

The Dissertations in the Programming Research Group
at Institute of Science Tokyo
Tokyo Institute of Technology
and the University of Tokyo

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Ph.D. Dissertations

Izawa, Yusuke. “Supporting multi-scope and multi-level compilation in a meta-tracing just-in-time compiler”. Supervisor: Hidehiko Masuhara. PhD thesis. Department of Mathematical and Computing Science, School of Computing, Tokyo Institute of Technology, Mar. 2023.

Tanabe, Yudai. “A Programming Language with Versions”. Supervisor: Hidehiko Masuhara. PhD thesis. Department of Mathematical and Computing Science, School of Computing, Tokyo Institute of Technology, Mar. 2023.

Springer, Matthias. “Memory-Efficient Object-Oriented Programming on GPUs”. Supervisor: Hidehiko Masuhara. PhD thesis. Department of Mathematical, Computing Science, Graduate School of Information Science, and Engineering, Tokyo Institute of Technology, Sept. 2019.

Aotani, Tomoyuki. “Practical User-Defined Analysis-Based Pointcuts in an Aspect-Oriented Programming Language”. Supervisor: Hidehiko Masuhara. PhD thesis. Department of General Systems Studies, Graduate School of Arts and Sciences, The University of Tokyo, Sept. 2009.

Sakurai, Kouhei. “Aspect-Oriented Language Mechanisms for Component Specific Concerns”. Supervisor: Hidehiko Masuhara. PhD thesis. Department of General Systems Studies, Graduate School of Arts and Sciences, The University of Tokyo, Sept. 2009.

Masuhara, Hidehiko. “Architecture Design and Compilation Techniques Using Partial Evaluation in Reflective Concurrent Object-Oriented Languages”. Supervisor: Akinori Yonezawa. PhD thesis. Department of Information Science, Graduate School of Science, The University of Tokyo, Jan. 1999. DOI: 10.11501/3163477.

Master's Dissertations

- Yoshimura, Yusei. “トレーシング JIT コンパイラを用いた多段階計算の一実現方式”. Supervisor: Hidehiko Masuhara. MA thesis. Department of Mathematical and Computing Science, School of Computing, Institute of Science Tokyo, Dec. 2025.
- Taniguchi, Rikito. “アンマネージド・マネージドメモリを持つ VM に向けたマネージド言語コンパイラ的设计・実装と評価”. Supervisor: Hidehiko Masuhara. MA thesis. Department of Mathematical and Computing Science, School of Computing, Institute of Science Tokyo, Sept. 2025.
- Kiuchi, Kosuke. “Fork-Join モデルで記述された細粒度並列プログラムの GPU 上での効率的な実行手法の提案”. Supervisor: Hidehiko Masuhara. MA thesis. Department of Mathematical and Computing Science, School of Computing, Institute of Science Tokyo, Mar. 2025.
- Sakai, Taiga. “目的文利用により再帰呼出式の値の解釈を促すブロック型学習環境”. Supervisor: Hidehiko Masuhara. MA thesis. Department of Mathematical and Computing Science, School of Computing, Institute of Science Tokyo, Mar. 2025.
- Omae, Ryoichi. “時系列データベースにおける双方向変換技術の性能評価”. Supervisor: Hidehiko Masuhara. MA thesis. Department of Mathematical and Computing Science, School of Computing, Tokyo Institute of Technology, June 2024.
- Saito, Ayumu. “Formalization of Intrinsically Typed Probabilistic Programs”. Supervisor: Hidehiko Masuhara. MA thesis. Department of Mathematical and Computing Science, School of Computing, Tokyo Institute of Technology, Mar. 2024.
- Tsunoda, Kazuhiro. “エラー生成クイズの導入可能性調査と問題作成自動化”. Supervisor: Hidehiko Masuhara. MA thesis. Department of Mathematical and Computing Science, School of Computing, Tokyo Institute of Technology, Mar. 2024.
- Tsuyama, Syouki. “継続の使用回数に基づいた最適化を行う内在的型安全コンパイラ”. Supervisor: Hidehiko Masuhara. MA thesis. Department of Mathematical and Computing Science, School of Computing, Tokyo Institute of Technology, Mar. 2024.
- Apriyadi, Rifqi Adlan. “Adding User-Definable Representation Conversion to Debugger State Visualization”. Supervisor: Hidehiko Masuhara. MA thesis. Department of Mathematical and Computing Science, School of Computing, Tokyo Institute of Technology, Sept. 2023.
- Furudono, Naoya. “差分実行の形式化”. Supervisor: Hidehiko Masuhara. MA thesis. Department of Mathematical and Computing Science, School of Computing, Tokyo Institute of Technology, Mar. 2023.
- Ikemori, Kazuki. “Translation Between Effect Instances and Multi-prompt Control Operators”. Supervisor: Hidehiko Masuhara. MA thesis. Department of Mathematical and Computing Science, School of Computing, Tokyo Institute of Technology, Mar. 2023.

- Takahashi, Shusuke. “実行履歴を用いた差分実行型ライブプログラミング環境の実現”. Supervisor: Hidehiko Masuhara. MA thesis. Department of Mathematical and Computing Science, School of Computing, Tokyo Institute of Technology, Mar. 2023.
- Arai, Kohei. “仮想機械語を用いた第一級継続の実現方法とその比較”. Supervisor: Hidehiko Masuhara. MA thesis. Department of Mathematical and Computing Science, School of Computing, Tokyo Institute of Technology, Mar. 2022.
- Fathul Asrar Alfansuri. “Supporting Multiple Inheritance in a Python DSL for GPGPU”. Supervisor: Hidehiko Masuhara. MA thesis. Department of Mathematical and Computing Science, School of Computing, Tokyo Institute of Technology, Mar. 2022.
- Nose, Junya. “Mio: プログラムデザインを支援するブロック学習環境”. Supervisor: Hidehiko Masuhara. MA thesis. Department of Mathematical and Computing Science, School of Computing, Tokyo Institute of Technology, Mar. 2022.
- Anshar, Lubis Luthfan. “BatakJava: an Object-Oriented Programming Language with Versions”. Supervisor: Hidehiko Masuhara. MA thesis. Department of Mathematical and Computing Science, School of Computing, Tokyo Institute of Technology, Mar. 2021.
- Chenxin, Jizhe. “Nested Object Support in an Object-Oriented Domain-Specific Language for GPGPU”. Supervisor: Hidehiko Masuhara. MA thesis. Department of Mathematical and Computing Science, School of Computing, Tokyo Institute of Technology, Mar. 2021.
- Niimi, Kazuki. “Extending Effekt with Bidirectional Effects”. Supervisor: Hidehiko Masuhara. MA thesis. Department of Mathematical and Computing Science, School of Computing, Tokyo Institute of Technology, Mar. 2021.
- Ogushi, Tomoki. “ライブデータ構造プログラミングの大規模データ利用のための改善”. Supervisor: Hidehiko Masuhara. MA thesis. Department of Mathematical and Computing Science, School of Computing, Tokyo Institute of Technology, Mar. 2021.
- Izawa, Yusuke. “Stack Hybridization: A Mechanism for Bridging Two Compilation Strategies in a Meta JIT Compiler Framework”. Supervisor: Hidehiko Masuhara. MA thesis. Department of Mathematical and Computing Science, School of Computing, Tokyo Institute of Technology, Mar. 2020.
- Shu, Aochi. “Improving Keyword Programming by Using Neural Text Generation”. Supervisor: Hidehiko Masuhara. MA thesis. Department of Mathematical and Computing Science, School of Computing, Tokyo Institute of Technology, Mar. 2020.
- Tanabe, Yudai. “版を扱えるプログラミング言語 λ VL への型・版多相性の導入の研究”. Supervisor: Hidehiko Masuhara. MA thesis. Department of Mathematical and Computing Science, School of Computing, Tokyo Institute of Technology, Mar. 2020.
- Adkisson, Jeanine Miller. “Magritte: A Language for Pipe-Based Programming”. Supervisor: Hidehiko Masuhara. MA thesis. Department of Mathematical and Computing Science, School of Computing, Tokyo Institute of Technology, Sept. 2019.

- Dongfang, Li. “Deep Learning based Code Completion with ASTToken2Vec”. Supervisor: Hidehiko Masuhara. MA thesis. Department of Mathematical and Computing Science, School of Computing, Tokyo Institute of Technology, Sept. 2019.
- Kani, Akira. “共有メモリ最適化のための GPGPU プログラム合成器”. Supervisor: Hidehiko Masuhara. MA thesis. Department of Mathematical and Computing Science, School of Computing, Tokyo Institute of Technology, Mar. 2019.
- Natsume, Atsuyuki. “文脈指向プログラムの検証法の研究”. Supervisor: Hidehiko Masuhara. MA thesis. Department of Mathematical and Computing Science, School of Computing, Tokyo Institute of Technology, Mar. 2019.
- Oka, Akio. “Supporting Recursive Functions in Live Data Structure Programming”. Supervisor: Hidehiko Masuhara. MA thesis. Department of Mathematical and Computing Science, School of Computing, Tokyo Institute of Technology, Mar. 2019.
- Okugawa, Ryo. “証明支援器 Coq を使ったプログラミング言語の操作的意味論に基づく型安全性の拡張可能な形式化の研究”. Supervisor: Hidehiko Masuhara. MA thesis. Department of Mathematical and Computing Science, School of Computing, Tokyo Institute of Technology, Mar. 2018.
- Imai, Tomoki. “ライブプログラミングが生産性に与える影響に関する実証研究”. Supervisor: Hidehiko Masuhara. MA thesis. Department of Mathematical, Computing Science, Graduate School of Information Science, and Engineering, Tokyo Institute of Technology, Mar. 2017.
- Kiriyama, Hirotada. “拡張可能な構文定義の枠組み”. Supervisor: Hidehiko Masuhara. MA thesis. Department of Mathematical, Computing Science, Graduate School of Information Science, and Engineering, Tokyo Institute of Technology, Mar. 2017.
- Huang, Ruochen. “Pyrlang: A High Performance Erlang Virtual Machine Based on RPython”. Supervisor: Hidehiko Masuhara. MA thesis. Department of Mathematical, Computing Science, Graduate School of Information Science, and Engineering, Tokyo Institute of Technology, Sept. 2016.
- Asakura, Izumi. “並行分離論理に基づく GPGPU 向けデータ並列 DSL コンパイラの形式検証”. Supervisor: Hidehiko Masuhara. MA thesis. Department of Mathematical, Computing Science, Graduate School of Information Science, and Engineering, Tokyo Institute of Technology, Mar. 2016.
- Murakami, Naoya. “関心度に基づいたソースコード推薦システム”. Supervisor: Hidehiko Masuhara. MA thesis. Department of General Systems Studies, Graduate School of Arts and Sciences, The University of Tokyo, Mar. 2014.
- Nishiguchi, Yusuke. “Ruby に基づく GPGPU 向けスクリプト言語における型推論”. Supervisor: Hidehiko Masuhara. MA thesis. Department of General Systems Studies, Graduate School of Arts and Sciences, The University of Tokyo, Mar. 2014.

- Shao, Bingfeng. “アスペクト指向アルゴリズムアニメーションフレームワークの研究”. Supervisor: Hidehiko Masuhara. MA thesis. Department of General Systems Studies, Graduate School of Arts and Sciences, The University of Tokyo, Mar. 2014.
- Toyama, Manabu. “アスペクト指向言語の around アドバイスにおける型に関する柔軟性の向上と型安全性の研究”. Supervisor: Hidehiko Masuhara. MA thesis. Department of General Systems Studies, Graduate School of Arts and Sciences, The University of Tokyo, Mar. 2011.
- Aotani, Tomoyuki. “解析を利用したポイントカットを実現するアスペクト指向言語のコンパイラ”. Supervisor: Hidehiko Masuhara. MA thesis. Department of General Systems Studies, Graduate School of Arts and Sciences, The University of Tokyo, Mar. 2006.
- Liu, Song. “Value Profiling for Java Bytecode”. Supervisor: Hidehiko Masuhara. MA thesis. Department of General Systems Studies, Graduate School of Arts and Sciences, The University of Tokyo, Mar. 2006.
- Watanabe, Takuya. “類似プログラムの提示によるコード再利用支援”. Supervisor: Hidehiko Masuhara. MA thesis. Department of General Systems Studies, Graduate School of Arts and Sciences, The University of Tokyo, Mar. 2006.
- Kamio, Takahiro. “オブジェクト指向プログラムの高速化を支援するプロファイラ”. Supervisor: Hidehiko Masuhara. MA thesis. Department of General Systems Studies, Graduate School of Arts and Sciences, The University of Tokyo, Mar. 2004.
- Kawauchi, Kazunori. “Design and Implementation of Dataflow Pointcut in Aspect-Oriented Programming Languages”. Supervisor: Hidehiko Masuhara. MA thesis. Department of General Systems Studies, Graduate School of Arts and Sciences, The University of Tokyo, Mar. 2004.
- Masuhara, Hidehiko. “Study on a Reflective Architecture to Provide Efficient Dynamic Resource Management for Highly-Parallel Object-Oriented Applications”. Supervisor: Akinori Yonezawa. MA thesis. Department of Information Science, Graduate School of Science, The University of Tokyo, 1994.

Bachelor's Dissertations

- Hayashi, Minami. *ライブプログラミング環境 Kanon* におけるプログラマの関心事の強調法の提案. Supervisor: Hidehiko Masuhara. Mar. 2025.
- Inaba, Ryota. *Language Server Protocol* を用いたライブプログラミング環境 *Kanon* の汎環境化. Supervisor: Hidehiko Masuhara. Mar. 2025.
- Konishi, Kyoka. *Assisting Understanding of Delimited Continuations via Visualization*. Supervisor: Youyou Cong. Mar. 2025.
- Kumamoto, Kota. *デザインレシピに基づくプログラム設計を学習するための対話型演習環境の開発*. Supervisor: Youyou Cong. Mar. 2025.
- Matsuyama, Kosei. *Formalizing a Choreographic Programming Language as an Effect-and-Coeffect System*. Supervisor: Youyou Cong. Mar. 2025.
- Yoshio, Takuma. *可視化されたオブジェクトの編集による対話的プログラム合成手法 RefSyn* の提案. Supervisor: Hidehiko Masuhara. Mar. 2025.
- Cahyono, Jessica Belicia. *Design and Implementation of a Block-Based System for Learning How to Construct Algebraic Data Types*. Supervisor: Youyou Cong. Mar. 2024.
- Kasuya, Satsuki. *複数バージョンのクラス定義を使用できる動的型付け言語の設計とその互換性検査機構*. Supervisor: Hidehiko Masuhara. Mar. 2024.
- Kawazoe, Hironori. *依存型付き言語に対する A-正規形から継続渡し形式への型保存変換*. Supervisor: Youyou Cong. Mar. 2024.
- Suda, Taito. *深層学習モデルの形状不一致を型レベルで検査する手法の有向非巡回グラフへの拡張*. Supervisor: Hidehiko Masuhara. Mar. 2024.
- Taniguchi, Akane. *Formalizing an Object-Oriented Programming Language with Delimited Control*. Supervisor: Youyou Cong. Mar. 2024.
- Kiuchi, Kosuke. *物理系を定義させるシミュレータ SimSym* の提案. Supervisor: Hidehiko Masuhara. Mar. 2023.
- Sakai, Taiga. *デザインレシピ内で使用される目的文作成のためのブロックプログラミング環境*. Supervisor: Hidehiko Masuhara. Mar. 2023.
- Saito, Ayumu. *Formal Verification of Effectful Programs by Equational Reasoning*. Supervisor: Hidehiko Masuhara. Mar. 2022.
- Tsunoda, Kazuhiro. *プログラミングエラーメッセージの読解を促進する初学者向け演習形式の提案*. Supervisor: Hidehiko Masuhara. Mar. 2022.
- Tsuyama, Syouki. *副作用を持つプログラミング言語を型安全に定義するためのライブラリの開発に向けて*. Supervisor: Hidehiko Masuhara. Mar. 2022.
- Furudono, Naoya. *代数的エフェクトを備えた関数型言語 Koka* に対する、エフェクト割り当て最適化. Supervisor: Hidehiko Masuhara. Mar. 2021.

- Ikemori, Kazuki. 代数的エフェクトを持つ計算体系 F^{eff} へのエフェクト強制の導入と健全性の証明. Supervisor: Hidehiko Masuhara. Mar. 2021.
- Takahashi, Shusuke. データ構造ライブプログラミング環境の汎言語的な構築手法. Supervisor: Hidehiko Masuhara. Mar. 2021.
- Nose, Junya. デザインレシピに沿ったプログラミング環境に関する研究. Supervisor: Hidehiko Masuhara. Mar. 2020.
- Anshar, Lubis Luthfan. *Batak Java: Version Numbered Object-Oriented Language to Solve Dependency Hell*. Supervisor: Hidehiko Masuhara. Mar. 2019.
- Niimi, Kazuki. GPU 向けデータ並列中間言語 *Lift* におけるフィルター関数の設計と実装. Supervisor: Hidehiko Masuhara. Mar. 2019.
- Ogushi, Tomoki. データ構造の関係性を視認しやすくする自動グラフィアウト手法. Supervisor: Hidehiko Masuhara. Mar. 2019.
- Izawa, Yusuke. メタ混合 JIT コンパイラの提案. Supervisor: Hidehiko Masuhara. Mar. 2018.
- Tanabe, Yudai. プログラミング言語へのバージョンの導入の研究. Supervisor: Hidehiko Masuhara. Mar. 2018.
- Kani, Akira. メモリ階層の探い GPGPU プログラムを合成するための領域特化言語の研究. Supervisor: Hidehiko Masuhara. Mar. 2017.
- Natsume, Atsuyuki. *Rosette* による *Petri nets* の検証. Supervisor: Hidehiko Masuhara. Mar. 2017.
- Oka, Akio. *Kanon*: データ構造を可視化するライブプログラミング環境. Supervisor: Hidehiko Masuhara. Mar. 2017.
- Okugawa, Ryo. プログラミング言語の拡張可能な形式化フレームワーク *Meta-Theory a la Carte* のオブジェクト指向言語への拡張. Supervisor: Hidehiko Masuhara. Mar. 2016.
- Taya, Atsushi. 配列指向領域特化言語における複数 GPU 向けデータ表現と並列化手法. Supervisor: Hidehiko Masuhara. Mar. 2016.
- Watanabe, Keita. 多次元文脈指向言語 *Korz* の表現力の改善. Supervisor: Hidehiko Masuhara. Mar. 2016.
- Fujita, Kenta. 大域的な制御フローを切り貼りできるアスペクト指向機構 *Chop&Graft* の提案. Supervisor: Hidehiko Masuhara. Mar. 2015.
- Imai, Tomoki. *Shiranui*: テストを統合したライブプログラミング言語環境. Supervisor: Hidehiko Masuhara. Mar. 2015.
- Kiryama, Hirotada. *Haskell* のモジュラリティと効率の両立のためのコンパイル時データ合成. Supervisor: Hidehiko Masuhara. Mar. 2015.
- Asakura, Izumi. 型安全なシェルプログラミングのための領域特化言語の提案. Supervisor: Hidehiko Masuhara. Mar. 2014.
- Moriya, Ryogo. 携帯端末アプリケーションの文脈指向言語を用いた省電力機能のモジュール化. Supervisor: Hidehiko Masuhara. Mar. 2014.

- Okumura, Toshifumi. *GPGPU* における *Merge Sort* の付加均等化手法. Supervisor: Hidehiko Masuhara. Mar. 2014.
- Murakami, Naoya. コード推薦システムの検索アルゴリズムの改良と既存プログラムを用いた設定値の調整. Supervisor: Hidehiko Masuhara. Mar. 2012.
- Nishiguchi, Yusuke. ブロック付メソッド呼出を用いて簡便に *GPGPU* プログラミングを行う *Ruby* 言語変換系. Supervisor: Hidehiko Masuhara. Mar. 2011.
- Toyama, Manabu. *Around* アドバイスの型緩和織込を可能とする *AspectJ* 処理系の作成. Supervisor: Hidehiko Masuhara. Mar. 2009.
- Kawachi, Takashi. 大量テキストを情報源に用いた対話システムの構築. Supervisor: Hidehiko Masuhara. Mar. 2003.
- Masuhara, Hidehiko. *Study on Implementation of an Object-Oriented Concurrent Reflective Language*. Bachelor's Thesis, Department of Information Science, Faculty of Science, The University of Tokyo. Supervisor: Akinori Yonezawa. Feb. 1992.