

# 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. Advised by Dan Ghica.  
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.  
Advised by 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). 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). 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). 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). 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). 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). 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). 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). 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: *29th European Symposium on Programming, ESOP 2020, Proceedings*. 2020. 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. 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”. In: *CoRR abs/2501.10802* (2025). arXiv: [2501.10802](https://arxiv.org/abs/2501.10802) [cs.LG].
- [B] Li, K. H., Aguirre, A., **Gregersen, S. O.**, Haselwarter, P. G., Tassarotti, J., Birkedal, L., “Modular Reasoning about Error Bounds for Concurrent Probabilistic Programs”. In: *CoRR abs/2503.04512* (2025). arXiv: [2503.04512](https://arxiv.org/abs/2503.04512) [cs.LG].

## Awards

2024	<b>ICFP Distinguished Paper Award</b>
2024 – 2026	<b>Carlsberg Foundation, Internationalization Fellowship (CF23-0791)</b> DKK 1,020,000 (≈ USD 150,000).

## Teaching and Advising

### Aarhus University

- (Head) teaching assistant for *Programming Languages* (BSc, 2018, 2019 & 2022).
- Teaching assistant for *Compilation* (BSc, 2020).
- Teaching assistant for *Functional Programming* (MSc, 2018).
- Developed teaching and course materials for *Programming Languages*.
- *Introduction to Science Teaching*, Aarhus University, 2018, pedagogics course for teaching assistants.
- Contributed to the *Iris Tutorial*, an introduction to the Iris separation logic framework in Coq.
- Guest lecturer for *Program Analysis and Verification* (MSc, 2019) on *Concurrency and Invariants*.
- Guest lecturer for *Language-Based Security* (MSc, 2019) on *Spectre and Meltdown*.
- Co-examiner for *Program Analysis* (MSc, 2023).
- Co-advised 4 MSc research projects and a BSc thesis on type safety and logical relations.
- Informal co-advisor of PhD student Kwing Hei Li.

### New York University

- Informal co-advisor of PhD students Chaitanya Agarwal and Markus de Medeiros.

## Selected Talks

- *Trillium: Intensional Refinement in Higher-Order Separation Logic*.  
Contributed talk at **New England Systems Verification Day** (16 April, 2024).
- *Asynchronous Probabilistic Couplings in Higher-Order Separation Logic*.  
Invited talk at the Bristol Programming Languages Research group seminar (19 July, 2023).

- *Asynchronous Probabilistic Couplings in Higher-Order Separation Logic*.  
Contributed talk at **VeriProP** (17 July, 2023).
- *Trillium: History-Sensitive Refinement in Separation Logic*.  
Contributed talk at **The Second Iris Workshop** (3 May, 2022).
- *Mechanized Logical Relations for Termination-Insensitive Noninterference*.  
Invited talk at the Chalmers ProgLog/Security seminar (4 November, 2020).

## Other Professional Activities

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

Conferences	<b>LICS 2024 &amp; 2025, CCS 2022, POPL 2022, OOPSLA 2022, ICFP 2022, CSF 2021 &amp; 2022, ESOP 2020</b>
Journals	Theoretical Computer Science ( <b>TCS</b> ) Transactions on Software Engineering and Methodology ( <b>TOSEM</b> )
- **Workshop on High Assurance Crypto Software (HACS) 2025**. Invited participant.