Yusuke Izawa, Ph.D. student, PyPy Contributor

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Education

2020-now **Ph.D., Tokyo Institute of Technology**.

2018-2020 **M.Sc. Mathematical and Computing, Tokyo Institute of Technology**.
Thesis title: *Stack Hybridization: A Mechanism for Bridging Two Compilation Strategies in a Meta Compiler Framework*

2014-2018 **B.Sc. Mathematical and Computing, Tokyo Institute of Technology**.
Thesis title: *BacCaml: A Meta-JIT Compiler Based on Both Tracing and Method JIT Compilations*

Employment History

2021.08 – 2021.10 IBM Research – Tokyo, Research Internship (Paid).

2021.04 – 2023.3 JSPS Research Fellow (DC2).

2020.11 – 2023.3 Tokyo Institute of Technology, Dept. of Math. and Comp., Research Assistant.

2018.6 – 2019.2 Recruit Marketing Partners, Inc., Software Engineer, Self-employment.

2018.8 Cookpad, Inc., Software Engineer, Internship (**Won 2nd Place**, Paid).

2017.4 – 2018.3 FOLIO, Inc., Software Engineer, Internship (Paid).

2016.8 – 2017.3 DOWANGO, Inc., Software Engineer, Internship (Paid).

2016.1 – 2016.6 Summaly, Inc., Software Engineer, Internship (Paid).

Grants, Honours and Scholarships

2021 **Research Fellowship for Young Scientists (JSPS DC2)**. Fellowship from the Japan Society for the Promotion of Science (JSPS), covering living expenses. Research expenses covered by KAKENHI.

2020 **JST Strategic Basic Research Programs ACT-X**. Research expenses covered by Japan Science and Technology Agency (JST).

Tokyo Tech Tsubame Scholarship for Doctoral Students. Covering living expenses.

2019 **Travel Grants by Information Science Incentive Fund**. By dept. of mathematical and computing science, Tokyo Tech.

2nd Place, Graduate Category, ACM Student Research Competition, *Association for Computing Machinery*. [*]

2014 **Scholarship by the Showa Scholarship Foundation**. Covering living expensed by Showa Scholarship Foundation.

Selected Publications

Journal

1 Yusuke Izawa, Hidehiko Masuhara, Carl Friedrich Bolz-Tereick, and Youyou Cong. "Threaded Code Generation with a Meta-Tracing JIT Compiler." In: *Journal of Object Technology* (2022), 2:1–11. ISSN: 1660-1769. DOI: 10.5381/jot.2022.21.2.a1. arXiv: 2106.12496.

2 Shusuke Takahashi, Yusuke Izawa, Hidehiko Masuhara, and Youyou Cong. "An approach to collect object graphs for data-structure live programming based on a language implementation framework." In: *Journal of Information Processing* 30 (2022), pp. 451–463. DOI: 10.2197/ipsjjip.30.451.

Conference Proceedings

1. Yusuke Izawa, Hidehiko Masuhara, and Carl Friedrich Bolz-Tereick. "Two-level Just-in-Time Compilation with One Interpreter and One Engine." In: *The ACM SIGPLAN Workshop on Partial Evaluation and Program Manipulation*. PEPM 2022. Virtual, Jan. 17, 2022. arXiv: 2201.09268. URL: https://popl22.sigplan.org/details/pepm-2022-papers/3/Two-level-Just-in-Time-Compilation-with-One-Interpreter-and-One-Engine.
2. Yusuke Izawa and Hidehiko Masuhara. "Amalgamating Different JIT Compilations in a Meta-Tracing JIT Compiler Framework." In: *Proceedings of the 16th ACM SIGPLAN International Symposium on Dynamic Languages*. DLS 2020. Virtual, USA: Association for Computing Machinery, Nov. 17, 2020, pp. 1–15. ISBN: 9781450381758. DOI: 10.1145/3426422.3426977.
3. Yusuke Izawa. "BacCaml: The Meta-Hybrid Just-in-Time Compiler." In: *Proceedings of the Conference Companion of the 3rd International Conference on Art, Science, and Engineering of Programming*. Programming 2019. Genova, Italy: Association for Computing Machinery, Apr. 2, 2019, pp. 1–3. ISBN: 9781450362573. DOI: 10.1145/3328433.3328466.
4. Yusuke Izawa, Hidehiko Masuhara, and Tomoyuki Aotani. "Extending a Meta-Tracing Compiler to Mix Method and Tracing Compilation." In: *Proceedings of the Conference Companion of the 3rd International Conference on Art, Science, and Engineering of Programming*. Programming 2019. Genova, Italy: Association for Computing Machinery, Apr. 2, 2019, pp. 1–3. ISBN: 9781450362573. DOI: 10.1145/3328433.3328439.

Selected Projects

2021- **Adaptive RPython.** A technique to let the RPython framework support "baseline" compilations, which can be used at an earlier stage in an execution.

2020- **Poly2Kanon.** Kanon is a live programming environment that can visualize data structures while editing code. Poly2Kanon aims to extend Kanon to support multi-language and multi-environment features.

2019-2020 **BacCaml.** A simple meta-tracing compiler framework, which implements RPython-like tracing compilation by extending the MinCaml compiler.

Selected Academic Services

2023 Program Committee, ICCQ 2023.

2022 Artifact Evaluation Committee, The Programming Journal, Volume 7.

2021 Artifact Evaluation Committee, PACT 2021.

Artifact Evaluation Committee, ECOOP 2021.

2020 Member of Student Volunteer, SPLASH 2020.

Co-reviewer of Onward! Essays, SPLASH 2020.

External reviewer of Scala Symposium, ECOOP 2020.

2019 Member of Student Volunteer, Programming 2019.

Teaching

2020 Programming II, Tokyo Institute of Technology, Math. and Comp. Science, TA.

2019 Programming II, Tokyo Institute of Technology, Math. and Comp. Science, TA.

Introduction to Computer Science, Tokyo Institute of Technology, TA.

2018 Programming II, Tokyo Institute of Technology, Math. and Comp. Science, TA.

Teaching (continued)

- Information Literacy I, Tokyo Institute of Technology, TA.

Skills

Languages	English (fluent), Japanese (native)
Coding	OCaml (S), Scala (S), Python (S), C (A), Java (A), Ruby (A), Shell (A), R (B), SQL (C), LaTeX(SS)
Misc.	Academic research, teaching, training, consultation, LaTeX typesetting and publishing.