Dr Dimi Racordon, Ph.D.

Personal Information

Date of birth:	26 May 1990
Nationality:	Swiss
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Research interests

My research advances methods and techniques that empower developers to write expressive, efficient, and reliable software. I gravitate toward **model checking**, **formal verification**, and **programming language design**, with a particular focus on advanced **type systems**.

Education

- **Ph.D. in Computer Science**, University of Geneva, Switzerland (2019)
  Obtained with the highest possible distinction
  Thesis title: *Revisiting Memory Assignment Semantics in Imperative Programming Languages*
  Advisor: Didier Buchs
- **Master in Computer Science**, University of Geneva, Switzerland (2013)
  Thesis title: *Model Checking of Gamma Programs with Algebraic Nets*
  Advisor: Didier Buchs
- **Bachelor in Computer Science**, HEPIA, Geneva, Switzerland (2011)

Employment

EPFL, Switzerland

- **Post-doctoral researcher** (2023 - present)
  Advisor: Martin Odersky

Northeastern University, USA

- **Post-doctoral researcher** (2021 - 2023)
  Advisor: Jan Vitek

University of Geneva, Switzerland

- **Post-doctoral researcher** (2019 - 2021)
  Advisor: Didier Buchs
- **Research and teaching assistant** (2014 - 2019)
- **Academic tutor** (2013 - 2014)

HEPIA, Geneva, Switzerland

- **Research assistant** (2012 - 2013)

Socialease SA

- **Co-founder and CTO** (2015 - 2019)

Publications

- **Type Checking with Rewriting Rules**
  Dimi Racordon
  Under review

- **Method Bundles**
  Dimi Racordon, Dave Abrahams
  Under review

- **Use Site Checking Considered Harmful**
  Dimi Racordon, Benjamin Chung
  Under review

- **Existential containers in Scala**
  Dimi Racordon, Eugene Flesselle, Matt Bovel
  *In International Conference on Managed Programming Languages and Runtimes (**MPLR 2024**), co-located with ECOOP/ISSTA*

- **Borrow checking Hylo**
  Dimi Racordon, Dave Abrahams
  *In International Workshop on Aliasing, Capabilities and Ownership (**IWACO 2023**), co-located with SPLASH*

- **Oxidize: A Step-Debugger for Static Semantics**
  Peter Chon, Dimi Racordon, Dave Abrahams
  *In International Workshop on Aliasing, Capabilities and Ownership (**IWACO 2023**), co-located with SPLASH*

- **The Val Object Model**
  Dave Abrahams, Sean Parent, Dimi Racordon, David Sankel
  In the C++ Standards Committee Papers, 2022

- **Implementation Strategies for Mutable Value Semantics**
  Dimi Racordon, Denys Shabalin, Daniel Zheng, Dave Abrahams, Brennan Saeta
  *Journal of Object Technology (**JoT**) 21(2):1-11, 2022*

- **Toward a Lingua Franca for Memory Safety**
  Dimi Racordon, Aurélien Coet, Didier Buchs
  *Journal of Object Technology (**JoT**) 21(2):1-11, 2022*

- **Belief Programming with Map Family Decision Diagrams**
  Sylvio Fossasti, Aurélien Coet, Dimi Racordon
  *In International Workshop on Implementation, Compilation, Optimization of Object-Oriented Languages, Programs and Systems (**ICOOOLPS 2022**), co-located with ECOOP*

- **Native Implementation of Mutable Value Semantics**
  Dimi Racordon, Denys Shabalin, Daniel Zheng, Dave Abrahams, Brennan Saeta
  *In International Workshop on Implementation, Compilation, Optimization of Object-Oriented Languages, Programs and Systems (**ICOOOLPS 2021**), co-located with ECOOP*

- **Fuel: A Compiler Framework for Safe Memory Management**
  Dimi Racordon, Aurélien Coet, Didier Buchs
  *In International Workshop on Implementation, Compilation, Optimization of Object-Oriented Languages, Programs and Systems (**ICOOOLPS 2021**), co-located with ECOOP*

- **From ASTs to Machine Code with LLVM**
  Dimi Racordon
  *In Companion Proceedings of the International Conference on the Art, Science, and Engineering of Programming (**Programming 2021**)*

- **Featherweight Swift: A Core Calculus for Swift's Type System**
  Dimi Racordon, Didier Buchs
  *In ACM SIGPLAN International Conference on Software Language Engineering (**SLE 2020**)*

- **Solving Schedulability as a Search Space Problem with Decision Diagrams**
  Dimi Racordon, Aurélien Coet, Emmanouela Stachtiari, Didier Buchs
  *In International Symposium on Search-Based Software Engineering (**SSBSE 2020**)*

- **Functional Block Programming and Debugging**
  Dimi Racordon, Emmanouela Stachtiari, Damien Morard, Didier Buchs
  *In International Workshop on Live Programming (**LIVE 2020**), co-located with SPLASH*

- **LogicKit: Bringing Logic Programming to Swift**
  Dimi Racordon, Didier Buchs
  *In Companion Proceedings of the International Conference on the Art, Science, and Engineering of Programming (**Programming 2020**)*

- **Implementing a language with explicit assignment semantics**
  Dimi Racordon, Didier Buchs
  *In International Workshop on Virtual Machines and Intermediate Languages (**VMIL 2019**), co-located with SPLASH*

- **A practical Type System for Safe Aliasing**
  Dimi Racordon, Didier Buchs
  *In ACM SIGPLAN International Conference on Software Language Engineering (**SLE 2018**)*

- **A model Checker Collection for the Model Checking Contest Using Docker and Machine Learning**
  Didier Buchs, Stefan Klikovits, Alban Linard, Romain Mencattini, Dimi Racordon
  *In International Conference on Application and Theory of Petri nets and Concurrency (**Petri Nets 2018**)*

- **Petri Sport: A Sport for Petri Netters**
  Stefan Klikovits, Alban Linard, Dimi Racordon, Didier Buchs
  *In International Workshop on Petri Nets and Software Engineering (**PNSE 2018**), co-located with Petri Nets*

- **Démystifier les concepts informatiques par l'expérimentation**
  Dimi Racordon, Didier Buchs
  *In Colloque Francophone de Didactique de l'Informatique (**Didapro 2018**)*

- **Extracting Formal Specifications to Strengthen Type Behavior Testing**
  Dimi Racordon, Didier Buchs
  *In Student Forum of European Dependable Computing Conference (**EDCC 2017**)*

- **Verifying Multi-Core Schedulability with Data Decision Diagrams**
  Dimi Racordon, Didier Buchs
  *In International Workshop on Software Engineering for Resilient Systems (**SERENE 2016**), co-located with EDCC*

- **TREXMO: a translation tool to support the use of regulatory occupational exposure models**
  Nenad Savic, Dimi Racordon, Didier Buchs, Bojan Gasic, David Vernez
  Annals of occupational hygiene 60(8): 991-1008, 2016
- **TREXMO: un nouvel outil d'aide à l'utilisation de modèles pour l'évaluation de l'exposition professionnelle.**
  Nenad Savic, Dimi Racordon, Didier Buchs, Bojan Gasic, David Vernez
  In Conférence INRS sur la recherche en santé au travail (2015)
- **Computing Bounds for Counter Automata**
  Maximilien Colange, Dimi Racordon, Didier Buchs
  *Electronic Communication of the European Association of Software Science and Technology (**EASST**) 72, 2015*
- **Introducing Formal Verification with Lego**
  David Lawrence, Dimi Racordon, Maximilien Colange, Steve Hostettler, Alban Linard, Edmundo López Bóbeda, Alexis Marechal, Matteo Risoldi, Nicolas Sedlmajer, Didier Buchs
  *In International Workshop on Fun With Formal Methods (**FWFM 2014**), co-located with LICS*

Invited talks and Keynotes

- **Val wants to be your friend**
  Invited Speaker, CppCon, Aurora, Colorado, September 2022
- **A Future of Value Semantics and Generic Programming**
  Co-speaker, CppNow, Aspen, Colorado, May 2022

Advising

Master students

- Anselm von Wangenheim, expected 2024 (co-advised with Heiko Röglin)
  Thesis title: Optimized Immutable Vector Concatenation in Scala
- Patrick Sardinha, graduated July 2021 (co-advised with Didier Buchs)
  Thesis title: A declarative approach to graphic programming
- Marvin Fourastie, graduated July 2021 (co-advised with Didier Buchs)
  Thesis title: FunBlocks Checker
- Tien-Tso Ning, graduated February 2021 (co-advised with Didier Buchs)
  Thesis title: Conversational Modeling from a Process-Oriented Perspective

Bachelor students

- Nicolas Papale, graduated September 2018 (co-advised with Didier Buchs)
  Thesis title: Détection de race condition en Elm avec l'exécution symbolique
- Patrick Sardinha, graduated February 2016 (co-advised with Didier Buchs)
  Thesis title: Probabilistic Leader Election with Anonymous Nodes and No Port Awareness

Projects

- **Automated Code Documentation Generation for the Hylo Language**
  Delft University of Technology , 2024
  Markas Aišparas, Alex Cazacu, Eviatar Hadasi, Ambrush Tóth, Thomas van Weert

ACM Mentees

- Ho Han Kit Ivan, 2022
  Topic: Programming language design
- Noah Lev Bartell-Mangel, 2021
  Topic: Compiler optimization

Teaching

EPFL, Switzerland

- (CS-320): Computer Language Processing (2024 - Present)

University of Geneva, Switzerland (as assistant)

- (14X014): Advanced Formal Tools (2014 - 2021)
- (14X007): Competition and Distribution (2014 - 2021)
- (12X005): Outils formels de modélisation (2014 - 2021)

- (11X020): Formation de base en informatique (2020 - 2021)

Service

- ACM SIPLAN Mentoring Program, since January 2020
- Organizer of **ICOOOLPS 2024**, co-located with ECOOP 2024
- Organizer of **VIMPL 2024**, co-located with <Programming23>
- Organizer of **ICOOOLPS 2023**, co-located with ECOOP 2023
- Organizer of **VIMPL 2023**, co-located with <Programming23>
- Program Committee (PC) of **CPPCon 2023**
- Co-organizer of **REBASE 2021**, co-located with ECOOP
- Extended Review Committee (ERC) of **OOPSLA 2021**
- Artifact Evaluation Committee (AEC) of **OOPSLA 2021**
- Faculty Hiring Committee, University of Geneva, 2019
- Extended Review Committee (ERC) of **PetriNets 2019**
- Extended Review Committee (ERC) of **PetriNets 2016**

Outreach

- Committee for the creation of the high-school computer science program in the canton of Geneva, Switzerland (2020 - 2021)
- Infoscope (contributor and animator), University of Geneva (2017 - 2020)
- Nuits de la Sciences, University of Geneva (2016 - 2017)
- TecDays, University of Geneva (2015)

Industry Funding and Recognition

- Venture Kick I and II,CHF 30,000 (2018)
- Foundation for Technological Innovation, CHF 50,000 (2018)
- MassChallenge finalist (2017)

Selected Open-Source Contributions

- Hylo (`https://github.com/hylo-lang/hylo`)
- LogicKit (`https://github.com/kyouko-taiga/LogicKit`)
- DDKit (`https://github.com/kyouko-taiga/DDKit`)

For a complete list, see my GitHub profile at `github.com/kyouko-taiga`.