

Kenshi Miyabe

Affiliation

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EDUCATION

Doctor of Science, Kyoto University,
Thesis: “An Extension of van Lambalgen’s Theorem to Infinitely Many Relative 1-Random Reals”
March 2010

Master of Science, Kyoto University,
Thesis: “Classification of Index Sets of Functions”
March 2007

Bachelor of Science, Kyoto University
March 2005

PROFESSIONAL EXPERIENCE

Employment

Associate Professor at Meiji University Oct 2017 -
Senior Assistant Professor at Meiji University Apr 2014 - Sep 2017
JSPS Research Fellow at University of Tokyo Apr 2013 - Mar 2014

Global COE Research Fellow at Kyoto University

Apr 2011 - Mar 2013

Global COE Research Fellow at Kyoto University

Apr 2010 - Mar 2011

RESEARCH INTERESTS

- The theory of algorithmic randomness
- Computable analysis
- Game-theoretic probability
- Philosophy of probability
- Solomonoff's universal induction

PUBLICATIONS

Books

1. An introduction to probability and statistics (in Japanese), with Prof. Watanabe, Morikita, to appear in March 2020.
2. A Japanese translation of "Philosophy and Probability" with Timothy Childers, Kyukasha, 31 Jan 2020.
3. "New approach to calculus", Volume 1,2 (in Japanese), with Prof. Nagaoka, Prof. Watanabe, Prof. Yazaki, Kodansha, 6 Feb 2017.

Papers with review

1. "Computable Prediction". In: Hammer P., Agrawal P., Goertzel B., Iklé M. (eds) Artificial General Intelligence. AGI 2019. Lecture Notes in Computer Science, vol 11654. Springer, Cham, pp.137-147, 2019.
2. "Uniform Relativization". In: Manea F., Martin B., Paulusma D., Primiero G. (eds) Computing with Foresight and Industry. CiE 2019. Lecture Notes in Computer Science, vol 11558. Springer, Cham, pp.50-61, 2019.
3. "Erdos-Feller-Kolmogorov-Petrowsky law of the iterated logarithm for self-normalized martingales: a game-theoretic approach" (with T. Sasai and A. Takemura), Annals of Probability, Vol. 47, No. 2, 1136-1161, 2019.
4. "Muchnik degrees and Medvedev degrees of the randomness notions", Proceedings of the 14th and 15th Asian Logic Conferences, pp.108-128, 2019.
5. "Coherence of reducibilities with randomness notions", Theory of Computing Systems, Volume 62, Issue 7, pp.1599-1619, 2018.
6. "Relation between the rate of convergence of strong law of large numbers and the rate of concentration of Bayesian prior in game-theoretic probability" (with R. Sato and A. Takemura), Stochastic Processes and their Applications. Volume 128, Issue 5, Pages 1466-1484, 2018.
7. "Randomness and Solovay degrees" (with A. Nies and F. Stephan), Journal of Logic and Analysis, Vol 10, pp.1-13, 2018.

8. "Using Almost-Everywhere Theorems from Analysis to Study Randomness" (with A. Nies and J. Zhang), *The Bulletin of Symbolic Logic*, Volume 22, Issue 3, pp. 305-331, 2016.
9. "Reducibilities relating to Schnorr randomness", *Theory of Computing Systems*, 58(3), 441-462, 2016.
10. "Unified Characterizations of Lowness Properties via Kolmogorov Complexity" (with T. Kihara), *Archive for Mathematical Logic: Volume 54, Issue 3*, Page 329-358, 2015.
11. "Schnorr triviality and its equivalent notions", *Theory of Computing Systems: Volume 56, Issue 3*, pp 465-486, 2015.
12. "Derandomization in Game-Theoretic Probability" (with A. Takemura), *Stochastic Processes and their Applications* 125, 39-59, 2015.
13. "Uniform Kurtz randomness" (with T. Kihara), *Journal of Logic and Computation*, 24 (4): 863-882, 2014.
14. "Algorithmic randomness over general spaces", *Mathematical Logic Quarterly*, 60(3), 184-204, 2014.
15. "An Optimal Superfairingale and Its Convergence over a Computable Topological Space". In: Dowe D.L. (eds) *Algorithmic Probability and Friends. Bayesian Prediction and Artificial Intelligence. Lecture Notes in Computer Science*, vol 7070. Springer, Berlin, Heidelberg, pp.273-284, 2013.
16. "The law of the iterated logarithm in game-theoretic probability with quadratic and stronger hedges" (with A. Takemura), *Stochastic Processes and their Application*, 123, 3132-3152, 2013.
17. "Van Lambalgen's Theorem for uniformly relative Schnorr and computable randomness" (with J. Rute), *Proceedings of the 12th Asian Logic Conference*, 251-270, 2013.
18. " L^1 -Computability, Layerwise Computability and Solovay Reducibility", *Computability*, 2:15-29, 2013.
19. "Characterization of Kurtz Randomness by a Differentiation Theorem", *Theory of Computing Systems*, 52(1):113-132, 2013.
20. "The difference between optimality and universality", *Logic Journal of the IGPL*, 20(1):222-234, 2012.
21. "Convergence of random series and the rate of convergence of the strong law of large numbers in game-theoretic probability" (with A. Takemura), *Stochastic Processes and their Applications*, 122:1-30, 2012.
22. "Truth-table Schnorr randomness and truth-table reducible randomness", *Mathematical Logic Quarterly*, 57(3):323-338, 2011.
23. "An Extension of van Lambalgen's Theorem to Infinitely Many Relative 1-Random Reals", *Notre Dame Journal of Formal Logic*, 51(3):337-349, 2010.

TALKS

Selected talks

1. "Uniform relativization", Computability in Europe 2019, (19 July, 2019), Durham (UK) invited to a special session
2. "Schnorr triviality via decidable machines", Computability Theory and Foundations of Mathematics 2019, (25 Mar, 2019), Wuhan (China) invited
3. "Variants of layerwise computability", Computability and Complexity in Analysis 2016 (15-17 June 2016), Faro (Portugal), invited
4. "Total-machine reducibility and randomness notions", Asian Logic Conference 2015 (5 Jan 2015), Mumbai (India), invited
5. "The emergence of probability from randomness and games" (with A. Takemura), Modeling Market Dynamics and Equilibrium: New Challenges, New Horizons, Aug 2013, Munich (Germany) (invited).
6. " L^1 -computability and the computability of conditional probability", Analysis, Randomness and Applications 2013, June 2013, Nancy (France) (invited).
7. "Characterization of Kurtz randomness by a differentiation theorem", Twelfth Asian Logic Conference, Dec 2011, Wellington (New Zealand) (invited).
8. "Randomness and separation axioms", Analysis and Randomness in Auckland, Dec 2011, Auckland (New Zealand) (invited).

MEMBERSHIPS

<i>Association Computability in Europe</i>	July 2011 -
<i>Association for Symbolic Logic</i>	June 2013 -
<i>The Mathematical Society of Japan</i>	Apr 2012 -
<i>The Japan Society for Industrial and Applied Mathematics</i>	Dec 2018 -

LANGUAGES

JAPANESE: Mother language

ENGLISH: Fluent

Last updated: February 16, 2020