

# Toru Takisaka

University of Electronic Science and  
Technology of China  
No.2006 Xiyuan Ave, West Hi-Tech Zone  
Chengdu, Sichuan, China

Phone: +86-28-6183-1670  
Email: [takisaka@uestc.edu.cn](mailto:takisaka@uestc.edu.cn)  
Homepage: <https://takisaka.github.io/>

## Affiliation

- NOV. 2023-CURRENT Associate Professor at University of Electronic Science and Technology of China, China  
*Algorithms and Logic Group*
- APR. 2023-OCT.2023 Research Associate Professor at University of Electronic Science and Technology of China, China  
*Algorithms and Logic Group*
- APR. 2022-MAR.2023 Postdoc at University of Electronic Science and Technology of China, China  
*Algorithms and Logic Group*  
*Supervisor: Bakhadyr Khoussainov*
- APR. 2018-MAR. 2022 Postdoc at National Institute of Informatics (NII), Japan  
*ERATO Metamathematics for Systems Design Project*  
*Supervisor: Ichiro Hasuo*
- APR. 2014-MAR. 2018 Ph.D. student at Research Institute for Mathematical Sciences, Japan  
*Dissertation title: Large Scale Geometries of Infinite Strings*  
*Supervisor: Masahito Hasegawa*
- APR. 2012-MAR. 2014 MSc student at Research Institute for Mathematical Sciences, Japan  
*Thesis title: On Gács' Quantum Algorithmic Entropy*  
*Supervisor: Masahito Hasegawa*

## Publications

### Journal articles

1. Sasinee Pruekprasert, Jérémy Dubut, **Toru Takisaka**, Clovis Eberhart, and Ahmet Cetinkaya: *Moment propagation of polynomial systems through Carleman linearization for probabilistic safety analysis*. *Automatica*, 160: 111441, 2024.
2. **Toru Takisaka**, Zhenya Zhang, Paolo Arcaini, and Ichiro Hasuo: *A Robustness-Based Confidence Measure for Hybrid System Falsification*. *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD)*, 42 (5), pp.1718-1731, 2023. [CCF-A journal]
3. Bakhadyr Khoussainov and **Toru Takisaka**: *Infinite Strings and Their Large Scale Properties*. *The Journal of Symbolic Logic (JSL)*, 87 (2), pp.585-625, 2022.
4. **Toru Takisaka**, Yuichiro Oyabu, Natsuki Urabe and Ichiro Hasuo: *Ranking and Repulsing Supermartingales for Reachability in Randomized Programs*. *ACM Transactions on Programming Languages and Systems (TOPLAS)*, 43 (2), pp.1-46, 2021. [CCF-A journal]

### Conference proceedings

5. **Toru Takisaka**, Libo Zhang, Changjiang Wang, and Jiamou Liu. *Lexicographic Ranking Supermartingales with Lazy Lower Bounds*. Proceedings of the 36th International Conference on Computer-Aided Verification (CAV), 2024. [CCF-A, CORE-A\* conference]
6. Zihui Liang, Bakhadyr Khoussainov, **Toru Takisaka**, and Mingyu Xiao. *Connectivity in the presence of an opponent*. Proceedings of the 31st Annual European Symposium on Algorithms (ESA 2023), Article No.: 79 pp.1-14. 2023. [CCF-B, CORE-A conference]
7. Libo Zhang, Yang Chen, **Toru Takisaka**, Bakhadyr Khoussainov, Michael Witbrock, and Jiamou Liu. *Learning Density-Based Correlated Equilibria for Markov Games*. Proceedings of The 22nd International Conference on Autonomous Agents and Multiagent Systems (AAMAS), pp.652-660, 2023. [CCF-B, CORE-A\* conference]
8. Ezequiel Castellano, Xiao-Yi Zhang, Paolo Arcaini, **Toru Takisaka**, Fuyuki Ishikawa, Nozomu Ikehata, and Kosuke Iwakura: *Explaining the Behaviour of Game Agents Using Differential Comparison*. Proceedings of the 37th IEEE/ACM International Conference on Automated Software Engineering (ASE), Article No.: 210 pp.1-8, 2022.
9. Masaki Waga, Ezequiel Castellano, Sasinee Pruekprasert, Stefan Klikovits, **Toru Takisaka**, and Ichiro Hasuo: *Dynamic Shielding for Reinforcement Learning in Black-Box Environments*. Proceedings of the 20th International Symposium on Automated Technology for Verification and Analysis (ATVA), LNCS 13505, pp.25-41, 2022.
10. Kittiphon Phalakarn, **Toru Takisaka**, Thomas Haas and Ichiro Hasuo: *Widest Paths and Global Propagation in Bounded Value Iteration for Stochastic Games*. Proceedings of the 32nd International Conference on Computer-Aided Verification (CAV), LNCS 12225, pp.349-371, 2020. [CCF-A, CORE-A\* conference]
11. Sasinee Pruekprasert, **Toru Takisaka**, Clovis Eberhart, Ahmet Cetinkaya and Jérémy Dubut. *Moment Propagation of Discrete-Time Stochastic Polynomial Systems using Truncated Carleman Linearization*. IFAC-PapersOnLine 53 (2), pp.14462-14469, 2020.
12. **Toru Takisaka**, Yuichiro Oyabu, Natsuki Urabe and Ichiro Hasuo: *Ranking and Repulsing Supermartingales for Reachability in Probabilistic Programs*. Proceedings of the 16th International Symposium on Automated Technology for Verification and Analysis (ATVA), LNCS 11138, pp.476-493, 2018.
13. Bakhadyr Khoussainov and **Toru Takisaka**: *Large Scale Geometries of Infinite Strings*. Proceedings of the 32nd Annual ACM/IEEE Symposium on Logic in Computer Science (LICS), pp.1-12, 2017. [CCF-A, CORE-A\* conference]
14. **Toru Takisaka**: *On Gács' Quantum Algorithmic Entropy*. Proceedings of the 11th Workshop on Quantum Physics and Logic (QPL), EPTCS 172, pp.204-216, 2014.

### Research Grants

15. Research Fund for International Young Scientists  
*National Natural Science Foundation of China, Grant number 62150410437, Jan. 2022-Dec. 2022.*
16. Foreign Experts Key Support Program Project – Foreign Scholars Research Fund Project  
*Ministry of Science and Technology of the People's Republic of China, Jan. 2022-Dec. 2022.*

## Honors and Awards

17. Excellent Young Scientist (Overseas)  
*National Natural Science Foundation of China, 2023.*

## Invited Talks

18. **Toru Takisaka:** *Large Scale Geometries of Infinite Strings*. Oral presentation delivered at the 16th Asian Logic Conference (ALC), Astana, Kazakhstan, June 2019.
19. **Toru Takisaka:** *Ranking and Repulsing Supermartingales for Reachability in Probabilistic Programs*. Oral presentation delivered at the 35th Japan Society for Software Science and Technology (JSSST) Annual Conference, Osaka, Japan, August 2018.

## Patent Applications

20. PCT International Patent Application PCT/JP2021/25164, "Device, method and program for optimal system control", Applied on July 2, 2021.  
Inventors: Kittiphon Phalakarn, **Toru Takisaka**, Thomas Haas and Ichiro Hasuo.
21. Japan Patent Application TOKUGAN 2020-115973, "Device, method and program for optimal system control", Applied on July 3, 2020.  
Inventors: Kittiphon Phalakarn, **Toru Takisaka**, Thomas Haas and Ichiro Hasuo.

## Teaching Experience

### University of Electronic Science and Technology of China, China

SPRING 2024- Teacher, Mathematical Foundation of Computer Science

### National Institute of Informatics (NII), Japan

SPRING 2019 Guest lecturer, Formal Methods for Cyber-Physical Systems

FALL 2018 Teaching assistant, Formal Language Theory

## Professional Service

### *Program committee member*

International Computing and Combinatorics Conference (COCOON 2025)

JSSST Workshop on Programming and Programming Languages (PPL 2021, PPL 2024)

### *Organizing committee member*

International Computing and Combinatorics Conference (COCOON 2025)

International Conference and Workshops on Algorithms and Computation (WALCOM 2025)

### *External reviewer*

**Conferences:** MFCS 2024, ICALP 2024, COCOON 2024, ATVA 2023, ISAAC 2023, ESOP 2021, CONCUR 2019, LICS 2018

**Journals:** Logical Methods in Computer Science (LMCS), Formal Aspects of Computing (FAC)