

Publications by Giuseppe Castagna.

[version of April 2, 2024]

Books

- [1] G. Castagna. *Object-Oriented Programming: A Unified Foundation*. Progress in Theoretical Computer Science Series. Birkäuser, Boston, 1997. ISBN 3-7643-3905-5 (hardcover, 388 pages).

Book chapters

- [2] Giuseppe Castagna. Programming with union, intersection, and negation types. In Bertrand Meyer, editor, *The French School of Programming*. Springer, March 2024. ISBN 978-3-031-34517-3. Preprint at arXiv:2111.03354.
- [3] V. Benzaken, G. Castagna, H. Hosoya, B.C. Pierce, and S. Vansummeren. *The Encyclopedia of Database Systems*, chapter “XML Typechecking”. Springer, 2009. ISBN 978-0-387-35544-3.
- [4] M. Bugliesi, G. Castagna, S. Crafa, R. Focardi, and V. Sassone. Name-passing calculi and crypto-primitives: a survey. In *Foundations of Security Analysis and Design*, number 2946 in Lecture Notes in Computer Science, pages 91–138. Springer, 2004.

Edition of proceedings or special issues

- [5] G. Castagna and A. Gordon, editors. *POPL 2017 - Proceedings of the 42nd Annual ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages*. ACM Press, 2017.
- [6] G. Castagna, editor. *ECOOP 2013 - Proceedings of the 27th European Conference on Object-Oriented Programming*, volume 7920 of *Lecture Notes in Computer Science*. Springer, 2013.
- [7] G. Castagna and J.T. Boyland, editors. *Selected Papers of the “18th European Symposium on Programming”*. Special issue of *Theoretical Computer Science*, volume 411, issue 51-52. Elsevier, 2010.
- [8] G. Castagna, editor. *Programming Languages and Systems: Proceedings of the 18th European Symposium on Programming, ESOP 2009*, volume 5502 of *Lecture Notes in Computer Science*. Springer, 2009.
- [9] G. Castagna and I. Walukiewicz, editors. *Selected Papers of the Conference “International Colloquium on Automata, Languages and Programming 2008”*. Special issue of *Logical Methods in Computer Science*. IfCoLog, 2009.
- [10] R. Amadio, A. Asperti, and G. Castagna, editors. *From Type Theory to Morphological Complexity*. Special issue of *Information and Computation*, volume 207 issue 5. Academic Press, 2008.
- [11] G. Castagna and A. Compagnoni, editors. *Foundation of Object-Oriented Languages*. Special issue of *Information and Computation*, volume 177(1). Academic Press, 2002.

Refereed international journals

- [12] Giuseppe Castagna, Guillaume Duboc, and José Valim. The design principles of the Elixir type system. *The Art, Science, and Engineering of Programming*, 8(2), 2024. Video of the presentation I gave at the Erlang Symposium 2023: <https://youtu.be/VYmo867YF6g>. Also available, Guillaume Duboc’s presentation at ElixirConf EU 2023: <https://www.youtube.com/watch?v=gJJH7a2J9O8>.

- [13] G. Castagna, M. Laurent, V. Lanvin, and K. Nguyễn. Revisiting occurrence typing. *Science of Computer Programming*, 217:102781, mar 2022.
- [14] G. Castagna. Covariance and contravariance: a fresh look at an old issue (a primer in advanced type systems for learning functional programmers). *Logical Methods in Computer Science*, 16(1):15:1–15:58, 2020. First version: 2013. New corrected and enhanced version: February 1, 2023.
- [15] D. Ancona, V. Bono, M. Bravetti, G. Castagna, J. Campos, P.-M. Deniérou, S. Gay, N. Gesbert, E. Giachino, R. Hu, E. Broch Johnsen, F. Martins, V. Mascardi, F. Montesi, N. Ng, R. Neykova, L. Padovani, V. Vasconcelos, and N. Yoshida. Behavioral Types in Programming Languages. *Foundations and Trends in Programming Languages*, 3:95–230, 2016.
- [16] V. Benzaken, G. Castagna, D. Colazzo, and K. Nguyễn. Optimizing XML querying using type-based document projection. *ACM Transactions on Database Systems*, 38(1):4:1–4:45, 2013.
- [17] G. Castagna, M. Dezani Ciancaglini, and L. Padovani. On global types and multi-party sessions. *Logical Methods in Computer Science*, 8(1:24):1–45, 2012. Extended version of the invited talk given at FMOODS & FORTE 2011.
- [18] G. Castagna, N. Gesbert, and L. Padovani. A theory of contracts for web services. *ACM Transactions on Programming Languages and Systems*, 31(5):1–61, 2009. Supersedes the article in POPL ’08.
- [19] H. Hosoya, A. Frisch, and G. Castagna. Parametric polymorphism for XML. *ACM Transactions on Programming Languages and Systems*, 32(1):1–56, 2009.
- [20] G. Castagna, R. De Nicola, and D. Varacca. Semantic subtyping for the π -calculus. *Theoretical Computer Science*, 398(1-3):217–242, 2008. Essays in honour of Mario Coppo, Mariangiola Dezani-Ciancaglini and Simona Ronchi della Rocca.
- [21] A. Frisch, G. Castagna, and V. Benzaken. Semantic subtyping: dealing set-theoretically with function, union, intersection, and negation types. *Journal of the ACM*, 55(4):1–64, 2008.
- [22] A. Phillips, L. Cardelli, and G. Castagna. A graphical representation for biological processes in the stochastic pi-calculus. *Transactions on Computational Systems Biology*, 7:123–152, 2006.
- [23] G. Castagna, J. Vitek, and F. Zappa Nardelli. The Seal Calculus. *Information and Computation*, 201(1):1–54, 2005.
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- [26] G. Castagna and G. Chen. Dependent types with subtyping and late-bound overloading. *Information and Computation*, 168(1):1–67, 2001.
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- [29] K. Bruce, L. Cardelli, G. Castagna, The Hopkins Object Group, G. Leavens, and B. Pierce. On binary methods. *Theory and Practice of Object Systems*, 1(3):221–242, 1996.

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- [33] G. Castagna, G. Ghelli, and G. Longo. A calculus for overloaded functions with subtyping. *Information and Computation*, 117(1):115–135, February 1995.

Invited Articles

- [34] Giuseppe Castagna, Mariangola Dezani-Ciancaglini, Elena Giachino, and Luca Padovani. Foundations of session types: 10 years later. In *Principles and Practice of Programming Languages 2019 (PPDP ’19)*, pages 1–3. ACM, New York, 2019. Invited talk, *Most Influential Paper 10-Years Award*.
- [35] G. Castagna, M. Dezani Ciancaglini, and L. Padovani. On global types and multi-party sessions. In *FMOODS & FORTE 2011, joint 13th IFIP International Conference on Formal Methods for Open Object-based Distributed Systems and 31st IFIP International Conference on FORMal TEchniques for Networked and Distributed Systems.*, number 6722 in Lecture Notes in Computer Science. Springer, 2011. Invited talk.
- [36] G. Castagna. CDuce, an XML processing programming language: From theory to practice. In *Proc. of SBLP 2007, XI Brazilian Symposium on Programming Languages*, pages 3–4. SBC - Brazilian Computer Society, 2007.
- [37] G. Castagna. Patterns and types for querying XML. In *Proceedings of DBPL 2005, 10th International Symposium on Database Programming Languages* Lecture Notes in Computer Science, n.3774, pages 1–26 Springer (full version) and *XSym 2005, 3rd International XML Database Symposium* Lecture Notes in Computer Science n.3671, pages 1-3, Springer (summary), 2005. Joint DBPL-XSym invited talk.
- [38] G. Castagna. Semantic subtyping: challenges, perspectives, and open problems. In *ICTCS 2005, Italian Conference on Theoretical Computer Science*, number 3701 in Lecture Notes in Computer Science, pages 1–20. Springer, 2005.
- [39] G. Castagna and A. Frisch. A gentle introduction to semantic subtyping. In *Proceedings of PPDP ’05, the 7th ACM SIGPLAN International Symposium on Principles and Practice of Declarative Programming*, pages 198-208, ACM Press (full version) and *ICALP ’05, 32nd International Colloquium on Automata, Languages and Programming*, Lecture Notes in Computer Science n. 3580, pages 30-34, Springer (summary), Lisboa, Portugal, July 2005. Joint ICALP-PPDP keynote talk.
- [40] G. Castagna. An overview of Boxed Ambients. In *TOSCA ’01, Theory of Concurrency, Higher Order, and Types Workshop*, number 62 in Electronic Notes in Theoretical Computer Science, pages 1–5. Elsevier Science B.V., 2001. Invited lecture based on joint work with M. Bugliesi and S. Crafa: [73, 74].

International Conferences with peer reviewing selection

- [41] Giuseppe Castagna, Mickaël Laurent, and Kim Nguyễn. Polymorphic type inference for dynamic languages. *Proc. ACM Program. Lang.*, 8(POPL), January 2024.
- [42] Giuseppe Castagna. Typing records, maps, and structs. *Proc. ACM Program. Lang.*, 7(ICFP), September 2023. The video of the presentation given at ICFP 23 is available here.

- [43] Giuseppe Castagna, Mickaël Laurent, Kim Nguyễn, and Matthew Lutze. On type-cases, union elimination, and occurrence typing. *Proc. ACM Program. Lang.*, 6(POPL), January 2022.
- [44] G. Castagna, G. Duboc, V. Lanvin, and J. G. Siek. A space-efficient call-by-value virtual machine for gradual set-theoretic types. In *IFL 2019: the 31st Symposium on Implementation and Application of Functional Languages*, sep 2019.
- [45] Giuseppe Castagna, Victor Lanvin, Tommaso Petrucciani, and Jeremy G. Siek. Gradual typing: a new perspective. *Proc. ACM Program. Lang.*, 3, Article 16(POPL '19: 46th ACM Symposium on Principles of Programming Languages), January 2019.
- [46] Tommaso Petrucciani, Giuseppe Castagna, Davide Ancona, and Elena Zucca. Semantic subtyping for non-strict languages. In *24th International Conference on Types for Proofs and Programs (TYPES 2018)*, volume 130 of *Leibniz International Proceedings in Informatics (LIPIcs)*, pages 4:1–4:24. Schloss Dagstuhl–Leibniz-Zentrum fuer Informatik, 2019.
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- [53] V. Benzaken, G. Castagna, K. Nguyễn, and J. Siméon. Static and dynamic semantics of NoSQL languages. In *POPL '13, 40th ACM Symposium on Principles of Programming Languages*, pages 101–113, 2013.
- [54] G. Castagna and Z. Xu. Set-theoretic foundation of parametric polymorphism and subtyping. In *ICFP '11: 16th ACM-SIGPLAN International Conference on Functional Programming*, pages 94–106, September 2011.
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- [86] G. Castagna, R. Rousseau, and J.-C. Royer. Fiabilité des langages à objets : le typage est-il suffisant ? *l'Objet*, 4(1), 1998.
- [87] G. Castagna. Le modèle fondé sur la surcharge : une visite guidée. *Technique et Science Informatiques*, 15(6):673–708, June 1996.

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- [88] V. Benzaken, G. Castagna, D. Colazzo, and C. Miachon. Pattern by Example: type-driven visual programming of XML queries. In *Bases de Données Avancées*, 2007. Preliminary version of [57].
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International workshops on invitation or selection based on peer reviewing

- [94] G. Castagna, H. Im, K. Nguyễn, and V. Benzaken. Towards a core calculus for XQuery 3.0. In *Data-Centric Programming workshop (co-located with POPL '14)*, January 2014. Electronic proceedings.
- [95] G. Castagna. Tackling parametric polymorphism for XML, 2010. Invited talk at the *Symposium on Computer Science and Novel Technologies*.
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- [97] G. Castagna and K. Nguyễn. Typed iterators for XML. In *PLAN-X '08, 6th ACM-SIGPLAN Workshop on Programming Language Technologies for XML*, January 2008. Superseded by the ICFP '08 version.
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- [102] V. Benzaken, G. Castagna, and A. Frisch. CDuce: a white paper. In *PLAN-X '02, Programming Language Technologies for XML*, Pittsburgh, October 2002. PC selection. Preliminary version of [68].
- [103] M. Bugliesi, G. Castagna, and S. Crafa. Boxed Ambients: types and security. In *International Workshop on Concurrency and Coordination*, Lipari, 2001. PC selection.
- [104] M. Bugliesi and G. Castagna. Mobile objects. In *7th Workshop on Foundation of Object-Oriented Languages*, Boston, 2000. PC selection.

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- [106] G. Castagna and J. Vitek. Towards a calculus of safe mobile computations. In *IEEE Workshop on Internet Programming Languages*, 1998. PC selection. Extended version published in [27].
- [107] G. Castagna and G. Chen. Dependent types with subtyping and late-bound overloading. In *Workshop on Subtyping, inheritance and modular development of proofs.*, University of Durham, 1997. PC selection. Published in [26].
- [108] G. Castagna. Covariance and contravariance: conflict without a cause. In *Workshop on advance in type systems for computing*, Newton Institute, Cambridge, 1995. PC selection. Published in [31].
- [109] G. Castagna. Second order *ad hoc* polymorphism. In *Workshop on Foundation of Object-Oriented Languages*, Stanford, 1993. Invited paper. Published in [30].
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**User guides, reference manuals, descriptive notes
of applications or programming languages**

- [112] Giuseppe Castagna, Mickaël Laurent, and Kim Nguyen. *Prototype: Polymorphic Type Inference for Dynamic Languages*, October 2023.
- [113] Giuseppe Castagna, Mickaël Laurent, Kim Nguyễn, and Matthew Lutze. *Prototype for Article: On Type-Cases, Union Elimination, and Occurrence Typing*, 2022. Online interactive version available at <https://typecaseunion.github.io>. Reference Article: <https://doi.org/10.1145/3498674>. Software: <https://doi.org/10.1145/3462306>.
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Submitted articles

- [121] Giuseppe Castagna and Loïc Peyrot. Polymorphic records for dynamic languages. ArXiv preprint: arXiv:2404.00338, 4 2024.

Course notes

- [122] G. Castagna. Soutypage et programmation à objets. Technical report, DEA sémantique, preuves et programmation, ENS, CNAM, Universités Paris VI et Paris VII, 1996. 122 pages.
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