Hiromi Ishii

Curriculum Vitae

Progiramming Skills

Education

2016–2019 **Ph.D. in Math**, *University of Tsukuba*, Tsukuba-city, Ibaraki, Japan.
Research Area: Mathematical Logic (Set Theory and Formal Logic), Computer Algebra, and Functional Programming.
Thesis: Bidirectional Interplay between Mathematics and Computer Science: Safety and Extensibility in Computer Algebra and Haskell [3].

2014–2016 **M.S. in Math**, *University of Tsukuba*, Tsukuba-city, Ibaraki, Japan.
Thesis: On Regularity Properties of Sets of Reals and Inaccessible Cardinals[4].

2010–2014 **B.A. in Math**, *Waseda University*, Shinjuku-ku, Tokyo, Japan, Summa cum laude.

Academic and Vocational Carrer

2019–present **Full-time Researcher and Developer**, *DeepFlow, Inc.*, Tokyo, Japan
Involved deeply in desigining and implementing the innovative numerical simulation software in Haskell from the ground up. Also designed and implemented workflow tools for scientific and industrial simulations for private company and national institutes.

2019–2020 **Visiting Researcher**, *Institute of Statistical Mathematics*, Tokyo, Japan

2018–2019 **Part-time Developer**, *Clear Code, Inc.*, Tokyo, Japan.

2014 **Google Summer of Code 2014**
Theme: An Efficient Computational Algebra and Symbolic Linear Algebra Library in Haskell

2010–2014 **Internship student and Part-Time Developer**, *Preferred Infrastructure, Inc.*, Tokyo, Japan

Fellowships, Awards, and Special Note

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2017–2019 **Research Fellowship for Young Scientists (DC2)**, *Japan Society for the Promotion of Science.*
Theme: Properties of sets of reals and its applications to Computer

2016 **14th Meikei Prize**, *University of Tsukuba*, Tsukuba-city, Ibaraki prefecture, Tokyo

2014 **Highest Award of Deans' Prize of School of Fundamental Science and Engineering**, *Waseda University*, Tokyo, Japan

Academic Publications

Amongst others, I coauthored the paper "Freer Monads, more extensible effects" [5] with O. Kiselyov.

[1] Hiromi Ishii. "A Purely Functional Computer Algebra System Embedded in Haskell". In: *Computer Algebra in Scientific Computing* (Lille, France). Ed. by Vladimir P. Gerdt, Wolfram Koepf, and Werner M. Seiler. Vol. 11077. Lecture Notes in Computer Science. Springer, Cham, 2018, pp. 288–303. ISBN: 978-3-319-99638-7. DOI: 10.1007/978-3-319-99639-4_20. arXiv: 1807.01456.

[2] Hiromi Ishii. "Automatic Differentiation With Higher Infinitesimals, or Computational Smooth Infinitesimal Analysis in Weil Algebra". In: *Computer Algebra in Scientific Computing* (Sochi, Russia). Ed. by François Boulier et al. Vol. 11077. Lecture Notes in Computer Science. Springer, Cham, 2021, pp. 174–191. ISBN: 978-3-030-85164-4. DOI: 10.1007/978-3-030-85165-1_11. arXiv: 2106.14153.

[3] Hiromi Ishii. "Bidirectional Interplay between Mathematics and Computer Science: Safety and Extensibility in Computer Algebra and Haskell". PhD thesis. University of Tsukuba, 2019. DOI: 10.15068/00156548.

[4] Hiromi Ishii. "On Regularity Properties of Set of Reals and Inaccessible Cardinals". MA thesis. Tsukuba University, 2016. URL: http://hdl.handle.net/2241/00135591.

[5] Oleg Kiselyov and Hiromi Ishii. "Freer Monads, More Extensible Effects". In: *Proceedings of the 2015 ACM SIGPLAN Symposium on Haskell*. Haskell '15. Vancouver, BC, Canada: ACM, 2015, pp. 94–105. ISBN: 978-1-4503-3808-0. DOI: 10.1145/2804302.2804319.

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