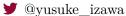
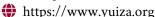
# Yusuke Izawa, Ph.D. student, PyPy Contributor

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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

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.

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.

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. [\*]

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

# Journal

#### Refereed

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* (Jan. 2022). Presented at the IPSJ PRO 2021-3-(5) in November 2021. 13 pages. In press.

Yusuke Izawa, Hidehiko Masuhara, Carl Friedrich Bolz-Tereick, and Youyou Cong. "Threaded Code Generation with a Meta-Tracing JIT Compiler." In: *The Journal of Object Technology Special Issue for ICOOOLPS 2021* (Dec. 2021). Presented at the ICOOOLPS 2021 workshop in July 2021. 11 pages. In press. arXiv: 2106.12496.

### **Conference Publications**

#### Refereed

- 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. **Refereed**. Short paper. 7 pages. 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.
- 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. **Refereed**. 15 pages. Virtual, USA: Association for Computing Machinery, Nov. 17, 2020, pp. 1–15. ISBN: 9781450381758. ODI: 10.1145/3426422.3426977.
- Hidehiko Masuhara, Shusuke Takahashi, Yusuke Izawa, and Youyou Cong. "Toward a Multi-Language and Multi-Environment Framework for Live Programming." In: *Proceedings of the 6th Workshop on Live Programming*. Live 2020. **Refereed**. 5 pages. Virtual, 2020, pp. 1–5. URL: http://liveprog.org/live-2020/Toward-a-Multi-Language-and-Multi-Environment-Framework-for-Live-Programming/.
- 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. **Refereed. Awarded [\*]**. 3 pages. Genova, Italy: Association for Computing Machinery, Apr. 2, 2019, pp. 1–3. ISBN: 9781450362573. ODI: 10.1145/3328433.3328466.
- 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. Refereed. 3 pages. Genova, Italy: Association for Computing Machinery, Apr. 2, 2019, pp. 1–3. ISBN: 9781450362573. ODI: 10.1145/3328433.3328439.

#### **Nonrefereed**

1 Yusuke Izawa, Hidehiko Masuhara, Tomoyuki Aotani, and Youyou Cong. "A Stack Hybridization for Meta-hybrid Just-in-time Compilation." In: *Proceedings of the 36th JSSST Annual Conference*. Ed. by Kei Ito. Nonrefereed. Japan Society for Software Science and Technology (JSSST). Shibaura Institute of Technology, Tokyo, Japan, Aug. 27, 2019, pp. 1–9. URL: http://jssst.or.jp/files/user/taikai/2019/proceedings.html.

### **Talks**

#### Refereed

Yusuke Izawa, Hidehiko Masuhara, Carl Friedrich Bolz-Tereick, and Youyou Cong. *Threaded Code Generation with a Meta-tracing JIT Compiler*. The 16th Workshop on Implementation, Compilation, Optimization of Object-Oriented Languages, Programs and Systems (ICOOOLPS 2021). **Refereed**. Virtual, July 13, 2021. arXiv: 2106.12496v4. URL: https://conf.researchr.org/track/ecoop-issta-2021/ecoop-issta-2021-icooolps.

### **Nonrefereed**

- 2 伊澤侑祐. A Meta-JIT Commpiler That Rules Them All. 通研共同プロジェクト「型主導コンパイルによる高性能高信頼ソフトウェア構成」研究発表会. Mar. 18, 2022.

- 5 伊澤侑祐. **汎用性と高性能を両立するハイブリッド型実行時コンパイラ**. JST ACT-X 第 5 回領域会議. Poster Presentation. Nov. 2021.
- 6 高橋 修祐, 伊澤 侑祐, 増原 英彦, and 叢 悠悠. **言語実現フレームワークに基づく汎言語的オブジェクトグラフ収集手法**. 情報処理学会第 135 回プログラミング研究会 PRO 2021-2-(7). July 21, 2021. **⊘** URL: https://sigpro.ipsj.or.jp/pro2021-2/program/.
- 7 伊澤侑祐. 汎用性と高性能を両立するハイブリッド型実行時コンパイラ. JST ACT-X 第 4 回領域会議. June 2021.
- Yusuke Izawa and Hidehiko Masuhara. Amalgamating Different JIT Compilations in a Meta-tracing JIT Compiler Framework. The 23nd JSSST Workshop on Programming and Programming Languages. Reproduction of the DLS'20 talk at JSSST PPL. Mar. 2021. URL: https://jssst-ppl.org/workshop/2021/.
- Shusuke Takahashi, Yusuke Izawa, Hidehiko Masuhara, and Youyou Cong. 汎言語的ライブプログラミング環境のためのデータ構造解析手法. The 23nd JSSST Workshop on Programming and Programming Languages. Poster Presentation. Mar. 2021. 🔗 URL: https://easychair.org/smart-program/PPL2021/.
- 11 伊澤侑祐. **汎用性と高性能を両立するハイブリッド型実行時コンパイラ**. JST ACT-X 第 3 回領域会議. Dec. 2020.
- Shusuke Takahashi, Yusuke Izawa, Hidehiko Masuhara, and Youyou Cong. ライブプログラミング環境は多言語化/多開発環境化の夢を見るか. The 37th JSSST Anual Conference. Japan Society for Software Science and Technology. Poster Presentation. Sept. 2020. 

  Ourl: https://jssst2020.wordpress.com/program/.
- Yusuke Izawa and Hidehiko Masuhara. *Making different JIT Compilations Dancing to the Same Tune, Acting in the Meta-level.* The 22nd JSSST Workshop on Programming and Programming Languages. Poster Presentation. Mar. 2020. URL: https://easychair.org/smart-program/PPL2020/.
- Yusuke Izawa, Hidehiko Masuhara, and Tomoyuki Aotani. *Meta-hybrid JIT Compilation Approach for the Path-divergence Problem*. The Kumiki 6.0 Meeting. Dec. 2019.
- Yusuke Izawa, Hidehiko Masuhara, and Tomoyuki Aotani. メタ混合 JIT コンパイラの提案. The 20nd JSSST Workshop on Programming and Programming Languages. Poster Presentation. Mar. 2018.

  O URL: https://jssst-ppl.org/workshop/2018/program.html.

## **Academic Services**

2021 Organizing Committee, the 2nd ACT-X Meeting for Researchers 2021.

Artifact Evaluation Committee, PACT 2021.

Artifact Evaluation Committee, ECOOP 2021.

Panelist, Reception of PPL 2021.

2020 Member of Student Volunteer, SPLASH 2020.

Co-reviewer of Onward! Essays, SPLASH 2020.

External reviewer of Scala Symposium, ECOOP 2020.

Candidate of Programming Language Mentoring Workshop, PLDI 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.

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, LTFX typesetting and publishing.