

Jonas Posner

PROFESSOR IN COMPUTER SCIENCE

Fulda University of Applied Sciences, Germany

Applied Computer Science Department

Operating Systems and Parallel Processing

[✉](mailto:jonas.posner@cs.hs-fulda.de) [HS Fulda](http://hs fulda) | jonasposner.com | [LinkedIn](#) | [Google Scholar](#)

Position

Professor

10/2025–PRESENT

FULDA UNIVERSITY OF APPLIED SCIENCES, GERMANY

Operating Systems and Parallel Processing

Postdoctoral Researcher & Lecturer

04/2025–09/2025

UNIVERSITY OF KASSEL, GERMANY

Research Group Programming Languages / Methodologies (PLM)

Substitute Professor

10/2024–03/2025

UNIVERSITY OF KASSEL, GERMANY

Research Group Software Engineering (SE)

Postdoctoral Researcher & Lecturer

08/2022–09/2024

UNIVERSITY OF KASSEL, GERMANY

Research Group Programming Languages / Methodologies (PLM)

Education

Ph.D. Computer Science

2016–2022

UNIVERSITY OF KASSEL, GERMANY

magna cum laude

Thesis: Load Balancing, Fault Tolerance, and Resource Elasticity for Asynchronous Many-Task Systems

Advisor: Prof. Dr. Claudia Fohry (University of Kassel)

Second Reviewer: Prof. Dr. Martin Schulz (Technical University of Munich—TUM)

M.Sc. Computer Science

2014–2016

UNIVERSITY OF KASSEL, GERMANY, 1.5 years program, 90 ECTS

90%

Thesis: Global Load Balancing and Intra-Node Synchronization with the Java Framework APGAS

B.Sc. Computer Science, ranked top 2%

2010–2014

UNIVERSITY OF KASSEL, GERMANY, 3.5 years program, 210 ECTS

90%

Thesis: Fault-Tolerant Task Pools in the Parallel Programming Language X10

Certificate of Chamber of Industry and Commerce: Computer Science Expert

2007–2010

BDO INTERNATIONAL, KASSEL, GERMANY, 3 years program

83%

Thesis: Installation and Configuration of Citrix Servers

Research Interests

- High Performance Computing,
- Parallel Programming Models,
- Asynchronous Many-Task Systems (AMT),
- Load Balancing,
- Fault Tolerance, and
- Resource Elasticity.

Publications

JOURNALS

- [P1] **Jonas Posner**, Tim Ellersiek, Nick Bietendorf, Dominik Huber, Martin Schreiber, and Martin Schulz. "Toward Dynamic Resource Management: An Asynchronous Many-Task (AMT) Runtime System leveraging Dynamic Processes with PSets (DPP)". In: *Springer Nature Computer Science* (2025). doi: 10.1007/s42979-025-04405-3.
- [P2] Patrick Finnerty, **Jonas Posner**, Janek Bürger, Leo Takaoka, and Takuma Kanzaki. "On the Performance of Malleable APGAS Programs and Batch Job Schedulers". In: *Springer Nature Computer Science* (2024). doi: 10.1007/s42979-024-02641-7.
- [P3] **Jonas Posner**, Mia Reitz, and Claudia Fohry. "Task-Level Resilience: Checkpointing vs. Supervision". In: *Special Issue International Journal of Networking and Computing (IJNC)* 12.1 (2022), pp. 47–72. doi: 10.15803/ijnc.12.1_47.
- [P4] **Jonas Posner**, Mia Reitz, and Claudia Fohry. "A Comparison of Application-Level Fault Tolerance Schemes for Task Pools". In: *Future Generation Computer Systems (FGCS)* 105 (2019), pp. 119–134. doi: 10.1016/j.future.2019.11.031.
- [P5] **Jonas Posner** and Claudia Fohry. "Hybrid Work Stealing of Locality-Flexible and Cancelable Tasks for the APGAS Library". In: *The Journal of Supercomputing* (2018), pp. 1435–1448. doi: 10.1007/s11227-018-2234-8.
- [P6] **Jonas Posner** and Claudia Fohry. "A Java Task Pool Framework providing Fault-Tolerant Global Load Balancing". In: *Special Issue on the International Journal of Networking and Computing (IJNC)* 8.1 (2018), pp. 2–31. doi: 10.15803/ijnc.8.1_2.
- [P7] Claudia Fohry, Marco Bungart, and **Jonas Posner**. "Fault Tolerance Schemes for Global Load Balancing in X10". In: *Scalable Computing: Practice and Experience (SCPE)* 16.2 (2015), pp. 169–186. doi: 10.12694/scpe.v16i2.1088.

DISSERTATION

- [P8] **Jonas Posner**. "Load Balancing, Fault Tolerance, and Resource Elasticity for Asynchronous Many-Task Systems". PhD thesis. University of Kassel, Germany, 2021. doi: 10.17170/kobra-202207286542.

CONFERENCES & WORKSHOPS

- [P9] Mia Reitz and **Jonas Posner**. "Stackless vs. Stackful Coroutines: A Comparative Study for RDMA-based Asynchronous Many-Task (AMT) Runtimes". In: *Proceedings International Conference on High Performance Computing, Networking, Storage and Analysis (SC) Workshops (PAW-ATM)*. ACM, 2025. To appear.
- [P10] Patrick Zojer, **Jonas Posner**, and Taylan Özden. "Evaluating Malleable Job Scheduling in HPC Clusters using Real-World Workloads". In: *Proceedings Latin American High Performance Computing Conference (CARLA)*. 2025. To appear. Slides.
- [P11] **Jonas Posner**, Nick Bietendorf, Dominik Huber, Martin Schreiber, and Martin Schulz. "Dynamic Resource Management: Comparison of Asynchronous Many-Task (AMT) and Dynamic Processes with PSets (DPP)". In: *Workshop on Asynchronous Many-Task Systems and Applications (WAMTA)*. 2025. doi: 10.1007/978-3-031-97196-9_2. Slides.
- [P12] **Jonas Posner**. "The Impact of Evolving APGAS Programs on HPC Clusters". In: *Proceedings Euro-Par Parallel Processing Workshops (DynResHPC)*. 2024. doi: 10.1007/978-3-031-90200-0_25. Slides.
- [P13] **Jonas Posner**, Raoul Goebel, and Patrick Finnerty. "Evolving APGAS Programs: Automatic and Transparent Resource Adjustments at Runtime". In: *Proceedings Workshop on Asynchronous Many-Task Systems and Applications (WAMTA)*. 2024. doi: 10.1007/978-3-031-61763-8_15. Slides.
- [P14] **Jonas Posner**, Fabian Hupfeld, and Patrick Finnerty. "Enhancing Supercomputer Performance with Malleable Job Scheduling Strategies". In: *Proceedings Euro-Par Parallel Processing Workshops (PECS)*. Springer, 2023. doi: 10.1007/978-3-031-48803-0_14. Slides.
- [P15] Patrick Finnerty, Reo Takaoka, Takuma Kanzaki, and **Jonas Posner**. "Malleable APGAS Programs and their Support in Batch Job Schedulers". In: *Proceedings Euro-Par Parallel Processing Workshops (AMTE)*. Springer, 2023. doi: 10.1007/978-3-031-48803-0_8. Slides.
- [P16] **Jonas Posner** and Claudia Fohry. "Transparent Resource Elasticity for Task-Based Cluster Environments with Work Stealing". In: *Proceedings International Conference on Parallel Processing (ICPP) Workshops (P2S2)*. ACM, 2021, pp. 1–10. doi: 10.1145/3458744.3473361.
- [P17] **Jonas Posner**, Mia Reitz, and Claudia Fohry. "Checkpointing vs. Supervision Resilience Approaches for Dynamic Independent Tasks". In: *Proceeding International Parallel and Distributed Processing Symposium (IPDPS) Workshops (APDCM)*. IEEE, 2021. doi: 10.1109/IPDPSW52791.2021.00089.
- [P18] **Jonas Posner**. "System-Level vs. Application-Level Checkpointing". In: *International Conference on Cluster Computing (CLUSTER)*. IEEE, 2020, pp. 404–405. doi: 10.1109/CLUSTER49012.2020.00051.
- [P19] **Jonas Posner**, Mia Reitz, and Claudia Fohry. "Comparison of the HPC and Big Data Java Libraries Spark, PCJ and APGAS". In: *Proceedings International Conference on High Performance Computing, Networking, Storage and Analysis (SC) Workshops (PAW-ATM)*. ACM, 2018, pp. 11–22. doi: 10.1109/PAW-ATM.2018.00007.

- [P20] Claudia Fohry, **Jonas Posner**, and Mia Reitz. “A Selective and Incremental Backup Scheme for Task Pools”. In: *Proceedings International Conference on High Performance Computing & Simulation (HPCS)*. 2018, pp. 621–628. doi: 10 . 1109 / HPCS . 2018 . 00103.
- [P21] **Jonas Posner** and Claudia Fohry. “A Combination of Intra- and Inter-place Work Stealing for the APGAS Library”. In: *Proceedings Parallel Processing and Applied Mathematics (PPAM) Workshops (WLPP)*. Springer, 2018, pp. 234–243. doi: 10 . 1007 / 978 - 3 - 319 - 78054 - 2 _ 22.
- [P22] **Jonas Posner** and Claudia Fohry. “Fault Tolerance for Cooperative Lifeline-Based Global Load Balancing in Java with APGAS and Hazelcast”. In: *International Parallel and Distributed Processing Symposium (IPDPS) Workshops (APDCM)*. IEEE, 2017, pp. 854–863. doi: 10 . 1109 / ipdpsw . 2017 . 31.
- [P23] **Jonas Posner** and Claudia Fohry. “Cooperation vs. Coordination for Lifeline-Based Global Load Balancing in APGAS”. In: *Proceedings of the 6th ACM SIGPLAN Workshop on X10*. ACM, 2016, pp. 13–17. doi: 10 . 1145 / 2931028 . 2931029.
- [P24] Claudia Fohry, Marco Bungart, and **Jonas Posner**. “Towards an Efficient Fault-Tolerance Scheme for GLB”. In: *Proceedings of the ACM SIGPLAN Workshop on X10*. ACM, 2015, pp. 27–32. doi: 10 . 1145 / 2771774 . 2771779.
- [P25] Marco Bungart, Claudia Fohry, and **Jonas Posner**. “Fault-Tolerant Global Load Balancing in X10”. In: *Proceedings International Symposium on Symbolic and Numeric Algorithms for Scientific Computing (SYNASC)*. IEEE, 2014, pp. 471–478. doi: 10 . 1109 / synasc . 2014 . 69.

POSTERS & EXTENDED ABSTRACTS

- [P26] Patrick Finnerty, **Jonas Posner**, Tomio Kamada, Zhiyi Zhu, and Chikara Ohta. “Parallel Program Performance Prediction based on Hardware Specification”. In: *Sensor Network and Mobile Intelligence (SeMI) Forum, Tokyo*. 2025. Presentation.
- [P27] **Jonas Posner**. “Resource Adaptivity at Task-Level”. In: *Parallel Applications Workshop, Alternatives To MPI+X (PAW-ATM)*. 2024. doi: 10 . 5281 / zenodo . 14211666. Extended Abstract. *Slides*.
- [P28] **Jonas Posner** and Patrick Finnerty. “Project Wagomu: Elastic HPC Resource Management”. In: *ISC High Performance Conference*. 2024. Poster.
- [P29] **Jonas Posner**. “Load Balancing, Fault Tolerance, and Resource Elasticity for Asynchronous Many-Task Systems”. In: *International Conference on High Performance Computing, Networking, Storage and Analysis (SC)*. 2022. Poster.
- [P30] **Jonas Posner**. “Asynchronous Many-Tasking (AMT): Load Balancing, Fault Tolerance, Resource Elasticity”. In: *ISC High Performance Conference*. 2022. Poster.
- [P31] **Jonas Posner**. “Resource Elasticity at Task-Level”. In: *Proceedings International Parallel and Distributed Processing Symposium (IPDPS), Ph.D. Forum*. IEEE, 2021. doi: 10 . 1109 / IPDPSW52791 . 2021 . 00160. Extended Abstract.
- [P32] **Jonas Posner**. “Locality-Flexible and Cancelable Tasks for the APGAS Library”. In: *EuroHPC Summit Week, PRACEdays*. 2021. Poster.
- [P33] **Jonas Posner**. “A Generic Reusable Java Framework for Fault-Tolerant Parallelization with the Task Pool Pattern”. In: *International Parallel and Distributed Processing Symposium (IPDPS), Ph.D. Forum*. 2017. Poster.

SOURCE CODE & ARTEFACTS

- [P34] **Jonas Posner** and Patrick Finnerty. *Project Wagomu: GitHub—Code Repositories*. URL: [https : / / github . com / ProjectWagomu](https://github.com/ProjectWagomu).
- [P35] **Jonas Posner** and Patrick Finnerty. *Project Wagomu: Zenodo—Artefacts and Slides*. URL: [https : / / zenodo . org / communities/ProjectWagomu](https://zenodo.org/communities/ProjectWagomu).

Invited Talks

Institute for Parallel and Distributed Systems

07/2025

INVITED TALK, UNIVERSITY OF STUTTGART (GERMANY)

- Title: Unlocking Dynamic HPC Resources with Task-Based Runtime Systems. *Slides*.

Advances in Applied Computer Science Invited Speaker Series

02/2025

INVITED TALK, LOS ALAMOS NATIONAL LAB (U.S.)

- Title: Transparent Resource Adaptivity for Task-Based Applications on Supercomputers. *Slides*.

Workshop on Effective Use of Resources on the Computing Continuum

04/2024

INVITED TALK, KOBE (JAPAN)

- Title: Elastic Runtimes and Applications for HPC Systems

Peer-Reviewed Presentations

Latin American High Performance Computing Conference (CARLA)

09/2025

PAPER PRESENTATION, PEER-REVIEWED, KINGSTON (JAMAICA)

- Title: Evaluating Malleable Job Scheduling in HPC Clusters using Real-World Workloads

Workshop on Asynchronous Many-Task Systems and Applications (WAMTA)

02/2025

PAPER PRESENTATION, PEER-REVIEWED, ST. LOUIS (U.S.)

- Title: Dynamic Resource Management: Comparison of Asynchronous Many-Task (AMT) and Dynamic Processes with PSets (DPP)

Supercomputing (SC) Workshops (PAW-ATM)

11/2024

PRESENTATION, PEER-REVIEWED, ATLANTA (U.S.)

- Title: Resource Adaptivity at Task-Level

Euro-Par Workshops (DynResHPC)

08/2024

PAPER PRESENTATION, PEER-REVIEWED, MADRID (SPAIN)

- Title: The Impact of Evolving APGAS Programs on HPC Clusters

ISC High Performance Conference

05/2024

POSTER PRESENTATION, PEER-REVIEWED, HAMBURG (GERMANY)

- Title: Project Wagomu: Elastic HPC Resource Management

Workshop on Asynchronous Many-Task Systems and Applications (WAMTA)

02/2024

PAPER PRESENTATION, PEER-REVIEWED, KNOXVILLE (U.S.)

- Title: Evolving APGAS Programs: Automatic and Transparent Resources Adjustments at Runtime

Euro-Par Workshops (PECS)

08/2023

PAPER PRESENTATION, PEER-REVIEWED, LIMASSOL (CYPRUS)

- Title: Enhancing Supercomputer Performance with Malleable Job Scheduling Strategies

Supercomputing (SC), Doctoral Showcases

11/2022

DISSERTATION PRESENTATION, PEER-REVIEWED, DALLAS (U.S.)

- Title: Load Balancing, Fault Tolerance, and Resource Elasticity for Asynchronous Many-Task Systems

Ph.D. Disputation

07/2022

PRESENTATION AND DEFENSE, UNIVERSITY OF KASSEL (GERMANY)

- Title: Load Balancing, Fault Tolerance, and Resource Elasticity for Asynchronous Many-Task Systems

ISC High Performance Conference

05/2022

POSTER PRESENTATION, PEER-REVIEWED, HAMBURG (GERMANY)

- Title: Asynchronous Many-Tasking (AMT): Load Balancing, Fault Tolerance, Resource Elasticity

International Conference on Parallel Processing (ICPP) Workshops (P2S2)

09/2021

PAPER PRESENTATION, PEER-REVIEWED, ONLINE

- Title: Transparent Resource Elasticity for Task-Based Cluster Environments with Work Stealing

International Parallel and Distributed Processing (IPDPS) Workshops (APDCM)

06/2021

PAPER PRESENTATION, PEER-REVIEWED, ONLINE

- Title: Checkpointing vs. Supervision Resilience Approaches for Dynamic Independent Tasks

Ph.D. Forum International Parallel and Distributed Processing (IPDPS)

06/2021

POSTER PRESENTATION, PEER-REVIEWED, ONLINE

- Title: Resource Elasticity at Task-Level

IEEE Cluster

09/2020

POSTER PRESENTATION, PEER-REVIEWED, ONLINE

- Title: System-Level vs. Application-Level Checkpointing

EuroHPC Summit Week, PRACEdays

03/2020

POSTER PRESENTATION, PEER-REVIEWED, ONLINE

- Title: Locality-Flexible and Cancelable Tasks for the APGAS Library

Supercomputing (SC) Workshops (PAW-ATM)

11/2019

PAPER PRESENTATION, PEER-REVIEWED, DENVER (U.S.)

- Title: Comparison of the HPC and Big Data Java Libraries Spark, PCJ and APGAS

International Conference on High Performance Computing & Simulation (HPCS)

07/2018

PAPER PRESENTATION, PEER-REVIEWED, ORLÉANS (FRANCE)

- Title: A Selective and Incremental Backup Scheme for Task Pools

Parallel Processing and Applied Mathematics (PPAM)

09/2017

PAPER PRESENTATION, PEER-REVIEWED, LUBLIN (POLAND)

- Title: A Combination of Intra- and Inter-place Work Stealing for the APGAS Library

Ph.D. Forum International Parallel and Distributed Processing (IPDPS)

06/2017

POSTER PRESENTATION, PEER-REVIEWED, LAKE BUENA VISTA (U.S.)

- Title: A Generic Reusable Java Framework for Fault-Tolerant Parallelization with the Task Pool Pattern

International Parallel and Distributed Processing (IPDPS) Workshops (APDCM)

06/2017

PAPER PRESENTATION, PEER-REVIEWED, LAKE BUENA VISTA (U.S.)

- Title: Fault Tolerance for Cooperative Lifeline-Based Global Load Balancing in Java with APGAS and Hazelcast

Grant Proposals

German Research Foundation (DFG)

2025

INDIVIDUAL RESEARCH GRANT. FUNDING FOR ONE DOCTORAL RESEARCHER AND TWO STUDENT ASSISTANTS

- Funding: € 380,000 for three years
- Role: Official applicant
- Status: *granted* in 08/2025
- <https://gepris.dfg.de/gepris/projekt/558599020>

The Central Research Fund (ZFF) of the University of Kassel

2022

PROJECT FOR PREPARING AN INDIVIDUAL POSTDOC GRANT PROPOSAL

- Funding: € 10,000
- Role: Official applicant
- Status: *granted*, run from 09/2022 to 09/2023

The HPC-Europa3 program

2020

8-WEEK INTERNSHIP AT THE BARCELONA SUPERCOMPUTING CENTER (BSC)

- Funding: € 3,200
- Role: Official applicant
- Status: *granted*, but cancelled due to COVID-19

Supercomputing Conference

2018 and 2021

TRAVEL GRANT

- Funding: € 1,000 per year
- Role: Official applicant
- Status: *granted*

The Gauss Centre for Supercomputing (GCS), Germany

2024–2025

ACCESS TO THE SUPERMUC-NG HPC CLUSTER AT THE GAUSS CENTRE FOR SUPERCOMPUTING (GCS), GERMANY

- Funding: 100,000 CPU hours per year
- Role: Co-writer of the proposal
- Status: *granted*

The Center for Scientific Computing (CSC) of the Goethe University Frankfurt

2019–PRESENT

ACCESS TO THE GOETHE-HLR HPC CLUSTER AT THE UNIVERSITY OF FRANKFURT, GERMANY

- Funding: 300,000 CPU hours per year
- Role: Co-writer of the proposals
- Status: *granted annually*

The University Computer Centre (HRZ) of the Technical University Darmstadt

2023–PRESENT

ACCESS TO THE LICHTENBERG II HPC CLUSTER AT THE TECHNICAL UNIVERSITY DARMSTADT, GERMANY

- Funding: 300,000 CPU hours per year
- Role: Co-writer of the proposals
- Status: *granted annually*

Teaching and Supervising (at the Fulda University of Applied Science)

M.Sc. Lecture: *Parallel Programming*

Winter Semester 2025/2026

- *Principal investigator.* Topics include shared memory and distributed memory. Duties include giving both lectures and exercises, as well as taking exams.

5 ECTS

B.Sc. Lecture: *Fundamentals of Computer Science*

Winter Semester 2025/2026

- Duties include giving both lectures and exercises, as well as taking exams.

5 ECTS

M.Sc. Research Project: *Practical Evaluation of Distributed File Systems*

Winter Semester 2025/2026

- *Principal investigator.* Duties include preparing topics and supervising.

5 ECTS

M.Sc. Research Project: *How to make Supercomputers greener with Malleable Resource Management*

Winter Semester 2025/2026

- *Principal investigator.* Duties include preparing topics and supervising.

5 ECTS

Teaching and Supervising (at the University of Kassel)

B.Sc. Lecture: *Introduction to Parallel Processing*

Summer Semester 2025

- *Principal investigator.* Topics include shared memory, distributed memory, and GPUs. Duties include giving lectures, designing exercises, and taking oral exams.

6 ECTS

M.Sc. Thesis: *Evaluating the Performance of the Itoyori AMT using TaskBench*

Summer Semester 2025

- *First examiner.* Duties include preparing the topic, supervising both the technical part and the manuscript, and grading.

30 ECTS

M.Sc. Thesis: *Development and Evaluation of a new Resource-Adaptive AMT*

Summer Semester 2025

- *First examiner.* Duties include preparing the topic, supervising both the technical part and the manuscript, and grading.

30 ECTS

B.Sc. Thesis: *From Prompt to Parallelism: Evaluating LLM-Generated Chapel Code*

Summer Semester 2025

- *Supervisor.* Duties include preparing the topic, supervising both the technical part and the manuscript.

15 ECTS

B.Sc. Thesis: *Sustainable Supercomputing: Simulation-Based Study of Malleable Job Scheduling with Real Workloads*

Summer Semester 2025

- *Supervisor.* Duties include preparing the topic, supervising both the technical part and the manuscript.

15 ECTS

B.Sc. Project: Renewable-Aware Supercomputer Job Scheduling: Malleable Jobs for Nighttime Sustainability	Summer Semester 2025
• Supervisor. Duties include preparing topics and supervising.	8 ECTS
B.Sc. Thesis: Web Technology Fingerprinting: Methods for identifying Frameworks and Libraries	Summer Semester 2025
• Second examiner. Duties include grading.	15 ECTS
M.Sc. Thesis: Geolocation Analysis and Map-Based Visualization of Internet Infrastructure	Summer Semester 2025
• Second examiner. Duties include grading.	30 ECTS
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B.Sc. Lecture: Programming and Modelling	Winter Semester 2024/2025
• Principal investigator. Duties include giving lectures, organizing exercises, and taking oral exams.	6 ECTS
B.Sc. Lecture: Design Patterns	Winter Semester 2024/2025
• Principal investigator. Duties include giving lectures, organizing exercises, and taking oral exams.	6 ECTS
B.Sc. & M.Sc. Seminar: Generative AI in Software and Algorithm Development	Winter Semester 2024/2025
• Principal investigator. Duties include preparing topics and grading student manuscripts as well as presentations.	6 ECTS
B.Sc. Thesis: Dynamic Resource Management: Comparison of MPI-DPP and APGAS+GLB	Winter Semester 2024/2025
• First examiner. Duties include preparing the topic, supervising both the technical part and the manuscript, and grading.	15 ECTS
B.Sc. Thesis: Simulation and Evaluation of evolving Workloads	Winter Semester 2024/2025
• First examiner. Duties include preparing the topic, supervising both the technical part and the manuscript, and grading.	15 ECTS
B.Sc. Thesis: Simulating Malleable Job Scheduling Algorithms using Real-World Supercomputer Trace Logs	Winter Semester 2024/2025
• First examiner. Duties include preparing the topic, supervising both the technical part and the manuscript, and grading.	15 ECTS
B.Sc. Thesis: Evaluation of Gemini-generated End-To-End and Unit Tests for Web Applications	Winter Semester 2024/2025
• First examiner. Duties include supervising both the technical part and the manuscript, and grading.	15 ECTS
B.Sc. Thesis: Bundler vs. CDN: A comparison of JavaScript delivery methods regarding performance	Winter Semester 2024/2025
• Second examiner. Duties include grading.	15 ECTS
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B.Sc. Lecture: Algorithms and Data Structures	Summer Semester 2024
• Duties includes giving exercises as well as creating and correcting weekly worksheets.	6 ECTS
B.Sc. & M.Sc. Seminar: History and Evolution of Supercomputing - From the Beginnings to the Exascale Era	Summer Semester 2024
• Principal investigator. Duties include preparing topics and grading student manuscripts as well as presentations.	6 ECTS

B.Sc. Thesis: Development of a Material Workflow System for Batch Processing of Materials on Virtual Production Systems	<i>Summer Semester 2024</i>
• Supervisor. Duties include supervising both the technical part and the manuscript.	15 ECTS
M.Sc. Project: MPI Sessions for Resource Adaptivity	<i>Summer Semester 2024</i>
• Supervisor. Duties include preparing topics and supervising.	8 ECTS
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B.Sc. Lecture: Introduction to Parallel Processing	<i>Winter Semester 2023/2024</i>
• Principal investigator. Topics include shared memory, distributed memory, and GPUs. Duties include giving lectures, designing exercises, and taking oral exams.	6 ECTS
B.Sc. Thesis: Evolving Task-based Parallel Programming Systems	<i>Winter Semester 2023/2024</i>
• Supervisor. Duties include preparing the topic and supervising both the technical part and the manuscript.	15 ECTS
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B.Sc. Practical Lecture: Building a Miniature Supercomputer	<i>Summer Semester 2023</i>
• Principal investigator. Full design of this new course. Topics include Linux, git, Docker, and Slurm. Duties include giving lectures, designing exercises, and taking oral exams.	6 ECTS
M.Sc. Thesis: TasGPI: A Global Load Balancing framework for C++	<i>Summer Semester 2023</i>
• Supervisor. Duties include preparing the topic and supervising both the technical part and the manuscript.	30 ECTS
B.Sc. Thesis: Evaluation of Malleable Job Scheduling Algorithms via Simulations	<i>Summer Semester 2023</i>
• Supervisor. Duties include preparing the topic and supervising both the technical part and the manuscript.	15 ECTS
B.Sc. Project: Evaluation of Real-world Supercomputer Trace Logs with Malleable Job Scheduling Algorithms via Simulations	<i>Summer Semester 2023</i>
• Supervisor. Duties include preparing topics and supervising.	12 ECTS
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B.Sc. Lecture: Introduction to Parallel Processing	<i>Winter Semester 2022/2023</i>
• Responsible for 75% of the lecture. Topics include shared memory and distributed memory. Duties include giving lectures, designing exercises, and taking oral exams.	6 ECTS
M.Sc. Lecture: Parallel Programming	<i>Winter Semester 2022/2023</i>
• Responsible for the part “Introduction to Charm++”. Duties include giving lectures, designing exercises, and taking oral exams.	6 ECTS
B.Sc. & M.Sc. Seminar: State-of-the-Art and Trends of High Performance Computing	<i>Winter Semester 2022/2023</i>
• Held in cooperation with a co-worker. Duties include preparing topics and grading student manuscripts as well as presentations.	6 ECTS
B.Sc. Thesis: Benchmarking of Virtual Threads in Java 19	<i>Winter Semester 2022/2023</i>
• Supervisor. Duties include preparing the topic and supervising the technical part.	15 ECTS
B.Sc. Project: Building a Slurm Cluster using Docker	<i>Winter Semester 2022/2023</i>
• Supervisor. Duties include preparing the topic and supervising the technical part.	12 ECTS
B.Sc. Project: Installation and Evaluation of several OpenSHMEM Implementations	<i>Winter Semester 2022/2023</i>
• Supervisor. Duties include preparing the topic and supervising the technical part.	12 ECTS

B.Sc. & M.Sc. Seminar: State of the Art and Trends of High Performance Computing

Summer Semester 2022

- *Principal investigator.* Duties include preparing topics and grading student manuscripts as well as presentations.

6 ECTS

B.Sc. Thesis: Integrating of APGAS into the Benchmark Suite TaskBench

Summer Semester 2022

- *Supervisor.* Duties include preparing the topic and supervising both the technical part and the manuscript.

15 ECTS

B.Sc. Lecture: Introduction to Parallel Processing

Winter Semester 2021/2022

- Responsible for 25% of the lecture. Topics include distributed memory. Duties include giving lectures, designing exercises, and taking oral exams.

6 ECTS

B.Sc. & M.Sc. Seminar: Task-based Parallel Programming-Systems

Winter Semester 2021/2022

- Held in cooperation with a co-worker. Duties include preparing topics and grading student manuscripts as well as presentations.

6 ECTS

M.Sc. Lecture: Parallel Programming

Summer Semester 2021

- Responsible for the part "Introduction to Charm++". Duties include giving lectures, designing exercises, and taking oral exams.

6 ECTS

B.Sc. Lecture: Introduction to Parallel Processing

Winter Semester 2020/2021

- Responsible for 75% of the lecture. Topics include shared memory and distributed memory. Duties include giving lectures, designing exercises, and taking oral exams.

6 ECTS

B.Sc. & M.Sc. Seminar: Task-based Parallel Programming-Systems

Winter Semester 2020/2021

- Held in cooperation with a co-worker. Duties include preparing topics and grading student manuscripts as well as presentations.

6 ECTS

B.Sc. Project: Implementation of Benchmarks in Chapel, Legion, and Charm++

Winter Semester 2020/2021

- *Supervisor.* Duties include preparing topics and supervising.

12 ECTS

M.Sc. Thesis: Implementing an MPI Transport Layer for APGAS

Winter Semester 2020/2021

- *Supervisor.* Duties include preparing the topic and supervising the technical part.

30 ECTS

B.Sc. & M.Sc. Seminar: The Future of Java

Summer Semester 2020

- Held in cooperation with a co-worker. Duties include preparing topics and grading student manuscripts as well as presentations.

6 ECTS

M.Sc. Thesis: Implementing Resource Elasticity for Global Task Pools in APGAS

Summer Semester 2020

- *Supervisor.* Duties include preparing the topic and supervising the technical part.

30 ECTS

M.Sc. Project: Implementation of Reduce and Broadcast Algorithms with APGAS

Summer Semester 2020

- *Supervisor.* Duties include preparing topics and supervising.

8 ECTS

B.Sc. Project: Analysis of APGAS programs using Likwid

Summer Semester 2020

- *Supervisor.* Duties include preparing topics and supervising.

12 ECTS

B.Sc. Project: Evaluation of the Naos Network Interface

Summer Semester 2020

- *Supervisor.* Duties include preparing topics and supervising.

12 ECTS

B.Sc. & M.Sc. Seminar: Java Concurrency

Winter Semester 2019/2020

- Held in cooperation with a co-worker. Duties include preparing topics and grading student manuscripts as well as presentations.

6 ECTS

M.Sc. Lecture: Parallel Programming	<i>Winter Semester 2019/2020</i>
• Responsible for the part “Introduction to Charm++”. Duties include giving lectures, designing exercises, and taking oral exams.	6 ECTS
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B.Sc. Lecture: Introduction to Parallel Processing	<i>Summer Semester 2019</i>
• Responsible for 50% of the lecture. Topics include distributed memory and GPUs. Duties include giving lectures, designing exercises, and taking oral exams.	6 ECTS
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B.Sc. Lecture: Algorithms and Data Structures	<i>Summer Semester 2019</i>
• Duties include giving exercises.	6 ECTS
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M.Sc. Project: Implementation of Reduce and Broadcast Algorithms with APGAS	<i>Summer Semester 2019</i>
• Supervisor. Duties include preparing the topic and supervising.	8 ECTS
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M.Sc. Thesis: Design and Evaluation of a Work Stealing-Based Fault Tolerance Scheme for Task Pools	<i>Summer Semester 2019</i>
• Supervisor. Duties include preparing the topic and supervising the technical part.	30 ECTS
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B.Sc. Thesis: Isolation of HPC Applications using Shifter and Singularity	<i>Summer Semester 2019</i>
• Supervisor. Duties include preparing the topic and supervising the technical part.	15 ECTS
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B.Sc. Thesis: Comparison of Charm++ and APGAS	<i>Summer Semester 2019</i>
• Supervisor. Duties include preparing the topic and supervising the technical part.	15 ECTS
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B.Sc. Thesis: Comparison of Akka and APGAS	<i>Summer Semester 2019</i>
• Supervisor. Duties include preparing the topic and supervising the technical part.	15 ECTS
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B.Sc. Project: Solving the Travelling Salesmen Problem with APGAS	<i>Summer Semester 2019</i>
• Supervisor. Duties include preparing topics and supervising.	12 ECTS
<hr/>	
M.Sc. Lecture: Parallel Programming	<i>Winter Semester 2018/2019</i>
• Responsible for the part “Introduction to Charm++”. Duties include giving lectures, designing exercises, and taking oral exams.	6 ECTS
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B.Sc. & M.Sc. Seminar: Script Languages	<i>Winter Semester 2018/2019</i>
• Held in cooperation with a co-worker. Duties include preparing topics and grading student manuscripts as well as presentations.	6 ECTS
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B.Sc. Thesis: Logging and Visualization of a Distributed Task Pool	<i>Winter Semester 2018/2019</i>
• Supervisor. Duties include preparing the topic and supervising the technical part.	15 ECTS
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B.Sc. Project: Solving the Queen Domination Problem with APGAS	<i>Winter Semester 2018/2019</i>
• Supervisor. Duties include preparing topics and supervising.	12 ECTS
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B.Sc. Project: Programming with Robocode	<i>Winter Semester 2018/2019</i>
• Supervisor. Duties include preparing topics and supervising.	12 ECTS
<hr/>	
B.Sc. Lecture: Introduction to Parallel Processing	<i>Summer Semester 2018</i>
• Responsible for 25% of the lecture. Topics include distributed memory. Duties include giving lectures, designing exercises, and taking oral exams.	6 ECTS
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B.Sc. & M.Sc. Seminar: Java Concurrency	<i>Summer Semester 2018</i>
• Held in cooperation with a co-worker. Duties include preparing topics and grading student manuscripts as well as presentations.	6 ECTS

M.Sc. Thesis: Using Fibers in APGAS	<i>Summer Semester 2018</i>
• Supervisor. Duties include preparing the topic and supervising the technical part.	30 ECTS
B.Sc. Thesis: An Asynchronous Backup Scheme Tracking Work-Stealing for Reduction-Based Task Pools	<i>Summer Semester 2018</i>
• Supervisor. Duties include preparing the topic and supervising the technical part.	30 ECTS
B.Sc. Thesis: Solving the Knapsack Problem with APGAS	<i>Summer Semester 2018</i>
• Supervisor. Duties include preparing the topic and supervising the technical part.	15 ECTS
B.Sc. Project: Installation and Configuration of a Checkpoint/Restart Library	<i>Summer Semester 2018</i>
• Supervisor. Duties include preparing topics and supervising.	12 ECTS
B.Sc. Project: Comparison of HPC and Intel CnC	<i>Summer Semester 2018</i>
• Supervisor. Duties include preparing topics and supervising.	12 ECTS
<hr/>	
B.Sc. Lecture: Introduction to Parallel Processing	<i>Summer Semester 2017</i>
• Responsible for 25% of the lecture. Topics include distributed memory. Duties include giving lectures, designing exercises, and taking oral exams.	6 ECTS
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B.Sc. Lecture: Introduction to Programming	<i>Winter Semesters 2011–2016</i>
• Student tutor and homework supervisor.	6 ECTS
B.Sc. Lecture: Algorithms and Data Structures	<i>Summer Semesters 2012–2016</i>
• Student tutor and homework supervisor.	6 ECTS

Service to Profession

Supercomputing Conference 2026	<i>2026</i>
• Workshops and Symposia Committee Member	
• Research Posters Committee Member	
Supercomputing Conference 2025	<i>2025</i>
• Programming Frameworks and System Software Technical Papers Program Committee Member	
• Research Posters Committee Member	
• Mentor in the Mentor-Protégé Program	
Supercomputing Conference 2024	<i>2024</i>
• Research Posters Committee Member	
• Mentor in the Mentor-Protégé Program	
Supercomputing Conference 2023	<i>2023</i>
• Programming Frameworks and System Software Technical Papers Program Committee Member	
• Birds of a Feather (BoF) Committee Member	
• HPC Illuminations Pavilion Committee Member	
• Mentor in the Mentor-Protégé Program	
Supercomputing Conference 2022	<i>2022</i>
• Birds of a Feather (BOF) Committee Member	
• AD/AE Appendices Committee Member	
• Reviewer for the Student Volunteers Program	

Supercomputing Conference 2021

2021

- Lead Student Volunteer (SCALE)
- *Birds of a Feather (BOF)* Committee Member
- *Guided Group of Interest (GIG)* Committee Member
- Reviewer for the Student Volunteers Program

Guest Editor

2025

- Invited Editor for the Journal “Recent advances in Asynchronous Many Task Runtime Systems” published in Springer Nature Computer Science

University of Kassel

2022

- Selection committee member for the professorship *Automation and Sensor Technology in Network Systems*

Program Committee Member

2018–PRESENT

- Workshop on Dynamic Resources in HPC (DynResHPC) at EuroPar (2025)
- Parallel Applications Workshop, Alternatives To MPI+X (PAW-ATM) at SC (2025)
- ISC High Performance Workshops (*since 2024*)
- International Conference on Compiler Construction (CC) Artifact Evaluation (2024)
- Workshop on Language-Based Parallel Programming Models (WLPP) at PPAM (*since 2024*)
- Workshop on Asynchronous Many-Task Systems and Applications (WAMTA) (*since 2024*)
- Workshop on Asynchronous Many-Task Systems for Exascale (AMTE) at EuroPar (*since 2024*)
- Workshop on Performance and Energy Efficiency in Concurrent and Distributed Systems (PECS) at HPDC (2024)
- Workshop on Advances in Parallel and Distributed Computational Models (APDCM) at IPDPS (*since 2018*)
- International Symposium on Computing and Networking (CANDAR) (2018–2023)

Invited Reviewer

2018–PRESENT

- EuroHPC Posters and Demos
- Concurrency and Computation: Practice and Experience
- Future Generation Computer Systems (FGCS)
- The Journal of Supercomputing
- International Journal of Networking and Computing (IJNC)

Lead Student Volunteer

2019–2021

- Supercomputing Conference, SC21, St. Louis (U.S.)
- Supercomputing Conference, SC20, online
- Supercomputing Conference, SC19, Denver (U.S.)

Student Volunteer

2017–2019

- ISC High Performance, ISC19, Frankfurt (Germany)
- Supercomputing Conference, SC18, Dallas (U.S.)
- Supercomputing Conference, SC17, Denver (U.S.)

Professional Memberships

ACM Member

2017–PRESENT