Jonas **Posner**

PROFESSOR IN COMPUTER SCIENCE

Fulda University of Applied Sciences, Germany
Applied Computer Science Department
Operating Systems and Parallel Processing

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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). To appear.

[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 & Artefacs

[P34] **Jonas Posner** and Patrick Finnerty. *Project Wagomu: GitHub—Code Repositories*. URL: https://github.com/ProjectWagomu.

[P35] **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

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*

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*

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

15 ECTS

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

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

8 ECTS

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*

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

15 ECTS

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*

- *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*** — *Summer Semester 2023*

- *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*** — *Summer Semester 2023*

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

12 ECTS

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*

- *Supervisor.* 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*

- *Supervisor.* 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*

- *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* — *Winter Semester 2019/2020*

- 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* — *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*

- *Supervisor.* 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*

- *Supervisor.* 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*

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

15 ECTS

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

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

15 ECTS

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

- *Supervisor.* 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*

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

12 ECTS

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*

- *Supervisor.* 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*

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

12 ECTS

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

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

12 ECTS

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*

- *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* *Summer Semester 2018*

- *Supervisor.* Duties include preparing the topic and supervising the technical part. *30 ECTS*

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

- *Supervisor.* 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*

- *Supervisor.* Duties include preparing topics and supervising. *12 ECTS*

B.Sc. Project: *Comparison of HPC and Intel CnC* *Summer Semester 2018*

- *Supervisor.* Duties include preparing topics and supervising. *12 ECTS*

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*

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 2026 *2026*

- *Workshops and Symposiums* Committee Member
- *Research Posters* Committee Member

Supercomputing Conference 2025 *2025*

- *Programming Frameworks and System Software* Technical Papers Program Committee Member
- *Research Posters* Committee Member
- Mentor in the *Mentor-Protégé Program*

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 *(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*