Huang, Xiang **University of Illinois Springfield**

CONTACT INFORMATION

Department of Computer Science
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CURRENT POSITION

Assistant Professor, University of Illinois Springfield, Springfield, IL, US. (August, 2020 to present)

PERSONAL WEBSITE

xianghuang.org

RESEARCH INTERESTS

Algorithmic Information Theory, Analog Computing, Molecular Programming, and Theoretical Foundations.

VISITING POSITION:

Visiting Assistant Professor, Le Moyne College, Syracuse, NY, US. (Sept, 2019 to June, 2019)

EDUCATION

Iowa State University, IA, US.

Ph.D. in Computer Science, 2020,

- Thesis: *Chemical Reaction Networks: Computability, Complexity, and Randomness*
- Advisor: Professor Jack H. Lutz

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

Computer Science, 2009.09 - 2012.06.

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

Nanjing University, Nanjing, China.

B.E. in Software Engineering , 2005.09 - 2009.06.

GRANT SUPPORTS

External Support:

1. Principal investigator: *Towards A Hierarchy of Real Numbers Computable by CRN*, $400K, Department of Energy EXPRESS grant, 2023-2025.

U of I Springfield or U of I System internal supports:

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

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. *Volume 18, Issue 1, pp 63-73, Natural Computing (2019).* ***(invited paper).***

Conference Publications

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, Aug 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, 2019. In Proceedings of the 57th Annual Allerton Conference on Communication, Control, and Computing.

3. Xiang Huang, Titus H. Klinge, James I. Lathrop. Real-Time Equivalence of Chemical Reaction Networks and Analog Computers. In: Thachuk C., Liu Y. (eds) 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. *In Proceedings of the 16th International Conference on Unconventional Computation and Natural Computation (UCNC)* , June 2017, pp. 29-40.

1. Xiang Huang and Donald. M. Stull. Polynomial Space Randomness in Analysis. *In Proceedings of the 41st International Symposium on Mathematical Foundations of Computer Science (MFCS)* , August 2016:86:1-86:13.

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, 2017, Iowa State University.

Invited Talks

Computing Real Numbers with Large-Population Protocols, Drake University, Oct 27, 2023.

Some Thoughts on Normality, Algorithmic Randomness, and Analog Computing, the Fifth Nanjing University Youth Forum, May, 2020. (Remote)

Contributed Talks

Computing Real Numbers with Large-Population Protocols Having a Continuum of Equilibria., DNA 28, August, 2022.

Real-Time Equivalence of Chemical Reaction Networks and Analog Computers, DNA 25, August, 2019.

Asymptotic Divergences and Strong Dichotomy, Iowa Colloquium on Information, Complexity, and Logic (ICICL), Spring 2019.

Some Thoughts on Normality, Algorithmic Randomness, and Analog Computing, Swarthmore College, Swarthmore, PA, March 2019.

Real-Time Computability of Real Numbers by Chemical Reaction Networks, the 19th Graduate Student Conference in Logic, Madison, WI, April 2018

Real-Time Computability of Real Numbers by Chemical Reaction Networks, 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 Theorey 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 (Grad)	Spring 2014 and 2016
COM S 511 - Algorithm Design and Analysis (Grad)	Fall 2014, 2015, and 2017
COM S 331 - Theory of Computation	Fall 2016 and Spring 2019
COM S 311 - Algorithm Design	Summer 2015, 2016, and Fall 2018
COM S 330 - Discrete Mathematical Structures	Spring 2014
COM S 252 - Introduction to Operating Systems	Fall 2013