Norihiro Yamada

Curriculum Vitae

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Citizenship: Japan

Research interests

Mathematical logic	game semantics; (higher-order) recursion theory; foundations of mathematics and constructive mathematics; homotopy type theory
Category theory	categorical logic; categorical algebra for dependent types
Topology	constructive topology; connections between logic and topology

Employment

2019–present	**Postdoctoral Research Scholar**, *University of Minnesota*. Research on game semantics and type theory, advised by Favonia.
2019 (Feb–Mar)	**Postdoctoral Research Fellow**, *Kyoto University*. Research on categorical logic, advised by Yoshihiro Maruyama.
2012 (Apr–Jul)	**Research Assistant**, *Japan Science and Technology Agency*. Research on computational group theory, advised by Shin-ichi Minato.
2011 (Apr–May)	**Lecturer**, *Japan Science and Technology Agency*. Lectures on abstract algebra.

Education

2012–2018	**DPhil in Computer Science (on Logic, Foundations and Structures)**, *University of Oxford*. Thesis on game semantics, higher-order recursion theory and constructive mathematics, advised by Samson Abramsky and Bob Coecke. Ranked first on the first year exams on logic and mathematics.
2009–2010	**Exchange Program in Mathematics**, *University of Wisconsin-Madison*. Final year undergraduate courses on pure mathematics, advised by Ken Ono. GPA: 4.00/4.00.
2007–2012	**BEng in Computer Science**, *Hokkaido University*. Thesis on computational group theory, advised by Shin-ichi Minato and Thomas Zeugmann. Whilliam Wheeler Prize (the best student award).

Doctoral thesis

Title	*Games as Mathematics of Logic and Computation*
Supervisors	Samson Abramsky and Bob Coecke

Description The thesis establishes a mathematical, in particular semantic and analytic, foundation of higher-order logic and computation, and constructive mathematics, including their dynamics and intensionality, in terms of game semantics.

Publications

2020 **Dynamic game semantics**, *joint work with Samson Abramsky*.
Mathematical Structures in Computer Science, accepted.

2018 **A game-semantic model of computation**.
Research in the Mathematical Sciences, **6**(1), 3 (2019).

Preprints

2020 **Game-semantic ω-groupoids and semantics of homotopy type theory**.
In preparation.

Game semantics of Martin-Löf type theory, part II: another proof of the independence of Markov's principle from Martin-Löf type theory.
In preparation.

Categorical algebra for the unity of logic.
In preparation.

Game semantics of Martin-Löf type theory, part III: its consistency with formal Church's thesis.
arXiv preprint arXiv:2007.08094.

Sequent calculi for the unity of logic without polarities nor definitional De Morgan laws.
arXiv preprint arXiv:2001.06138, submitted.

2019 **Game semantics of Martin-Löf type theory, part I: a mathematical theory of predicative games and strategies**.
arXiv preprint arXiv:1610.01669, submitted.

Honors

Mar, 2012 **Whilliam Wheeler Prize**, *Hokkaido University*.
The best student award in each academic discipline of the school of engineering.

Nov, 2011 **Funai Overseas Scholarship**, *Funai Foundation for Information Technology*.
A highly competitive scholarship for Japanese students in natural sciences, mathematics, computer science, engineering and economics to study in PhD programs at world-leading universities in foreign countries. 11 recipients in 2011.

Jun, 2008 **Inoue Scholarship**, *Inoue Scholarship Foundation*.
15 recipients from top 9 Japanese universities in any academic disciplines in 2008.

Jun, 2008 **Nitobe Prize**, *Hokkaido University*.
Awarded top 90 students out of 2,700 freshmen in all academic disciplines in 2008.

Invited talks

Sep, 2020	**Game semantics for the consistency of Church's thesis with Martin-Löf type theory**, *University of Padova*. The mathematical logic seminar (online), invited by Maria Maietti.
Apr, 2018	**A game-semantic model of computation**, *Hokkaido University*. The theoretical computer science seminar, invited by Thomas Zeugmann.
Nov, 2017	**Game semantics of Martin-Löf type theory**, *Stockholm University*. The mathematical logic seminar, invited by Erik Palmgren.
Nov, 2017	**Game semantics of Martin-Löf type theory**, *University of Leeds*. The mathematical logic seminar, invited by Nicola Gambino.
Oct, 2017	**Game semantics of Martin-Löf type theory**, *University of Nottingham*. The functional programming seminar, invited by Thorsten Altenkirch.
Aug, 2017	**Game semantics of Martin-Löf type theory**, *Stockholm University*. The international conference *CSL 2017*, peer-reviewed.
Aug, 2015	**Dynamic games and strategies**, *University College Cork*. The international conference *Domains XII*, peer-reviewed.
May, 2015	**Dynamic games and strategies**, *University of Birmingham*. The theory of computation seminar, invited by Dan Ghica.

Teaching experience

2011 (Apr-May)	**Abstract algebra**, *Japan Science and Technology Agency*. A short course on abstract algebra in the final year undergraduate level.

Languages

Native language	Japanese
Second language	English (fluent)