

Dr. André Bauer

✉ andrebauer@uchicago.edu | 🌐 <https://drandrebaauer.github.io>

Curriculum Vitae

RESEARCH INTEREST

My research vision is to provide intuitive, efficient, and sustainable data science solutions across all disciplines and domains. Therefore, I focus on fusing Software Engineering, Performance Engineering, and Data Science.

ACADEMIC CAREER

Argonne National Laboratory

ASSOCIATED RESEARCHER

Lemont, United States

since January 2023

University of Chicago

POSTDOCTORAL RESEARCHER (PROF. FOSTER)

Chicago, United States

since November 2022

University of Würzburg

RESEARCH GROUP LEADER (PROF. KOUNEV)

Würzburg, Germany

January 2021 — October 2022

University of Würzburg

RESEARCH ASSISTANT

Würzburg, Germany

October 2016 — December 2020

SCHOOL & ACADEMIC EDUCATION

University of Würzburg

HABILITATION

Würzburg, Germany

since July 2022

University of Würzburg

DR. RER. NAT. (COMPUTER SCIENCE)

Würzburg, Germany

October 2016 — December 2020

- **Dissertation** “Automated Hybrid Time Series Forecasting: Design, Benchmarking, and Use Cases”
- **Advisor** Prof. Dr. Samuel Kounev
- **Grade** Summa cum laude (1.0) — *Disputation December 22, 2020*

University of Würzburg

MASTER OF SCIENCE IN COMPUTER SCIENCE

Würzburg, Germany

October 2014 — September 2016

Blekinge Institute of Technology

SEMESTER ABROAD (ERASMUS PROGRAM)

Karlskrona, Sweden

August 2015 — January 2016

University of Würzburg

BACHELOR OF SCIENCE IN COMPUTER SCIENCE

Würzburg, Germany

October 2012 — October 2014

AWARDS & SCHOLARSHIPS

GAIN Participation Grant, German Academic International Network

The GAIN conference connects internationally mobile German scientists with representatives from the scientific community, politics, and industry.

Bonn, Germany

May 2023

2023 SPECTacular Award, Standard Performance Evaluation Corporation (SPEC)

The SPECTacular Award is given to individuals who have significantly exceeded expectations in their contributions to SPEC.

Gainesville, United States

February 2023

Leadership Academy Fellowship, German Scholars Organization

The Leadership Academy Fellowship is awarded to 25 outstanding researchers from all disciplines.

Berlin, Germany

January 2023

SPEC Kaivalya Dixit Distinguished Dissertation Award, SPEC

The SPEC Kaivalya Dixit Distinguished Dissertation Award is an annual award recognizing one outstanding doctoral dissertation within the scope of the SPEC Research Group in terms of scientific originality, scientific significance, practical relevance, impact, and presentation.

Gainesville, United States

April 2022

Distinguished Dissertation Award, Faculty of Mathematics and Computer Science

The Distinguished Dissertation Award is an annual award for outstanding dissertations from the Faculty of Mathematics and Computer Science.

Würzburg, Germany

July 2021

Dissertation Award , Unterfränkische Gedenkjahrstiftung für Wissenschaft	Würzburg, Germany
The Dissertation Award is an annual award for outstanding dissertations from all disciplines.	May 2021
Summa cum laude , University of Würzburg	Würzburg, Germany
Grading of the doctoral thesis ‘Automated Hybrid Time Series Forecasting: Design, Benchmarking, and Use Cases’.	December 2020
Winner of the FameLab State of Bavaria final , British Council	Regensburg, Germany
In this science communication competition, researchers must present their work in three minutes in an understandable and humorous way.	March 2020
Sokrates/Erasmus Grant , University of Würzburg	Würzburg, Germany
Mobility grant for a semester abroad in Sweden.	August 2015 — January 2016
Deutschlandstipendium , University of Würzburg	Würzburg, Germany
The Deutschlandstipendium supports talented and high-achieving students, taking into account not only first-class grades but also social commitment and special personal achievements.	October 2014 — September 2015
Heinrich-Thein Award , Heinrich-Thein-Stiftung	Haßfurt, Germany
Award for talented students pursuing the “second-chance education”.	November 2009

FUNDING

Google Research Grant (\$1,000) , Google	March 2023
Acquisition of Google Cloud credits for the project “Performance Analysis and Prediction of Microservices in Cloud Environments”.	
DFG Research Grant (\$347,235) , Deutsche Forschungsgemeinschaft e.V.	January 2023
Applicant and PI for the project “MINERVA: Performance Prediction of Microservice Applications with Black-box Container Orchestration”, starting in October 2023, with a project duration of 3 years.	
Industrial project , DATEV eG	May 2022
Assistance for the extension of the project “Self-Configuring Autoscaler” (\$30,068), with a project duration of 3 months.	
Industrial project , DATEV eG	July 2021
Assistance with the application of the project “Self-Configuring Autoscaler” (\$71,200), with a project duration of 6 months.	
Normalverfahren Grant 2021 (\$3,234) , Universitätsbund Würzburg	April 2021
Acquisition of the Normalverfahren Grant for the project “Prediction of Winter Mortality of Bee Colonies Using Machine Learning”.	

TEACHING ACTIVITIES

Supervision of students , University of Würzburg	Würzburg, Germany
I have supervised 19 bachelor’s and seven master’s theses. In addition, I co-supervised four PhD students.	October 2016 — November 2022
Time Series Analysis and Forecasting , University of Würzburg	Würzburg, Germany
Lecturer of this self-created master’s course (English).	April 2022 — September 2022
Advance Programming , University of Würzburg	Würzburg, Germany
Co-Lecturer with Prof. Kounev of this master’s course (English).	October 2021 — March 2022
Computer Science: Getting Started , University of Würzburg	Würzburg, Germany
Co-Lecturer with Prof. Kounev of this bachelor’s course (German).	April 2021 — September 2021
Operating Systems , University of Würzburg	Würzburg, Germany
Co-Lecturer with Dr. Herbst of this bachelor’s/master’s course (German).	October 2020 — March 2021
Software-Engineering Seminar , University of Würzburg	Würzburg, Germany
Instructor of this bachelor’s/master’s course (German).	October 2016 — March 2021
Operating Systems (Exercise) , University of Würzburg	Würzburg, Germany
Coordinator & instructor of this bachelor’s/master’s course (German).	October 2016 — March 2021

SCIENCE COMMUNICATION

21st Stuttgart Science Slam

LUUPS

Stuttgart, Germany

October 2022

FameLab State of Bavaria final

BRITISH COUNCIL

Regensburg, Germany

March 2021

6th Alumni-Science Slam

UNIVERSITY OF WÜRZBURG

Würzburg, Germany

November 2020

FameLab German final

BRITISH COUNCIL

Bielefeld, Germany

May 2020

FameLab State of Bavaria final

BRITISH COUNCIL

Regensburg, Germany

March 2020

14th Munich Science Slam

LUUPS

Munich, Germany

February 2020

33rd Dortmund Science Slam

LUUPS

Dortmund, Germany

November 2019

ACADEMIC SERVICE

Organization committee

- The International Conference on Performance Engineering (Posters and Demos)
- The Second International Workshop on Performance-Data Analytics and Data-Management
- The First International Workshop on Performance-Data Analytics and Data-Management

since August 2022

October 2022 — February 2023

October 2021 — April 2022

Program committee

- International Conference on Cloud Computing and Services Science
- International Conference on Utility and Cloud Computing 2024
- Symposium on Software Performance 2023
- Int'l Conference on Autonomic Computing and Self-Organizing Systems 2023 (Posters und Demos)
- International conference on Data Science Technology and Applications 2023
- International Conference on Time Series and Forecasting 2023
- International Symposium on Cluster, Cloud and Internet Computing 2023
- International Conference on Utility and Cloud Computing 2022
- Int'l Conference on Autonomic Computing and Self-Organizing Systems 2022 (Posters und Demos)
- Symposium on Software Performance 2022
- International conference on Time Series and Forecasting 2022
- International Conference on Performance Engineering 2020 (Artefact Evaluation)
- Workshop on Evaluations and Measurements in Self-Aware Computing Systems 2019

since August 2022

since July 2023

since June 2023

since May 2023

March 2023 — July 2023

February 2023 — July 2023

November 2022 — May 2023

June 2022 — December 2022

June 2022 — September 2022

April 2022 — November 2022

April 2022 — July 2022

March 2019 — April 2020

January 2019 — June 2019

Publicity chair

- International Conference on Performance Engineering 2020
- Workshop on Evaluations and Measurements in Self-Aware Computing Systems 2019

November 2018 — April 2020

January 2019 — June 2019

Standard Performance Evaluation Corporation

- Founder and chair of the SPEC RG Predictive Data Analytics Working Group
- Elected editor of the annual SPEC RG newsletter
- Elected release manager of the SPEC RG Cloud Working Group

since June 2021

April 2017 — May 2023

October 2018 — May 2021

REVIEWING ACTIVITIES

Journals

• Journal of Grid Computing	July 2023
• Science of Computer Programming	July 2023
• Transactions on Autonomous and Adaptive Systems	June 2023
• Empirical Software Engineering	May 2023
• Empirical Software Engineering	November 2022
• Journal of Systems & Software	September 2022
• Transactions on Cloud Computing	May 2021
• Transactions on Services Computing	February 2020
• Journal of Parallel and Distributed Computing	December 2019
• Journal of Future Generation Computer Systems	March 2019
• Transactions on Network and Service Management	November 2018
• Journal of Systems and Software	March 2018

Conferences

• Int'l Conference on Autonomic Computing and Self-Organizing Systems 2023	July 2022
• International Conference on Time Series and Forecasting 2023	March 2022
• International Symposium on Cluster, Cloud and Internet Computing 2023	January 2023
• International Conference on Utility and Cloud Computing 2022	October 2022
• Symposium on Software Performance 2022	September 2022
• International Conference on Time Series and Forecasting 2022	April 2022
• International Conference on Distributed Computing Systems 2021	February 2021
• International Symposium on Software Engineering for Adaptive and Self-Managing Systems 2020	February 2020
• International Conference on Performance Engineering 2020	November 2019
• International Middleware Conference 2019	June 2019
• International Conference on Utility and Cloud Computing 2018	September 2018
• International Conference on Self-Adaptive and Self-Organizing Systems 2018	May 2018
• International Symposium on Software Engineering for Adaptive and Self-Managing Systems 2018	February 2018
• International Conference on Dependable Systems and Networks 2018	January 2018
• International Conference on Performance Engineering 2018	November 2017
• International Conference on Self-Adaptive and Self-Organizing Systems 2017	June 2017
• Symposium on Modelling, Analysis, and Simulation of Computer and Telecommunication Systems 2017	May 2017
• International Symposium on Software Engineering for Adaptive and Self-Managing Systems 2017	February 2017
• International Conference on Software Engineering 2017	January 2017
• International Conference on Performance Engineering 2017	November 2016

SELECTED PUBLICATIONS (56 TOTAL)

A. Bauer, M. Straesser, M. Leznik, L. Beierlieb, M. Hadry, N. Hudson, K. Chard, S. Kounev, and I. Foster (2023). “Searching for the Ground Truth: Assessing the Similarity of Benchmarking Runs”. In: *Companion of the 14th ACM/SPEC International Conference on Performance Engineering (ICPE)*.

A. Bauer, M. Züfle, S. Eismann, J. Grohmann, N. Herbst, and S. Kounev (2021). “Libra: A Benchmark for Time Series Forecasting Methods”. In: *Proceedings of the 12th ACM/SPEC International Conference on Performance Engineering (ICPE)*.

A. Bauer, M. Züfle, N. Herbst, A. Zehe, A. Hotho, and S. Kounev (2020). “Time Series Forecasting for Self-Aware Systems”. In: *Proceedings of the IEEE* 108.7.

A. Bauer, M. Züfle, N. Herbst, S. Kounev, and V. Curtef (2020). “Telescope: An Automatic Feature Extraction and Transformation Approach for Time Series Forecasting on a Level-Playing Field”. In: *Proceedings of the 36th IEEE International Conference on Data Engineering (ICDE)*.

A. Bauer, M. Züfle, J. Grohmann, N. Schmitt, N. Herbst, and S. Kounev (2020). “An Automated Forecasting Framework based on Method Recommendation for Seasonal Time Series”. In: *Proceedings of the 11th ACM/SPEC International Conference on Performance Engineering (ICPE)*.

A. Bauer, V. Lesch, L. Versluis, A. Ilyushkin, N. Herbst, and S. Kounev (2019). “Chamulteon: Coordinated Auto-Scaling of Micro-Services”. In: *Proceedings of the 39th IEEE International Conference on Distributed Computing Systems (ICDCS)*.

A. Bauer, N. Herbst, S. Spinner, A. Ali-Eldin, and S. Kounev (2018). “Chameleon: A Hybrid, Proactive Auto-Scaling Mechanism on a Level-Playing Field”. In: *IEEE Transactions on Parallel and Distributed Systems (TPDS)* 30.4.

M. Straesser, A. Bauer, R. Leppich, N. Herbst, K. Chard, I. Foster, and S. Kounev (2023). “An Empirical Study of Container Image Configurations and Their Impact on Start Times”. In: *Proceedings of the 23rd IEEE/ACM International Symposium on Cluster, Cloud and Internet Computing (CCGRID)*.

N. Herbst, A. Bauer, S. Kounev, G. Oikonomou, E. V. Eyk, G. Kousiouris, A. Evangelinou, R. Krebs, T. Brecht, C. Abad, and A. Iosup (2018). “Quantifying Cloud Performance and Dependability: Taxonomy, Metric Design, and Emerging Challenges”. In: *ACM Transactions on Modeling and Performance Evaluation of Computing Systems (TOMPECS)* 3.4.

A. V. Papadopoulos, L. Versluis, A. Bauer, N. Herbst, J. von Kistowski, A. Ali-Eldin, C. Abad, J. N. Amaral, P. Tuma, and A. Iosup (2021). "Methodological Principles for Reproducible Performance Evaluation in Cloud Computing". In: *IEEE Transactions on Software Engineering (TSE)* 47.8.

CERTIFICATES

Certificate Leadership (University of Würzburg)

October 2022

Certificate Academic Teaching (State of Bavaria)

November 2020

Certificate Academic Teaching (University of Würzburg)

December 2019

VOLUNTARY ACTIVITIES

Pen Pal Program

Chicago, United States

OFFICE OF DIVERSITY AND INCLUSION UNIVERSITY OF CHICAGO

since February 2023

Mentoring for students

Würzburg, Germany

ALUMNIVEREIN UNIVERSITY OF WÜRZBURG

November 2019 — October 2022

Supervision of scouts

Würzburg, Germany

SCHWARZER HAUFEN WÜRZBURG (BDP E.V.)

July 2019 — February 2020

Volunteer tutoring

Würzburg, Germany

NACHBARSCHAFTSHILFE GROMBÜHL

September 2013 — September 2014

Student council

Schweinfurt, Germany

FRIEDRICH-FISCHER SCHULE

September 2010 — August 2011

Volunteer fire brigade

Horhausen, Germany

FFW HORHAUSEN E.V.

April 2003 — August 2009

LANGUAGES

German Mother tongue

English Fluent