

Simon Oddershede Gregersen

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Employment

2024 – **New York University**. Postdoctoral fellow. Advised by Joseph Tassarotti.
2023 – 2024 **Aarhus University**. Postdoctoral researcher. Advised by Lars Birkedal.
2021 **Huawei Technologies R&D (UK), Edinburgh**. Research intern.
2017 **Aarhus University**. Center for Advanced Software Analysis. Student programmer.
2015 – 2017 **CCI Europe A/S (now Stibo DX)**. Student software developer.

Education

2017 – 2023 **PhD in Computer Science**. Aarhus University.
Advisors: Amin Timay and Lars Birkedal
Thesis: Higher-Order Separation Logic for Distributed Systems and Security
2017 – 2020 **MSc in Computer Science**. Aarhus University
2014 – 2017 **BSc in Computer Science**. Aarhus University

Publications

- [10] Haselwarter, P. G., Li, K. H., Aguirre, A., **Gregersen, S. O.**, Tassarotti, J., Birkedal, L., “Approximate Relational Reasoning for Higher-Order Probabilistic Programs”. In: *Proc. ACM Program. Lang.* 9.POPL (2025), pp. 1196–1226. DOI: [10.1145/3704877](https://doi.org/10.1145/3704877).
- [9] Haselwarter, P. G., Li, K. H., de Medeiros, M., **Gregersen, S. O.**, Aguirre, A., Tassarotti, J., Birkedal, L., “Tachis: Higher-Order Separation Logic with Credits for Expected Costs”. In: *Proc. ACM Program. Lang.* 8.OOPSLA2 (2024), pp. 1189–1218. DOI: [10.1145/3689753](https://doi.org/10.1145/3689753).
- [8] **Gregersen, S. O.**, Aguirre, A., Haselwarter, P. G., Tassarotti, J., Birkedal, L., “Almost-Sure Termination by Guarded Refinement”. In: *Proc. ACM Program. Lang.* 8.ICFP (2024), pp. 203–233. DOI: [10.1145/3674632](https://doi.org/10.1145/3674632).
- [7] Aguirre, A., Haselwarter, P. G., de Medeiros, M., Li, K. H., **Gregersen, S. O.**, Tassarotti, J., Birkedal, L., “Error Credits: Resourceful Reasoning about Error Bounds for Higher-Order Probabilistic Programs”. In: *Proc. ACM Program. Lang.* 8.ICFP (2024), pp. 284–316. DOI: [10.1145/3674635](https://doi.org/10.1145/3674635).
- [6] Timany, A., **Gregersen, S. O.**, Stefanescu, L., Hinrichsen, J. K., Gondelman, L., Nieto, A., Birkedal, L., “Trillium: Higher-Order Concurrent and Distributed Separation Logic for Intensional Refinement”. In: *Proc. ACM Program. Lang.* 8.POPL (2024), pp. 241–272. DOI: [10.1145/3632851](https://doi.org/10.1145/3632851).

- [5] **Gregersen, S. O.**, Aguirre, A., Haselwarter, P. G., Tassarotti, J., Birkedal, L., “Asynchronous Probabilistic Couplings in Higher-Order Separation Logic”. In: *Proc. ACM Program. Lang.* 8.POPL (2024), pp. 753–784. DOI: [10.1145/3632868](https://doi.org/10.1145/3632868).
- [4] **Gregersen, S. O.**, Bay, J., Timany, A., Birkedal, L., “Mechanized Logical Relations for Termination-Insensitive Noninterference”. In: *Proc. ACM Program. Lang.* 5.POPL (2021), pp. 1–29. DOI: [10.1145/3434291](https://doi.org/10.1145/3434291).
- [3] Gondelman, L., **Gregersen, S. O.**, Nieto, A., Timany, A., Birkedal, L., “Distributed Causal Memory: Modular Specification and Verification in Higher-Order Distributed Separation Logic”. In: *Proc. ACM Program. Lang.* 5.POPL (2021), pp. 1–29. DOI: [10.1145/3434323](https://doi.org/10.1145/3434323).
- [2] Krogh-Jespersen, M., Timany, A., Ohlenbusch, M. E., **Gregersen, S. O.**, Birkedal, L., “Aneris: A Mechanized Logic for Modular Reasoning about Distributed Systems”. In: *Programming Languages and Systems - 29th European Symposium on Programming, ESOP 2020, Held as Part of the European Joint Conferences on Theory and Practice of Software, ETAPS 2020, Dublin, Ireland, April 25-30, 2020, Proceedings.* 2020, pp. 336–365. DOI: [10.1007/978-3-030-44914-8_13](https://doi.org/10.1007/978-3-030-44914-8_13).
- [1] **Gregersen, S. O.**, Thomsen, S. E., Askarov, A., “A Dependently Typed Library for Static Information-Flow Control in Idris”. In: *Principles of Security and Trust - 8th International Conference, Held as Part of the European Joint Conferences on Theory and Practice of Software, ETAPS 2019, Prague, Czech Republic, April 6-11, 2019, Proceedings.* 2019, pp. 51–75. DOI: [10.1007/978-3-030-17138-4_3](https://doi.org/10.1007/978-3-030-17138-4_3).

Manuscripts

- [A] **Gregersen, S. O.**, Agarwal, C., Tassarotti, J., *Logical Relations for Formally Verified Authenticated Data Structures*. 2025. arXiv: [2501.10802](https://arxiv.org/abs/2501.10802) [cs.LG]

Awards

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| 2024 | ICFP Distinguished Paper Award |
| 2024 – 2026 | Carlsberg Foundation, Internationalization Fellowship (CF23-0791)
DKK 1,020,000. Funding for postdoctoral position at New York University. |

Teaching and advising

- Teaching assistant for *Programming Languages* (BSc course, 2018, 2019 & 2022), *Functional Programming* (MSc course, 2018), and *Compilation* (BSc course, 2020) at AU.
- Guest lecturer for *Program Analysis and Verification* (MSc course, 2019) on *Concurrency and Invariants* and *Language-Based Security* (MSc course, 2019) on *Spectre and Meltdown* at AU.
- Co-examiner for *Program Analysis* (MSc course, 2023) at AU.
- Co-advised 4 MSc student projects and a BSc thesis on type safety and logical relations at AU.
- Informal co-advisor of PhD student Kwing Hei Li at AU.
- Informal co-advisor of PhD student Chaitanya Agarwal at NYU.

Selected talks

- *Trillium: Intensional Refinement in Higher-Order Separation Logic*.
Contributed talk at [New England Systems Verification Day](#) (16 Apr 2024).

- *Asynchronous Probabilistic Couplings in Higher-Order Separation Logic*.
Invited talk at the Bristol Programming Languages Research group seminar (19 Jul 2023).
- *Asynchronous Probabilistic Couplings in Higher-Order Separation Logic*.
Contributed talk at **VeriProP** (17 July 2023).
- *Mechanized Logical Relations for Termination-Insensitive Noninterference*.
Invited talk at the Chalmers ProgLog/Security seminar (4 Nov 2020).

Other professional activities

- **Artifact evaluation committee** for **POPL 2022**.
- **External reviewing**

Conferences	LICS 2024, CCS 2022, POPL 2022, OOPSLA 2022, ICFP 2022, CSF 2022 & 2021, ESOP 2020
Journals	Theoretical Computer Science (TCS) Transactions on Software Engineering and Methodology (TOSEM)