

CONTACT
INFORMATION

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Springfield, IL 62703-5407, USA

CURRENT
POSITION

Associate Professor, University of Illinois Springfield, Springfield, IL, USA (August 2026 –).

PREVIOUS
POSITION

Assistant Professor, University of Illinois Springfield, Springfield, IL, USA (August 2020 – August 2026).

PERSONAL
WEBSITE

xianghuang.org

RESEARCH
INTERESTS

Algorithmic Information Theory, Analog Computing, DNA/Molecular Programming, Normal numbers, and Theoretical Computer Science in general.

VISITING
POSITIONS

Visiting Associate, California Institute of Technology (August 2024 – December 2024, hosted by [Erik Winfree](#)).

Visiting Assistant Professor, Le Moyne College, Syracuse, NY (September 2019 – June 2020).

EDUCATION

Iowa State University, IA, USA

Ph.D. in Computer Science, 2020.

- Thesis: *Chemical Reaction Networks: Computability, Complexity, and Randomness*.
- Advisor: [Jack H. Lutz](#).

Institute of Software, Chinese Academy of Sciences, Beijing, China

Computer Science, September 2009 – June 2012.

- Topic: *Model Checking, Formal Methods, Automata Theory*.

Nanjing University, Nanjing, China

B.E. in Software Engineering, September 2005 – June 2009.

GRANT SUPPORT

External Support:

1. Principal investigator: *Towards A Hierarchy of Real Numbers Computable by CRN*, Department of Energy EXPRESS grant, \$400,000 (2023–2026).

UIS and University of Illinois System Internal Support:

4. National Taiwan University-University of Illinois System Travel Grants Program, \$5,000 (2024).
3. Competitive Scholarly Research Grant, \$5,000 (2023–2024).
2. Grant Writing Mentorship Award, \$1,500 (2022–2023).
1. Leadership Lived Experience (LLE) student employment initiative, \$4,000 (2022).

JOURNAL
PUBLICATIONS

3. Xiang Huang, Jack H. Lutz, Neil Lutz, and Andrei N. Migunov, “[Algorithmic Randomness in Continuous-Time Markov Chains](#),” *Information and Computation* (2026), article 105024, doi:10.1016/j.ic.2026.105024.
2. Xiang Huang, Jack H. Lutz, Elvira Mayordomo, and Donald M. Stull, “Asymptotic divergences and strong dichotomy,” *IEEE Transactions on Information Theory* 67 (2021), pp. 6296–6305.
1. Xiang Huang, Titus H. Klinge, James I. Lathrop, Xiaoyuan Li and Jack H. Lutz, “Real-Time Computability of Real Numbers by Chemical Reaction Networks,” *Natural Computing* 18(1) (2019), pp. 63–73 (**invited paper**).

CONFERENCE
PUBLICATIONS

- (Undergraduate student collaborators are underlined.)
9. Ho-Lin Chen and Xiang Huang, “[Bounded Analog Complexity](#),” *The 32nd International Conference on DNA Computing and Molecular Programming* (DNA 32), LIPIcs vol. 387, pp. 14:1–14:22, 2026.
 8. Xiang Huang, Xiaoyuan Li, Jack H. Lutz, and Neil Lutz, “[Multi-Head Finite-State Dimension](#),” *Proceedings of the 51st International Symposium on Mathematical Foundations of Computer Science* (MFCS 2026), LIPIcs vol. 386.
 7. Nicholas Haisler, Xiang Huang, Andrei N Migunov, Khalid Mohammed, and Garrett Provence. “A Selective Dual-Railing Technique for General Purpose Analog Computers ” In Proceedings of the 22nd International Conference on Unconventional Computation and Natural Computation (UCNC 2025), Sep 2025.
 6. Xiang Huang and Rachel Huls, “Computing Real Numbers with Large-Population Protocols Having a Continuum of Equilibria,” *The 28th International Conference on DNA Computing and Molecular Programming* (DNA 28, Albuquerque, NM, August 8–12, 2022).
 5. Xiang Huang, Jack H. Lutz, Elvira Mayordomo, and Donald M. Stull, “Asymptotic divergences and strong dichotomy,” *Proceedings of the Thirty-seventh Symposium on Theoretical Aspects of Computer Science* (STACS 2020, Montpellier, France, March 10–13, 2020).

4. Xiang Huang, Jack H. Lutz, and Andrei N. Migunov, “Algorithmic Randomness in Continuous-Time Markov Chains,” *Proceedings of the 57th Annual Allerton Conference on Communication, Control, and Computing* (2019).
3. Xiang Huang, Titus H. Klinge, and James I. Lathrop, “Real-Time Equivalence of Chemical Reaction Networks and Analog Computers,” *DNA Computing and Molecular Programming* (DNA 2019), Lecture Notes in Computer Science, vol. 11648, Springer, Cham.
2. Xiang Huang, Titus H. Klinge, James I. Lathrop, Xiaoyuan Li, and Jack H. Lutz, “Real-Time Computability of Real Numbers by Chemical Reaction Networks,” *Proceedings of the 16th International Conference on Unconventional Computation and Natural Computation* (UCNC 2017), pp. 29–40.
1. Xiang Huang and Donald M. Stull, “Polynomial Space Randomness in Analysis,” *Proceedings of the 41st International Symposium on Mathematical Foundations of Computer Science* (MFCS 2016), 86:1–86:13.

PREPRINTS

1. Ho-Lin Chen and Xiang Huang, “[Ripple: An Open, AI-Formalized Lean 4 Framework for Computing with CRNs](#),” arXiv:2607.13531, 2026.

PEER-REVIEWED WORKSHOP PAPER/EXTENDED ABSTRACT

1. Xiang Huang and Andrei N. Migunov, “[A General Purpose Analog Computer to Population Protocol Compiler](#),” In *Proceedings of the 21st ACM International Conference on Computing Frontiers Workshops and Special Sessions (CF ’24 Companion)*, May 2024.

BOOK CHAPTER

1. Xiang Huang, “[Deterministic Chemical Reaction Network](#),” completed chapter for *The Art of Molecular Programming*. Part of a DNA/molecular programming community initiative to create a comprehensive molecular programming textbook (molecularprogrammers.org).

AWARDS

2. The International Society for Nanoscale Science, Computation and Engineering (ISNSCE) [Best Student Presentation Award](#), at 25th International Conference on DNA Computing and Molecular Programming (DNA25), August 2019.
1. Teaching Excellence Award, Iowa State University, 2017.

INVITED TALKS	<i>Computing Real Numbers with Large-Population Protocols</i> , Drake University, October 2023.	
	<i>Some Thoughts on Normality, Algorithmic Randomness, and Analog Computing</i> , The Fifth Nanjing University Youth Forum, May 2020 (Remote).	
	<i>Asymptotic Divergences and Strong Dichotomy</i> , Iowa Colloquium on Information, Complexity, and Logic (ICICL), Spring 2019.	
CONTRIBUTED TALKS	<i>Computing Real Numbers with Large-Population Protocols Having a Continuum of Equilibria</i> , DNA 28, August 2022.	
	<i>Real-Time Equivalence of Chemical Reaction Networks and Analog Computers</i> , DNA 25, August 2019.	
	<i>Real-Time Computability of Real Numbers by Chemical Reaction Networks</i> , The 19th Graduate Student Conference in Logic, Madison, WI, April 2018.	
	<i>Real-Time Computability of Real Numbers by Chemical Reaction Networks</i> , UCNC 2017.	
TEACHING EXPERIENCE	At UIS	
	CSC 570F – Graduate Algorithms and Applications	Spring 2023
	CSC 302 – Discrete Structures	Fall 2020 to present
	CSC 482 – Algorithms and Theory of Computation	Fall 2020 to present
	As Instructor at Le Moyne College	
	CSC 175 – Introduction to Algorithms and Program Design	Fall 2019
	CSC 170 – Java Introduction (no prior programming experience)	Spring 2020
	CSC 176 – Java Introduction (as a second programming course)	Spring 2020
	CSC 276 – Object Oriented Design Using Java	Spring 2020
	As Teaching Assistant at Iowa State	
	COM S 531 – Theory of Computation (Graduate)	Spring 2014, 2016
	COM S 511 – Algorithm Design and Analysis (Graduate)	Fall 2014, 2015, 2017
	COM S 331 – Theory of Computation	Fall 2016, Spring 2019
	COM S 311 – Algorithm Design	Summer 2015, 2016, Fall 2018
	COM S 330 – Discrete Mathematical Structures	Spring 2014
	COM S 252 – Introduction to Operating Systems	Fall 2013