

Jonas Posner

POSTDOCTORAL RESEARCHER · HABILITATION CANDIDATE · LECTURER

University of Kassel, Germany

Research Group Programming Languages / Methodologies (PLM)

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Position

Postdoctoral Researcher & Habilitation Candidate & Lecturer

Apr. 25–PRESENT

UNIVERSITY OF KASSEL, GERMANY

Research Group Programming Languages/Methodologies (PLM)

Chair Substitute

Oct. 24–Mar. 25

UNIVERSITY OF KASSEL, GERMANY

Research Group Software Engineering (SE)

Postdoctoral Researcher & Lecturer

Aug. 22–Sept. 24

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] 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.

- [P2] **Jonas Posner**, Lukas 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.
- [P3] **Jonas Posner**, Lukas 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.
- [P4] **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.
- [P5] **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.
- [P6] 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

- [P7] **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

- [P8] 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.
- [P9] 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.
- [P10] **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. To appear. *Slides*.
- [P11] **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*.
- [P12] **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*.
- [P13] **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*.
- [P14] 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*.
- [P15] **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.
- [P16] **Jonas Posner**, Lukas 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.
- [P17] **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.
- [P18] **Jonas Posner**, Lukas 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.
- [P19] Claudia Fohry, **Jonas Posner**, and Lukas 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.
- [P20] **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.

- [P21] **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.
- [P22] **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.
- [P23] 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.
- [P24] 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

- [P25] 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.
- [P26] **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*.
- [P27] **Jonas Posner** and Patrick Finnerty. “Project Wagomu: Elastic HPC Resource Management”. In: *ISC High Performance Conference*. 2024. *Poster*.
- [P28] **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*.
- [P29] **Jonas Posner**. “Asynchronous Many-Tasking (AMT): Load Balancing, Fault Tolerance, Resource Elasticity”. In: *ISC High Performance Conference*. 2022. *Poster*.
- [P30] **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.
- [P31] **Jonas Posner**. “Locality-Flexible and Cancelable Tasks for the APGAS Library”. In: *EuroHPC Summit Week, PRACEdays*. 2021. *Poster*.
- [P32] **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

- [P33] **Jonas Posner** and Patrick Finnerty. *Project Wagomu: GitHub—Code Repositories*. URL: <https://github.com/ProjectWagomu>.
- [P34] **Jonas Posner** and Patrick Finnerty. *Project Wagomu: Zenodo—Artefacts and Slides*. URL: <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

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

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

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: <i>Generative AI in Software and Algorithm Development</i> <ul style="list-style-type: none"> <i>Principal investigator.</i> Duties include preparing topics and grading student manuscripts as well as presentations. 	<i>Winter Semester 2024/2025</i> 6 ECTS
B.Sc. Thesis: <i>Dynamic Resource Management: Comparison of MPI-DPP and APGAS+GLB</i> <ul style="list-style-type: none"> <i>First examiner.</i> Duties include preparing the topic, supervising both the technical part and the manuscript, and grading. 	<i>Winter Semester 2024/2025</i> 15 ECTS
B.Sc. Thesis: <i>Simulation and Evaluation of evolving Workloads</i> <ul style="list-style-type: none"> <i>First examiner.</i> Duties include preparing the topic, supervising both the technical part and the manuscript, and grading. 	<i>Winter Semester 2024/2025</i> 15 ECTS
B.Sc. Thesis: <i>Simulating Malleable Job Scheduling Algorithms using Real-World Supercomputer Trace Logs</i> <ul style="list-style-type: none"> <i>First examiner.</i> Duties include preparing the topic, supervising both the technical part and the manuscript, and grading. 	<i>Winter Semester 2024/2025</i> 15 ECTS
B.Sc. Thesis: <i>Evaluation of Gemini-generated End-To-End and Unit Tests for Web Applications</i> <ul style="list-style-type: none"> <i>First examiner.</i> Duties include supervising both the technical part and the manuscript, and grading. 	<i>Winter Semester 2024/2025</i> 15 ECTS
B.Sc. Thesis: <i>Bundler vs. CDN: A comparison of JavaScript delivery methods regarding performance</i> <ul style="list-style-type: none"> <i>Second examiner.</i> Duties include grading. 	<i>Winter Semester 2024/2025</i> 15 ECTS
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B.Sc. Lecture: <i>Algorithms and Data Structures</i> <ul style="list-style-type: none"> Duties includes giving exercises as well as creating and correcting weekly worksheets. 	<i>Summer Semester 2024</i> 6 ECTS
B.Sc. & M.Sc. Seminar: <i>History and Evolution of Supercomputing - From the Beginnings to the Exascale Era</i> <ul style="list-style-type: none"> <i>Principal investigator.</i> Duties include preparing topics and grading student manuscripts as well as presentations. 	<i>Summer Semester 2024</i> 6 ECTS
B.Sc. Thesis: <i>Development of a Material Workflow System for Batch Processing of Materials on Virtual Production Systems</i> <ul style="list-style-type: none"> <i>Supervisor.</i> Duties include supervising both the technical part and the manuscript. 	<i>Summer Semester 2024</i> 15 ECTS
M.Sc. Project: <i>MPI Sessions for Resource Adaptivity</i> <ul style="list-style-type: none"> <i>Supervisor.</i> Duties include preparing topics and supervising. 	<i>Summer Semester 2024</i> 8 ECTS
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B.Sc. Lecture: <i>Introduction to Parallel Processing</i> <ul style="list-style-type: none"> <i>Principal investigator.</i> Topics include shared memory, distributed memory, and GPUs. Duties include giving lectures, designing exercises, and taking oral exams. 	<i>Winter Semester 2023/2024</i> 6 ECTS
B.Sc. Thesis: <i>Evolving Task-based Parallel Programming Systems</i> <ul style="list-style-type: none"> <i>Supervisor.</i> Duties include preparing the topic and supervising both the technical part and the manuscript. 	<i>Winter Semester 2023/2024</i> 15 ECTS
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B.Sc. Practical Lecture: <i>Building a Miniature Supercomputer</i> <ul style="list-style-type: none"> <i>Principal investigator.</i> Full design of this new course. Topics include Linux, git, Docker, and Slurm. Duties include giving lectures, designing exercises, and taking oral exams. 	<i>Summer Semester 2023</i> 6 ECTS

M.Sc. Thesis: <i>TasGPI: A Global Load Balancing framework for C++</i> <ul style="list-style-type: none"> <i>Supervisor.</i> Duties include preparing the topic and supervising both the technical part and the manuscript. 	<i>Summer Semester 2023</i> 30 ECTS
B.Sc. Thesis: <i>Evaluation of Malleable Job Scheduling Algorithms via Simulations</i> <ul style="list-style-type: none"> <i>Supervisor.</i> Duties include preparing the topic and supervising both the technical part and the manuscript. 	<i>Summer Semester 2023</i> 15 ECTS
B.Sc. Project: <i>Evaluation of Real-world Supercomputer Trace Logs with Malleable Job Scheduling Algorithms via Simulations</i> <ul style="list-style-type: none"> <i>Supervisor.</i> Duties include preparing topics and supervising. 	<i>Summer Semester 2023</i> 12 ECTS
B.Sc. Lecture: <i>Introduction to Parallel Processing</i> <ul style="list-style-type: none"> Responsible for 75% of the lecture. Topics include shared memory and distributed memory. Duties include giving lectures, designing exercises, and taking oral exams. 	<i>Winter Semester 2022/2023</i> 6 ECTS
M.Sc. Lecture: <i>Parallel Programming</i> <ul style="list-style-type: none"> Responsible for the part “Introduction to Charm++”. Duties include giving lectures, designing exercises, and taking oral exams. 	<i>Winter Semester 2022/2023</i> 6 ECTS
B.Sc. & M.Sc. Seminar: <i>State-of-the-Art and Trends of High Performance Computing</i> <ul style="list-style-type: none"> Held in cooperation with a co-worker. Duties include preparing topics and grading student manuscripts as well as presentations. 	<i>Winter Semester 2022/2023</i> 6 ECTS
B.Sc. Thesis: <i>Benchmarking of Virtual Threads in Java 19</i> <ul style="list-style-type: none"> <i>Supervisor.</i> Duties include preparing the topic and supervising the technical part. 	<i>Winter Semester 2022/2023</i> 15 ECTS
B.Sc. Project: <i>Building a Slurm Cluster using Docker</i> <ul style="list-style-type: none"> <i>Supervisor.</i> Duties include preparing the topic and supervising the technical part. 	<i>Winter Semester 2022/2023</i> 12 ECTS
B.Sc. Project: <i>Installation and Evaluation of several OpenSHMEM Implementations</i> <ul style="list-style-type: none"> <i>Supervisor.</i> Duties include preparing the topic and supervising the technical part. 	<i>Winter Semester 2022/2023</i> 12 ECTS
B.Sc. & M.Sc. Seminar: <i>State of the Art and Trends of High Performance Computing</i> <ul style="list-style-type: none"> <i>Principal investigator.</i> Duties include preparing topics and grading student manuscripts as well as presentations. 	<i>Summer Semester 2022</i> 6 ECTS
B.Sc. Thesis: <i>Integrating of APGAS into the Benchmark Suite TaskBench</i> <ul style="list-style-type: none"> <i>Supervisor.</i> Duties include preparing the topic and supervising both the technical part and the manuscript. 	<i>Summer Semester 2022</i> 15 ECTS
B.Sc. Lecture: <i>Introduction to Parallel Processing</i> <ul style="list-style-type: none"> Responsible for 25% of the lecture. Topics include distributed memory. Duties include giving lectures, designing exercises, and taking oral exams. 	<i>Winter Semester 2021/2022</i> 6 ECTS
B.Sc. & M.Sc. Seminar: <i>Task-based Parallel Programming-Systems</i> <ul style="list-style-type: none"> Held in cooperation with a co-worker. Duties include preparing topics and grading student manuscripts as well as presentations. 	<i>Winter Semester 2021/2022</i> 6 ECTS
M.Sc. Lecture: <i>Parallel Programming</i> <ul style="list-style-type: none"> Responsible for the part “Introduction to Charm++”. Duties include giving lectures, designing exercises, and taking oral exams. 	<i>Summer Semester 2021</i> 6 ECTS

B.Sc. Lecture: <i>Introduction to Parallel Processing</i> <ul style="list-style-type: none"> Responsible for 75% of the lecture. Topics include shared memory and distributed memory. Duties include giving lectures, designing exercises, and taking oral exams. 	<i>Winter Semester 2020/2021</i> 6 ECTS
B.Sc. & M.Sc. Seminar: <i>Task-based Parallel Programming-Systems</i> <ul style="list-style-type: none"> Held in cooperation with a co-worker. Duties include preparing topics and grading student manuscripts as well as presentations. 	<i>Winter Semester 2020/2021</i> 6 ECTS
B.Sc. Project: <i>Implementation of Benchmarks in Chapel, Legion, and Charm++</i> <ul style="list-style-type: none"> <i>Supervisor.</i> Duties include preparing topics and supervising. 	<i>Winter Semester 2020/2021</i> 12 ECTS
M.Sc. Thesis: <i>Implementing an MPI Transport Layer for APGAS</i> <ul style="list-style-type: none"> <i>Supervisor.</i> Duties include preparing the topic and supervising the technical part. 	<i>Winter Semester 2020/2021</i> 30 ECTS
B.Sc. & M.Sc. Seminar: <i>The Future of Java</i> <ul style="list-style-type: none"> Held in cooperation with a co-worker. Duties include preparing topics and grading student manuscripts as well as presentations. 	<i>Summer Semester 2020</i> 6 ECTS
M.Sc. Thesis: <i>Implementing Resource Elasticity for Global Task Pools in APGAS</i> <ul style="list-style-type: none"> <i>Supervisor.</i> Duties include preparing the topic and supervising the technical part. 	<i>Summer Semester 2020</i> 30 ECTS
M.Sc. Project: <i>Implementation of Reduce and Broadcast Algorithms with APGAS</i> <ul style="list-style-type: none"> <i>Supervisor.</i> Duties include preparing topics and supervising. 	<i>Summer Semester 2020</i> 8 ECTS
B.Sc. Project: <i>Analysis of APGAS programs using Likwid</i> <ul style="list-style-type: none"> <i>Supervisor.</i> Duties include preparing topics and supervising. 	<i>Summer Semester 2020</i> 12 ECTS
B.Sc. Project: <i>Evaluation of the Naos Network Interface</i> <ul style="list-style-type: none"> <i>Supervisor.</i> Duties include preparing topics and supervising. 	<i>Summer Semester 2020</i> 12 ECTS
B.Sc. & M.Sc. Seminar: <i>Java Concurrency</i> <ul style="list-style-type: none"> Held in cooperation with a co-worker. Duties include preparing topics and grading student manuscripts as well as presentations. 	<i>Winter Semester 2019/2020</i> 6 ECTS
M.Sc. Lecture: <i>Parallel Programming</i> <ul style="list-style-type: none"> Responsible for the part “Introduction to Charm++”. Duties include giving lectures, designing exercises, and taking oral exams. 	<i>Winter Semester 2019/2020</i> 6 ECTS
B.Sc. Lecture: <i>Introduction to Parallel Processing</i> <ul style="list-style-type: none"> Responsible for 50% of the lecture. Topics include distributed memory and GPUs. Duties include giving lectures, designing exercises, and taking oral exams. 	<i>Summer Semester 2019</i> 6 ECTS
B.Sc. Lecture: <i>Algorithms and Data Structures</i> <ul style="list-style-type: none"> Duties include giving exercises. 	<i>Summer Semester 2019</i> 6 ECTS
M.Sc. Project: <i>Implementation of Reduce and Broadcast Algorithms with APGAS</i> <ul style="list-style-type: none"> <i>Supervisor.</i> Duties include preparing the topic and supervising. 	<i>Summer Semester 2019</i> 8 ECTS
M.Sc. Thesis: <i>Design and Evaluation of a Work Stealing-Based Fault Tolerance Scheme for Task Pools</i> <ul style="list-style-type: none"> <i>Supervisor.</i> Duties include preparing the topic and supervising the technical part. 	<i>Summer Semester 2019</i> 30 ECTS
B.Sc. Thesis: <i>Isolation of HPC Applications using Shifter and Singularity</i> <ul style="list-style-type: none"> <i>Supervisor.</i> Duties include preparing the topic and supervising the technical part. 	<i>Summer Semester 2019</i> 15 ECTS

B.Sc. Thesis: Comparison of Charm++ and APGAS	<i>Summer Semester 2019</i>
• <i>Supervisor.</i> Duties include preparing the topic and supervising the technical part.	15 ECTS
B.Sc. Thesis: Comparison of Akka and APGAS	<i>Summer Semester 2019</i>
• <i>Supervisor.</i> Duties include preparing the topic and supervising the technical part.	15 ECTS
B.Sc. Project: Solving the Travelling Salesmen Problem with APGAS	<i>Summer Semester 2019</i>
• <i>Supervisor.</i> Duties include preparing topics and supervising.	12 ECTS
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
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
B.Sc. Thesis: Logging and Visualization of a Distributed Task Pool	<i>Winter Semester 2018/2019</i>
• <i>Supervisor.</i> Duties include preparing the topic and supervising the technical part.	15 ECTS
B.Sc. Project: Solving the Queen Domination Problem with APGAS	<i>Winter Semester 2018/2019</i>
• <i>Supervisor.</i> Duties include preparing topics and supervising.	12 ECTS
B.Sc. Project: Programming with Robocode	<i>Winter Semester 2018/2019</i>
• <i>Supervisor.</i> Duties include preparing topics and supervising.	12 ECTS
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
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>
• <i>Supervisor.</i> 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>
• <i>Supervisor.</i> 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>
• <i>Supervisor.</i> 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>
• <i>Supervisor.</i> Duties include preparing topics and supervising.	12 ECTS
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
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 2025

2025

- *Programming Frameworks and System Software* Technical Papers Program Committee Member
- *Research Posters* Committee Member

Supercomputing Conference 2024

2024

- *Research Posters* Committee Member
- Mentor in the *Mentor-Protégé Program*

Supercomputing Conference 2023

2023

- *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

2022

- *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 (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.)

Further Scientific Qualifications

Training as an Education Coach

2025

UNIVERSITY OF KASSEL, GERMANY

Period of one year with a total of 80 hours of training

Effective Doctoral Supervision

2023–2024

UNIVERSITY OF KASSEL, GERMANY

Qualification Program *quali.prof@haw*: On the Way to a Professorship

2022–2023

UNIVERSITY OF APPLIED SCIENCES FULDA AND UNIVERSITY OF KASSEL, GERMANY

Comprising the following modules:

- Leadership: Time Management and Communication for Leaders
- HAW Professorship Expert Discussions
- University Governance: Current Developments and Challenges of the University Landscape
- Design and Management of Application-Related Projects

Efficient Parallel Programming with GASPI

2022

PRACE, ONLINE

DFG Proposal Writing Workshop

2022

UNIVERSITY OF KASSEL, GERMANY

Programming Distributed Computing Platforms with COMPSs

2021

PRACE, ONLINE

Parallelization with MPI and OpenMP

2020

PRACE, ONLINE

Marie Skłodowska-Curie Actions (MSCA) Postdoctoral Fellowships

2020

UNIVERSITY OF KASSEL, GERMANY

Role Management in Science: Responsibly Shaping Working Relationships Shape

2020

UNIVERSITY OF KASSEL, GERMANY

Postdoc Wanted–Planning and Optimizing your University Career

2019

UNIVERSITY OF KASSEL, GERMANY

Grant Proposal Writing

2019

UNIVERSITY OF KASSEL, GERMANY

Professional Memberships

ACM Member

2017–PRESENT