of Unary Automatic Structures*  
June 2009, Stuttgart, Germany.
- LATA'09 Contributed Talk: *Analyzing Complexity in Unary Automatic Structures*  
April 2009, Tarragona, Spain.
- Cornell Logic Seminar: *On Graphs with Finite Components*  
October 2008, Cornell University, Ithaca, NY, USA.
- CEDAR'08 Contributed Talk: *Combining Dense Linear Orders with Random Graph*  
August 2008, Sydney, Australia.
- CiE'08 Contributed Talk: *Computable Categoricity of Strongly Locally Finite Graphs*  
June 2008, Athens, Greece.
- TAMC'08 Contributed Talk: *Unary Automatic Graphs: An Algorithmic Perspective*  
April 2008, Xi'An, China.
- Microsoft Theory Seminar: *An Introduction to Automatic Structures*  
February 2008, Microsoft Research Asia, Beijing, China.
- Cornell Logic Seminar: *Reverse Mathematics:  $RCA_0$*   
September 2007, Cornell University, Ithaca, NY, USA.
- Computer Science Department Seminar: *Unary Automatic Graphs: An Algorithmic Perspective*  
July 2007, University of Auckland, New Zealand.
- Computer Science Department Seminar: *On Complexity of Ehrenfeucht-Fraïssé Games*  
May 2007, University of Auckland, New Zealand.
- NUS Logic Seminar(twice): *Introduction to Automatic Structures*  
April 2006, National University of Singapore, Singapore.
- Cornell Logic Seminar: *Parity Games*  
October 2005, Cornell University, Ithaca, NY, USA.

## Professional Development

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| Faculty of Science Tutor Certificate, University of Auckland | 2006 |
| Tutoring in Mathematics Course, University of Auckland       | 2003 |

## Activities/Volunteer Work

- Volunteer at International Symposium on Information Theory and its Applications (ISITA2008)  
Auckland, New Zealand, December 2008

## Professional Affiliations

- Member of the New Zealand Mathematical Society

## References

**Prof. Bakhadyr Khoussainov** (*PhD Advisor*)

Fellow of the Royal Society of New Zealand (FRSNZ)  
Deputy Head of Department in Research  
Department of Computer Science  
University of Auckland  
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**Prof. Dr. rer. nat. habil. Markus Lohrey** (*PostDoc Mentor*)

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**Assoc. Prof. Andre Nies**

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**Dr. Ting Zhang**

Assistant Professor  
Department of Computer Science  
Iowa State University  
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