

Yusuke Izawa, Assistant Professor, PyPy Contributor

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Education

- 2020-2023 **Ph.D. Mathematical and Computing Science, Tokyo Institute of Technology.**
Thesis title: *Supporting multi-scope and multi-level compilation in a meta-tracing just-in-time compiler.* (GPA 3.49)
- 2018-2020 **M.Sc. Mathematical and Computing Science, 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 Science, Tokyo Institute of Technology.**
Thesis title: *BacCaml: A Meta-JIT Compiler Based on Both Tracing and Method JIT Compilations.*

Employment History

- 2025.06 – 2025.09 **Heinrich-Heine-Universität Düsseldorf, Guest Researcher.**
- 2024.04 – now **Tokyo Metropolitan University, Assistant Professor.**
- 2023.04 – 2024.03 **IBM Research – Tokyo, Research Scientist.**
- 2023.04 – 2023.04 **JSPS Research Fellow PD. (declined)**
- 2021.08 – 2021.10 **IBM Research – Tokyo, Research Internship (Paid).**
- 2021.04 – 2023.03 **JSPS Research Fellow DC2.**
- 2020.11 – 2023.03 **Tokyo Institute of Technology, Dept. of Math. and Comp., Research Assistant.**

Selected Grants, Honours and Scholarships

- 2026 **Grant-in-Aid for Acceleration Fund for International Collaborative Research (International Collaborative Research Strengthening).**
- 2025 **Tokyo Metropolitan University, Funds for Research Stay in Overseas.**
Grant-in-Aid for Early-Career Scientists. Research expenses are covered by KAKENHI.
- 2024 **Grant-in-Aid for Research Activity Start-up.** Research expenses are covered by KAKENHI.
- 2023 **Research Fellowship for Young Scientists (JSPS PD).** Fellowship from the Japan Society for the Promotion of Science (JSPS), covering living expenses. Research expenses covered by KAKENHI. (declined)
- 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).
- 2019 **2nd Place, Graduate Category, ACM Student Research Competition, Association for Computing Machinery. [*]**

Selected Publications

Journal

- 1 Yusuke Izawa, Hidehiko Masuhara, and Carl Friedrich Bolz-Tereick. “A Lightweight Method for Generating Multi-Tier JIT Compilation Virtual Machine in a Meta-Tracing Compiler Framework (Artifact).” In: *Dagstuhl Artifacts Series* 11.2 (2025), 16:1–16:4. ISSN: 2509-8195. [DOI: 10.4230/DARTS.11.2.16](https://doi.org/10.4230/DARTS.11.2.16). [URL: https://drops.dagstuhl.de/entities/document/10.4230/DARTS.11.2.16](https://drops.dagstuhl.de/entities/document/10.4230/DARTS.11.2.16).
- 2 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](https://doi.org/10.5381/jot.2022.21.2.a1). arXiv: 2106.12496.
- 3 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/ipsjip.30.451](https://doi.org/10.2197/ipsjip.30.451).

Conference Proceedings

- 1 Yusuke Izawa, Junichiro Kadomoto, and Hidetsugu Irie. “VisMorph: A Live Programming Environment for Shape-Adaptive Computers.” In: *Adjunct Proceedings of the 38th Annual ACM Symposium on User Interface Software and Technology*. UIST Adjunct ’25. Busan, Korea: Association for Computing Machinery, 2025. ISBN: 9798400720369. [DOI: 10.1145/3746058.3758364](https://doi.org/10.1145/3746058.3758364). [URL: https://doi.org/10.1145/3746058.3758364](https://doi.org/10.1145/3746058.3758364).
- 2 Yusuke Izawa, Hidehiko Masuhara, and Carl Friedrich Bolz-Tereick. “A Lightweight Method for Generating Multi-Tier JIT Compilation Virtual Machine in a Meta-Tracing Compiler Framework.” In: *39th European Conference on Object-Oriented Programming (ECOOP 2025)*. Ed. by Jonathan Aldrich and Alexandra Silva. Vol. 333. Leibniz International Proceedings in Informatics (LIPIcs). Dagstuhl, Germany: Schloss Dagstuhl – Leibniz-Zentrum für Informatik, 2025, 16:1–16:29. ISBN: 978-3-95977-373-7. [DOI: 10.4230/LIPIcs.ECOOP.2025.16](https://doi.org/10.4230/LIPIcs.ECOOP.2025.16). arXiv: <http://arxiv.org/abs/2504.17460>. [URL: https://drops.dagstuhl.de/entities/document/10.4230/LIPIcs.ECOOP.2025.16](https://drops.dagstuhl.de/entities/document/10.4230/LIPIcs.ECOOP.2025.16).
- 3 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](https://doi.org/10.1145/3426422.3426977).

Selected Academic Services

- 2026 📌 Program Committee, PEPM 2026.
- 2025 – now 📌 Steering Committee, VMIL 2025.
- 2025 📌 Organizer and Program Co-Chair, VMIL 2025.
- 📌 Program Committee, Programming and Programming Language Workshop (PPL).
- 📌 Programming and Programming Language Workshop (PPL), Program Committee.
- 📌 Program Committee, PEPM 2026.
- 📌 Member, Steering Committee, VMIL 2025.
- 📌 Program Co-Chair, VMIL 2025.
- 📌 Programming and Programming Language Workshop (PPL), Program Committee.
- 2024 📌 External Reviewer, The Programming Journal, Volume 8. Issue 2.
- 📌 Reviewer, ACM Transactions on Architecture and Code Optimization.
- 📌 Reviewer, ACM Transactions on Software Engineering and Methodology.
- 📌 Program Committee, MPLR 2024, ICCQ 2024, MoreVMs 2024.
- 2023 📌 Program Committee, ICSME 2023 (Industry Track), ICCQ 2023.
- 📌 Artifact Evaluation Committee, The Programming Journal, Volume 8.

Selected Academic Services (continued)

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

2023 📌 Artifact Evaluation Committee, The Programming Journal, Volume 8.

Teaching Experience (Lead and Co-Lead)

Experiment on Compiler Construction

📌 Target: BEng 2nd year

📌 Teaching a compiler construction by building a compiler from *While* language to WebAssembly in OCaml

Experiment on Compiler Construction

📌 Target: BEng 3rd year

📌 Teaching hardware programming by using a FPGA board and Verilog

Research Seminar on Programming Language and Virtual Machine

📌 Target: BEng 3rd year

📌 Leading a seminar that discusses programming language implementation and virtual machine construction

Introduction to Programming in C (II) (Co-Lead)

📌 Target: BEng 2nd year

📌 Teaching programming in C

Excercise on Scripting Languages (Co-Lead)

📌 Target: BEng 3rd year

📌 Teaching programming in Python and small interpreter construction