Neea Rusch

Curriculum vitae

Augusta University
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Research Interests

Programming languages, formal methods, implicit computational complexity, static program analysis.

Education

8/2021–present	Doctor of Philosophy, Computer & Cyber Sciences, *Augusta University*, Augusta, GA USA. Admission to candidacy 1/2023 ∘ expected dissertation defense 7/2025 and graduation 8/2025.
8/2014–5/2016	Master of Science in Computer Science, *Georgia Institute of Technology*, Atlanta, GA USA.
8/2011–5/2014	Bachelor of Science in Computer Science, *Augusta University*, Augusta, GA USA.

Professional Appointments & Employment

8/2021–5/2024	Graduate Research Assistant, *Augusta University*, Augusta GA, USA.
1/2019–12/2021	Instructor, *Augusta University*, Augusta GA, USA.
7/2020–1/2021	Senior Consultant, *Rural Sourcing Inc.*, Augusta GA, USA.
8/2018–5/2019	Android Developer, *TaxSlayer*, Augusta GA, USA.
5/2014–8/2018	Software Developer, *TaxSlayer*, Augusta GA, USA.

Publications

2023 Clément Aubert, Thomas Rubiano, Neea Rusch, and Thomas Seiller. "Distributing and Parallelizing Non-canonical Loops". In: *Verification, Model Checking, and Abstract Interpretation*. Springer Nature Switzerland, 2023, pp. 1–24. DOI: 10.1007/978-3-031-24950-1_1.

2023 Clément Aubert, Thomas Rubiano, Neea Rusch, and Thomas Seiller. "pymwp: A Static Analyzer Determining Polynomial Growth Bounds". In: *Automated Technology for Verification and Analysis*. Springer International Publishing, 2023, pp. 263–275. DOI: 10.1007/978-3-031-45332-8_14.

2022 Clément Aubert, Thomas Rubiano, Neea Rusch, and Thomas Seiller. "mwp-Analysis Improvement and Implementation: Realizing Implicit Computational Complexity". In: *7th International Conference on Formal Structures for Computation and Deduction (FSCD 2022)*. Vol. 228. LIPIcs. Schloss Dagstuhl–Leibniz-Zentrum für Informatik, 2022, 26:1–26:23. DOI: 10.4230/LIPIcs.FSCD.2022.26.

2022 Neea Rusch. "Formally Verified Resource Bounds Through Implicit Computational Complexity". In: *Companion Proceedings of the 2022 ACM SIGPLAN International Conference on Systems, Programming, Languages, and Applications: Software for Humanity*. SPLASH Companion 2022. ACM, 2022, pp. 17–20. DOI: 10.1145/3563768.3565545.

Software

2023 Clément Aubert, Thomas Rubiano, Neea Rusch, and Thomas Seiller. *pymwp: MWP analysis in Python*. Version 0.4.2. May 2023. DOI: 10.5281/zenodo.7908484.

2022 Clément Aubert, Thomas Rubiano, Neea Rusch, and Thomas Seiller. *Distributing and Parallelizing Non-canonical Loops – Artifact*. Version 1.0. Sept. 2022. DOI: 10.5281/zenodo.7080145.

Research Presentations

Presentation titles and slides are available at: https://nkrusch.github.io/posts/talks

2024-10-14	🇺🇸 The 19th Workshop on Programming Languages and Analysis for Security (PLAS'24), *Salt Lake City UT, USA*.

2024-08-20 ✚ Weekly Theory Seminar, *Aalto University, Espoo, Finland.*

2024-08-07 🇩🇪 Lightning talk at the Marktoberdorf Summer School, *Herrsching, Germany.*

2024-07-10 🇳🇱 The 37th IEEE Computer Security Foundations Symposium (CSF'24) – 5-minute talks, *University of Twente, Enschede, the Netherlands.*

2024-04-23 🇺🇸 The 3-Minute Thesis (3MT), research communication competition, *Augusta University, Augusta GA, USA.*

2023-10-25 🇸🇬 The 21st International Symposium on Automated Technology for Verification and Analysis (ATVA'23), *Singapore Management University, Singapore.*

2023-10-20 🇭🇰 The 19th EAI International Conference on Security and Privacy in Communication Networks (SecureComm '23), *Hong Kong Polytechnic University, Hong Kong SAR.*

2023-09-15 🇩🇪 Lightning talk at the International Autumn School on Proof and Computation, *Herrsching, Germany.*

2023-03-10 🌐 SCOT Webinar: A Seminar on Semantic and Formal Approaches to Complexity, *online.*

2023-01-21 🇺🇸 The Ninth International Workshop on Coq for Programming Languages (CoqPL'23), *Boston MA, USA.*

2023-01-16 🇺🇸 The 24th International Conference on Verification, Model Checking, and Abstract Interpretation (VMCAI'23), *Boston MA, USA.*

2022-12-06 🇳🇿 The 2022 ACM SIGPLAN International Conference on Systems, Programming, Languages, and Applications: Software for Humanity (SPLASH'22) Doctoral Symposium, *University of Auckland, New Zealand.*

2022-06-20 🇫🇷 The 28th International Conference on Types for Proofs and Programs (TYPES'22), *University of Nantes, France.*

2022-04-01 🇺🇸 The 37th Annual Graduate Research Day – poster, *Augusta University, USA.*

2021-11-18 🇫🇷 Laboratoire d'Informatique de Paris Nord (LIPN) seminar, *Université Sorbonne Paris Nord, France.*

2021-11-15 🇫🇷 Inria Celtique research team seminar, *IRISA Rennes, France.*

2021-03-26 🌐 The 36th Annual Graduate Research Day, *online, Augusta University, USA.*

Reviews and Professional Service

PC Member **Artifact Evaluation Committee**.

APLAS – Asian Symposium on Programming Languages and Systems – 2022.

CAV – Computer Aided Verification – 2024.

COORDINATION – International Conference on Coordination Models and Languages – 2023.

ECOOP – European Conference on Object-Oriented Programming – 2023, 2024.

ICFP – International Conference on Functional Programming – 2022, 2023, 2024.

ICSE – International Conference on Software Engineering – 2024.

OOPSLA – Object-oriented Programming, Systems, Languages, and Applications – 2024, 2025.

PLDI – Programming Language Design and Implementation – 2022, 2023.

POPL – Principles of Programming Languages – 2024, 2025.

PPoPP – Principles and Practice of Parallel Programming – 2023.

SOSP – Symposium on Operating Systems Principles – 2023.

TACAS – Tools and Algorithms for the Construction and Analysis of Systems – 2025.

⟨Programming⟩ – Art, Science, and Engineering of Programming, journal artifacts – 2025.

Extended Review Committee.

ECOOP Research Papers – 2023, 2024.

Reviewer **Journals**.

The Journal of Open Source Software – 2023.

Science of Computer Programming – 2024.

Organizer **Organizing Committee**.

SERPL – The Southeast Regional Programming Languages Seminar – 2023.

Student Volunteer.

In-person student volunteer at POPL'25, ETAPS'24, CAV'23, POPL'23, and SPLASH'22.

Teaching Experience

2019–2021   Principles of Computer Programming I (CSCI 1301), *Instructor*, Augusta University.
Total enrollment 228, 6 semesters: fall 2019 ∘ spring and fall 2020 ∘ spring, summer and fall 2021.

2019   Introduction to Computers and Programming (CSCI 1200), *Instructor*, Augusta University.
Total enrollment 24, 2 semesters: spring and summer 2019.

Academic Awards, Fellowships & Scholarships

Merit-based awards in **bold** ∘ monetary awards total $33,000+

11/2024 $5,000 **Doctoral Student of the Year Award**, *by the School of Computer & Cyber Sciences, Augusta University.*

10/2024   **Distinguished Artifact Reviewer** of OOPSLA'24, *awarded by the artifact evaluation chairs.*

10/2024 $250 Research Travel Award, *by the GSGA at Augusta University.*

7/2024 $1,330 **The Graduate School Scholarship**, *by The Graduate School, Augusta University.*

6/2024 $1,000 Travel Award, *by The Graduate School, Augusta University.*

6/2024 $2,000 Travel Scholarship, *by organizers of IEEE CSF 2024 and funded by NSF and IEEE.*

5/2024   €1,000 Marktoberdorf Summer School Travel Grant, *by organizers of the summer school.*

3/2024 $150 Research Travel Award, *by the GSGA at Augusta University.*

3/2024   €850 VerifyThis Travel Grant, *by ETH Zürich Programming Methodology Group.*

2/2024   €500 ETAPS Student Scholarship, *by ETAPS e.V. and local organizers.*

1/2024 $3,000 **Ralph W. Shrader Graduate Diversity Scholarship**, *by AFCEA Educational Foundation.*

8/2023 $1,000 Travel Award, *by The Graduate School, Augusta University.*

5/2023 $3,600 Verification Mentoring Workshop (VMW) Scholarship, *by VMW organizers.*

4/2023 $700 Summer School on Formal Techniques Travel Award, *by SRI International and funded by NSF.*

1/2023 $1,000 Student Research Program Award, *by Augusta University Provost's Office and Medical College of Georgia.*

10/2022 $1,000 Travel Award, *by The Graduate School, Augusta University.*

5/2022 $350+ Programming Languages Mentoring Workshop (PLMW) Scholarship, *by ACM SIGPLAN.*

4/2022 $100 **Excellence in Research in Computer & Cyber Sciences**, *by The Graduate School at Augusta University.*

12/2021 $1,500 VMCAI 2022 Student Travel Fellowship, *by VMCAI 2022 organizers.*

11/2021 $1,000 Travel Award, *by The Graduate School, Augusta University.*

8/2015   **Grace Hopper Scholarship**, *by College of Computing, Georgia Institute of Technology.*

4/2014   **The Outstanding Computer Science Student Award 2014**, *by Augusta University.*

5/2013 $7,800 **Savannah River Scholars Program Scholarship** 2013–2014, *by Augusta University and funded by NSF.*

Schools, Seminars & Workshops

8/2024   🇩🇪 Marktoberdorf Summer School 2024, Herrsching, Germany, August 6–17, 2024.

4/2024   🇱🇺 VerifyThis 2024, verification competition, Luxembourg City, Luxembourg, April 6–7, 2024.

9/2023   🇩🇪 International Autumn School on Proof and Computation, Herrsching, Germany, September 10–16, 2023.

7/2023   🇫🇷 Verification Mentoring Workshop (VMW), CAV 2023, Paris, France, July 18, 2023.

5–6/2023   🇺🇸 Twelfth Summer School on Formal Techniques (SSFT 2023) & the First Formal Methods in the Field Bootcamp, on principles and practice of formal techniques, Atherton CA, USA, May 24–June 2, 2023.

6/2022   🇺🇸 Programming Languages Mentoring Workshop, PLMW @ PLDI 2022, San Diego CA, USA, June 13–14, 2022.

11/2021   🇩🇪 Dagstuhl Seminar 21453, on Static Analyses of Program Flows: Types and Certificate for Complexity, Schloss Dagstuhl, Germany, November 7–12, 2021.

6/2021   🌐 Oregon Programming Languages Summer School (OPLSS 2021), on foundations of programming and security, online, June 14–26, 2021.

4/2021   🌐 Midlands Graduate School, on the foundations of computing science, online, April 12–16, 2021.

University Service

8/2024–present	Graduate Student Government Association (GSGA), Event Planning Committee, *Augusta University*.
9/2023–present	Representative in the Graduate Student Government Association (GSGA), *Augusta University*.
1/2023–present	Organizer of ΔΛΔ's weekly Programming Languages Reading Group, *Augusta University*.
8/2021–present	Member of The Graduate School's Graduate Student Council (TGS-GSC), *Augusta University*.
5/2023–8/2024	Vice President and co-founder of ΔΛΔ student organization, *Augusta University*.
9/2023–5/2024	GSGA Funding & Conferences Database Ad Hoc Committee, *Augusta University*.

Languages

English, Finnish