# 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] **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.*

[P9] **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.*

[P10] **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.*

[P11] **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.*

[P12] 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.*

[P13] **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.

[P14] **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.

[P15] **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.

[P16] **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.

[P17] 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.

[P18] **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.

[P19] **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.

[P20] **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.

[P21] 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.

[P22] 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

[P23] 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.

[P24] **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.*

[P25] **Jonas Posner** and Patrick Finnerty. "Project Wagomu: Elastic HPC Resource Management". In: *ISC High Performance Conference*. 2024. *Poster.*

[P26] **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.*

[P27] **Jonas Posner**. "Asynchronous Many-Tasking (AMT): Load Balancing, Fault Tolerance, Resource Elasticity". In: *ISC High Performance Conference*. 2022. *Poster.*

[P28] **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.

[P29] **Jonas Posner**. "Locality-Flexible and Cancelable Tasks for the APGAS Library". In: *EuroHPC Summit Week, PRACEdays*. 2021. *Poster.*

[P30] **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 & Artefacs

[P31] **Jonas Posner** and Patrick Finnerty. *Project Wagomu: GitHub—Code Repositories*. URL: https://github.com/ProjectWagomu.

[P32] **Jonas Posner** and Patrick Finnerty. *Project Wagomu: Zenodo—Artefacts and Slides*. URL: https://zenodo.org/communities/ProjectWagomu.

## Invited Talks

**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 Effective Use of Resources on the Computing Continuum** *04/2024*

Invited Talk, Kobe (Japan)

- Title: Elastic Runtimes and Applications for HPC Systems

**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

### 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: *accepted*, 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: *accepted*, but cancelled due to COVID-19

### Supercomputing Conference *2018 and 2021*

Travel Grant

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

### 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: *accepted*

### 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: *accepted 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: *accepted 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. Project:** ***Renewable-Aware Supercomputer Job Scheduling: Malleable Jobs for Nighttime Sustainability*** — *Summer Semester 2025*

- *Principal investigator.* 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*

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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*

**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*** — *Summer Semester 2024*

- Duties include supervising both the technical part and the manuscript.

*15 ECTS*

**M.Sc. Project: *MPI Sessions for Resource Adaptivity*** — *Summer Semester 2024*

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

*8 ECTS*

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**B.Sc. Lecture: *Introduction to Parallel Processing*** — *Winter Semester 2023/2024*

- *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*** — *Winter Semester 2023/2024*

- 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*** — *Summer Semester 2023*

- *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++*** — *Summer Semester 2023*

- 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*** — *Summer Semester 2023*

- 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*** — *Summer Semester 2023*

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

*12 ECTS*

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**B.Sc. Lecture: *Introduction to Parallel Processing*** — *Winter Semester 2022/2023*

- 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*** — *Winter Semester 2022/2023*

- 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*** — *Winter Semester 2022/2023*

- 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*** — *Winter Semester 2022/2023*

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

*15 ECTS*

**B.Sc. Project:** ***Building a Slurm Cluster using Docker*** *Winter Semester 2022/2023*

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

*12 ECTS*

**B.Sc. Project:** ***Installation and Evaluation of several OpenSHMEM Implementations*** *Winter Semester 2022/2023*

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

*12 ECTS*

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**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*

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

*15 ECTS*

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**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*

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**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*

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**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:** ***Implementating Benchmarks in Chapel, Legion, and Charm++*** *Winter Semester 2020/2021*

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

*12 ECTS*

**M.Sc. Thesis:** ***Implementing a MPI Transport Layer for APGAS*** *Winter Semester 2020/2021*

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

*30 ECTS*

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**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*

- 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*

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

*8 ECTS*

**B.Sc. Project:** ***Analysis of APGAS programs using Likwid*** *Summer Semester 2020*

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

*12 ECTS*

**B.Sc. Project: *Evaluation of the Naos Network Interface*** *Summer Semester 2020*

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

*12 ECTS*

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**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*** *Winter Semester 2019/2020*

- 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*** *Summer Semester 2019*

- Responsible for 50% of the lecture. Topics include distributed memory and GPUs. Duties include giving lectures, designing exercises, and taking oral exams.

*6 ECTS*

**B.Sc. Lecture: *Algorithms and Data Structures*** *Summer Semester 2019*

- Duties include giving exercises.

*6 ECTS*

**M.Sc. Project: *Implementation of Reduce and Broadcast Algorithms with APGAS*** *Summer Semester 2019*

- *Principal investigator.* Duties include preparing the topic and supervising.

*8 ECTS*

**M.Sc. Thesis: *Design and Evaluation of a Work Stealing-Based Fault Tolerance Scheme for Task Pools*** *Summer Semester 2019*

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

*30 ECTS*

**B.Sc. Thesis: *Isolation of HPC Applications using Shifter and Singularity*** *Summer Semester 2019*

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

*15 ECTS*

**B.Sc. Thesis: *Comparison of Charm++ and APGAS*** *Summer Semester 2019*

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

*15 ECTS*

**B.Sc. Thesis: *Comparison of Akka and APGAS*** *Summer Semester 2019*

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

*15 ECTS*

**B.Sc. Project: *Solving the Travelling Salesmen Problem with APGAS*** *Summer Semester 2019*

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

*12 ECTS*

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**M.Sc. Lecture: *Parallel Programming*** *Winter Semester 2018/2019*

- 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*** *Winter Semester 2018/2019*

- 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*** *Winter Semester 2018/2019*

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

*15 ECTS*

**B.Sc. Project: *Solving the Queen Domination Problem with APGAS*** *Winter Semester 2018/2019*

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

*12 ECTS*

**B.Sc. Project: *Programming with Robocode*** *Winter Semester 2018/2019*

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

*12 ECTS*

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**B.Sc. Lecture: *Introduction to Parallel Processing*** *Summer Semester 2018*

- 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*** *Summer Semester 2018*

- 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*** *Summer Semester 2018*

- 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*** *Summer Semester 2018*

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

*30 ECTS*

**B.Sc. Thesis: *Solving the Knapsack Problem with APGAS*** *Summer Semester 2018*

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

*15 ECTS*

**B.Sc. Project: *Installation and Configuration of a Checkpoint/Restart Library*** *Summer Semester 2018*

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

*12 ECTS*

**B.Sc. Project: *Regular Applications with APGAS*** *Summer Semester 2018*

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

*12 ECTS*

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**B.Sc. Lecture: *Introduction to Parallel Processing*** *Summer Semester 2017*

- 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*** *Winter Semesters 2011–2016*

- Student tutor and homework supervisor.

*6 ECTS*

**B.Sc. Lecture: *Algorithms and Data Structures*** *Summer Semesters 2012–2016*

- 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. Artifact Evaluation *(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 Sklodowska-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*