

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 (HPC) and Supercomputing
- Parallel Programming Models, with emphasis on Asynchronous Many-Task Systems (AMT)
- Dynamic Resource Management
- Application-Level Techniques for Load Balancing, Fault Tolerance, and Resource Elasticity
- Adaptive Job Scheduling
- AI-Assisted Development and Programming Methodologies

Publications

JOURNALS

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

DISSERTATION

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

CONFERENCES & WORKSHOPS

- [P9] Anna-Lena Roth and **Jonas Posner**. “An Empirical Analysis of High-Performance Computing Education in Germany”. In: *Proceedings of International Conference on Computational Science (ICCS) Workshops (WTCS)*. Springer, 2026. To appear.
- [P10] Anna-Lena Roth, **Jonas Posner**, and Michael Kuhn. “Enabling Interactive Visualization for Near-Real-Time Performance Analysis of MPI Applications”. In: *Proceedings International Conference on Performance Engineering (ICPE) Workshops (WEPPE)*. ACM, 2026. To appear.
- [P11] Torben R. Lahnor, Mia Reitz, **Jonas Posner**, and Patrick Diehl. “Exploring Performance-Productivity Trade-offs in AMT Runtimes: A Task Bench Study of Itoyori, ItoyoriFBC, HPX, and MPI”. In: *Workshop on Asynchronous Many-Task Systems and Applications (WAMTA)*. 2026. To appear. *Slides. Preprint*.
- [P12] 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. doi: 10.1145/3731599.3767502. *Slides*.
- [P13] Anna-Lena Roth, David James, **Jonas Posner**, and Michael Kuhn. “Performance Analysis in Parallel Programming Education: A Comparative Usability Study”. In: *PARS-Mitteilungen* (2025). To appear.
- [P14] 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. Preprint*.
- [P15] **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*.
- [P16] **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*.
- [P17] **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*.
- [P18] **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*.
- [P19] 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*.

- [P20] **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.
- [P21] **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.
- [P22] **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.
- [P23] **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.
- [P24] 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.
- [P25] **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.
- [P26] **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.
- [P27] **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.
- [P28] 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.
- [P29] 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

- [P30] 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.
- [P31] **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.
- [P32] **Jonas Posner** and Patrick Finnerty. “Project Wagomu: Elastic HPC Resource Management”. In: *ISC High Performance Conference*. 2024. Poster.
- [P33] **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.
- [P34] **Jonas Posner**. “Asynchronous Many-Tasking (AMT): Load Balancing, Fault Tolerance, Resource Elasticity”. In: *ISC High Performance Conference*. 2022. Poster.
- [P35] **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.
- [P36] **Jonas Posner**. “Locality-Flexible and Cancelable Tasks for the APGAS Library”. In: *EuroHPC Summit Week, PRACEdays*. 2021. Poster.
- [P37] **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

- [P38] **Jonas Posner**. *FuldaHPC: GitHub—Code Repositories*. URL: <https://github.com/FuldaHPC>.
- [P39] **Jonas Posner**. *FuldaHPC: Zenodo—Artefacts and Slides*. URL: <https://zenodo.org/communities/FuldaHPC>.
- [P40] **Jonas Posner** and Patrick Finnerty. *Project Wagomu: GitHub—Code Repositories*. URL: <https://github.com/ProjectWagomu>.
- [P41] **Jonas Posner** and Patrick Finnerty. *Project Wagomu: Zenodo—Artefacts and Slides*. URL: <https://zenodo.org/communities/ProjectWagomu>.

Invited Talks

Department of Computer Science, Parallel Programming

03/2026

INVITED TALK, TECHNICAL UNIVERSITY OF DARMSTADT (GERMANY)

- Title: GreenHPC: Scheduler-Integrated Node Power Management for Energy-Efficient Supercomputing. *Slides.*

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)

02/2026

PAPER PRESENTATION, PEER-REVIEWED, GARCHIGEN (GERMANY)

- Title: Exploring Performance-Productivity Trade-offs in AMT Runtimes: A Task Bench Study of Itoyori, ItoyoriFBC, HPX, and MPI

Supercomputing (SC) Workshops (PAW-ATM)

11/2025

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

- Title: Stackless vs. Stackful Coroutines: A Comparative Study for RDMA-based Asynchronous Many-Task (AMT) Runtimes

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 DISSERTATION PRESENTATION, PEER-REVIEWED, DALLAS (U.S.) Title: Load Balancing, Fault Tolerance, and Resource Elasticity for Asynchronous Many-Task Systems	11/2022
Ph.D. Disputation PRESENTATION AND DEFENSE, UNIVERSITY OF KASSEL (GERMANY) Title: Load Balancing, Fault Tolerance, and Resource Elasticity for Asynchronous Many-Task Systems	07/2022
ISC High Performance Conference POSTER PRESENTATION, PEER-REVIEWED, HAMBURG (GERMANY) Title: Asynchronous Many-Tasking (AMT): Load Balancing, Fault Tolerance, Resource Elasticity	05/2022
International Conference on Parallel Processing (ICPP) Workshops (P2S2) PAPER PRESENTATION, PEER-REVIEWED, ONLINE Title: Transparent Resource Elasticity for Task-Based Cluster Environments with Work Stealing	09/2021
International Parallel and Distributed Processing (IPDPS) Workshops (APDCM) PAPER PRESENTATION, PEER-REVIEWED, ONLINE Title: Checkpointing vs. Supervision Resilience Approaches for Dynamic Independent Tasks	06/2021
Ph.D. Forum International Parallel and Distributed Processing (IPDPS) POSTER PRESENTATION, PEER-REVIEWED, ONLINE Title: Resource Elasticity at Task-Level	06/2021
IEEE Cluster POSTER PRESENTATION, PEER-REVIEWED, ONLINE Title: System-Level vs. Application-Level Checkpointing	09/2020
EuroHPC Summit Week, PRACEdays POSTER PRESENTATION, PEER-REVIEWED, ONLINE Title: Locality-Flexible and Cancelable Tasks for the APGAS Library	03/2020
Supercomputing (SC) Workshops (PAW-ATM) PAPER PRESENTATION, PEER-REVIEWED, DENVER (U.S.) Title: Comparison of the HPC and Big Data Java Libraries Spark, PCJ and APGAS	11/2019
International Conference on High Performance Computing & Simulation (HPCS) PAPER PRESENTATION, PEER-REVIEWED, ORLÉANS (FRANCE) Title: A Selective and Incremental Backup Scheme for Task Pools	07/2018
Parallel Processing and Applied Mathematics (PPAM) PAPER PRESENTATION, PEER-REVIEWED, LUBLIN (POLAND) Title: A Combination of Intra- and Inter-place Work Stealing for the APGAS Library	09/2017
Ph.D. Forum International Parallel and Distributed Processing (IPDPS) POSTER PRESENTATION, PEER-REVIEWED, LAKE BUENA VISTA (U.S.) Title: A Generic Reusable Java Framework for Fault-Tolerant Parallelization with the Task Pool Pattern	06/2017
International Parallel and Distributed Processing (IPDPS) Workshops (APDCM) 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	06/2017

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. Starts in 04/2026*
- <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. 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 • <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. Lecture: Algorithms and Data Structures • Duties includes giving exercises as well as creating and correcting weekly worksheets.	<i>Summer Semester 2024</i>
	6 ECTS
B.Sc. & M.Sc. Seminar: History and Evolution of Supercomputing - From the Beginnings to the Exascale Era • <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: Development of a Material Workflow System for Batch Processing of Materials on Virtual Production Systems • <i>Supervisor.</i> Duties include supervising both the technical part and the manuscript.	<i>Summer Semester 2024</i>
	15 ECTS
M.Sc. Project: MPI Sessions for Resource Adaptivity • <i>Supervisor.</i> Duties include preparing topics and supervising.	<i>Summer Semester 2024</i>
	8 ECTS
B.Sc. Lecture: Introduction to Parallel Processing • <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: Evolving Task-based Parallel Programming Systems • <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
B.Sc. Practical Lecture: Building a Miniature Supercomputer • <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: TasGPI: A Global Load Balancing framework for C++ • <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: Prototypical Development of a Job Scheduler for Malleable Jobs • <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. Thesis: Evaluation of Malleable Job Scheduling Algorithms via Simulations • <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: Evaluation of Real-world Supercomputer Trace Logs with Malleable Job Scheduling Algorithms via Simulations • <i>Supervisor.</i> Duties include preparing topics and supervising.	<i>Summer Semester 2023</i>
	12 ECTS
B.Sc. Lecture: Introduction to Parallel Processing • 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: Parallel Programming • 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: State-of-the-Art and Trends of High Performance Computing 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: Benchmarking of Virtual Threads in Java 19 <i>Supervisor.</i> Duties include preparing the topic and supervising the technical part.	<i>Winter Semester 2022/2023</i> 15 ECTS
B.Sc. Project: Building a Slurm Cluster using Docker <i>Supervisor.</i> Duties include preparing the topic and supervising the technical part.	<i>Winter Semester 2022/2023</i> 12 ECTS
B.Sc. Project: Installation and Evaluation of several OpenSHMEM Implementations <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: State of the Art and Trends of High Performance Computing <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: Integrating of APGAS into the Benchmark Suite TaskBench <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: Introduction to Parallel Processing 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: Task-based Parallel Programming-Systems 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: Parallel Programming 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: Introduction to Parallel Processing 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: Task-based Parallel Programming-Systems 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: Implementation of Benchmarks in Chapel, Legion, and Charm++ <i>Supervisor.</i> Duties include preparing topics and supervising.	<i>Winter Semester 2020/2021</i> 12 ECTS
M.Sc. Thesis: Implementing an MPI Transport Layer for APGAS <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: The Future of Java 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: Implementing Resource Elasticity for Global Task Pools in APGAS <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> • <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> • <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> • <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> • 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> • 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. Thesis: <i>Logging and Visualization of a Distributed Task Pool</i> • <i>Supervisor.</i> Duties include preparing the topic and supervising the technical part.	<i>Winter Semester 2019/2020</i> 15 ECTS
B.Sc. Lecture: <i>Introduction to Parallel Processing</i> • 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> • Duties include giving exercises.	<i>Summer Semester 2019</i> 6 ECTS
M.Sc. Project: <i>Implementation of Reduce and Broadcast Algorithms with APGAS</i> • <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> • <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> • <i>Supervisor.</i> Duties include preparing the topic and supervising the technical part.	<i>Summer Semester 2019</i> 15 ECTS
B.Sc. Thesis: <i>Comparison of Charm++ and APGAS</i> • <i>Supervisor.</i> Duties include preparing the topic and supervising the technical part.	<i>Summer Semester 2019</i> 15 ECTS
B.Sc. Thesis: <i>Comparison of Akka and APGAS</i> • <i>Supervisor.</i> Duties include preparing the topic and supervising the technical part.	<i>Summer Semester 2019</i> 15 ECTS
B.Sc. Project: <i>Solving the Travelling Salesmen Problem with APGAS</i> • <i>Supervisor.</i> Duties include preparing topics and supervising.	<i>Summer Semester 2019</i> 12 ECTS
M.Sc. Lecture: <i>Parallel Programming</i> • Responsible for the part “Introduction to Charm++”. Duties include giving lectures, designing exercises, and taking oral exams.	<i>Winter Semester 2018/2019</i> 6 ECTS
B.Sc. & M.Sc. Seminar: <i>Script Languages</i> • Held in cooperation with a co-worker. Duties include preparing topics and grading student manuscripts as well as presentations.	<i>Winter Semester 2018/2019</i> 6 ECTS
B.Sc. Project: <i>Solving the Queen Domination Problem with APGAS</i> • <i>Supervisor.</i> Duties include preparing topics and supervising.	<i>Winter Semester 2018/2019</i> 12 ECTS

B.Sc. Project: <i>Programming with Robocode</i>	<i>Winter Semester 2018/2019</i>
<i>Supervisor.</i> Duties include preparing topics and supervising.	12 ECTS
B.Sc. Lecture: <i>Introduction to Parallel Processing</i>	<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: <i>Java Concurrency</i>	<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: <i>Using Fibers in APGAS</i>	<i>Summer Semester 2018</i>
<i>Supervisor.</i> Duties include preparing the topic and supervising the technical part.	30 ECTS
B.Sc. Thesis: <i>An Asynchronous Backup Scheme Tracking Work-Stealing for Reduction-Based Task Pools</i>	<i>Summer Semester 2018</i>
<i>Supervisor.</i> Duties include preparing the topic and supervising the technical part.	30 ECTS
B.Sc. Thesis: <i>Solving the Knapsack Problem with APGAS</i>	<i>Summer Semester 2018</i>
<i>Supervisor.</i> Duties include preparing the topic and supervising the technical part.	15 ECTS
B.Sc. Project: <i>Installation and Configuration of a Checkpoint/Restart Library</i>	<i>Summer Semester 2018</i>
<i>Supervisor.</i> Duties include preparing topics and supervising.	12 ECTS
B.Sc. Project: <i>Comparison of HPX and Intel CnC</i>	<i>Summer Semester 2018</i>
<i>Supervisor.</i> Duties include preparing topics and supervising.	12 ECTS
B.Sc. Lecture: <i>Introduction to Parallel Processing</i>	<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: <i>Introduction to Programming</i>	<i>Winter Semesters 2011–2016</i>
Student tutor and homework supervisor.	6 ECTS
B.Sc. Lecture: <i>Algorithms and Data Structures</i>	<i>Summer Semesters 2012–2016</i>
Student tutor and homework supervisor.	6 ECTS

Service to Profession

Supercomputing Conference 2026	2026
<i>Workshops and Symposiums</i> Committee Member <i>Research Posters</i> Committee Member	
Supercomputing Conference 2025	2025
<i>Programming Frameworks and System Software</i> Technical Papers Program Committee Member <i>Research Posters</i> Committee Member - Mentor in the <i>Mentor-Protégé Program</i>	
Supercomputing Conference 2024	2024
<i>Research Posters</i> Committee Member - Mentor in the <i>Mentor-Protégé Program</i>	

Supercomputing Conference 2023 • <i>Programming Frameworks and System Software</i> Technical Papers Program Committee Member • <i>Birds of a Feather (BoF)</i> Committee Member • <i>HPC Illuminations Pavilion</i> Committee Member • Mentor in the <i>Mentor-Protégé Program</i>	2023
Supercomputing Conference 2022 • <i>Birds of a Feather (BOF)</i> Committee Member • <i>AD/AE Appendices</i> Committee Member • Reviewer for the Student Volunteers Program	2022
Supercomputing Conference 2021 • Lead Student Volunteer (SCALE) • <i>Birds of a Feather (BOF)</i> Committee Member • <i>Guided Group of Interest (GIG)</i> Committee Member • Reviewer for the Student Volunteers Program	2021
Guest Editor • Invited Editor for the Journal “<i>Recent advances in Asynchronous Many Task Runtime Systems</i>” published in Springer Nature Computer Science	2025
University of Kassel • Selection committee member for the professorship <i>Automation and Sensor Technology in Network Systems</i>	2022
Organizing Committee • Workshop on Asynchronous Many-Task Systems for Exascale (AMTE) at PPAM (<i>since 2026</i>)	2026–PRESENT
Program Committee Member • Workshop on Dynamic Resources in HPC (DynResHPC) at EuroPar (<i>2025</i>) • Parallel Applications Workshop, Alternatives To MPI+X (PAW-ATM) at SC (<i>2025</i>) • ISC High Performance Workshops (<i>since 2024</i>) • International Conference on Compiler Construction (CC) Artifact Evaluation (<i>2024</i>) • Workshop on Language-Based Parallel Programming Models (WLPP) at PPAM (<i>since 2024</i>) • Workshop on Asynchronous Many-Task Systems and Applications (WAMTA) (<i>since 2024</i>) • Workshop on Asynchronous Many-Task Systems for Exascale (AMTE) at EuroPar (<i>2024</i>) • Workshop on Performance and Energy Efficiency in Concurrent and Distributed Systems (PECS) at HPDC (<i>2024</i>) • Workshop on Advances in Parallel and Distributed Computational Models (APDCM) at IPDPS (<i>since 2018</i>) • International Symposium on Computing and Networking (CANDAR) (<i>2018–2023</i>)	2018–PRESENT
Invited Reviewer • 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)	2018–PRESENT
Lead Student Volunteer • Supercomputing Conference, SC21, St. Louis (U.S.) • Supercomputing Conference, SC20, online • Supercomputing Conference, SC19, Denver (U.S.)	2019–2021
Student Volunteer • ISC High Performance, ISC19, Frankfurt (Germany) • Supercomputing Conference, SC18, Dallas (U.S.) • Supercomputing Conference, SC17, Denver (U.S.)	2017–2019

Professional Memberships

ACM Member

2017-PRESENT