Dr. André Bauer

✉ andrebauer@uchicago.edu | ⌂ https://drandrebauer.github.io

Curriculum Vitae

RESEARCH INTEREST

My research focuses on applying data science across domains and disciplines, addressing software engineering, performance, sustainability, and data science challenges. Specifically, my research aims to improve data science methods and infrastructure, develop an automated framework to streamline tasks, and promote sustainable data science.

ACADEMIC CAREER

Argonne National Laboratory   *Lemont, United States*

ASSOCIATED RESEARCHER   *since January 2023*

University of Chicago   *Chicago, United States*

POSTDOCTORAL RESEARCHER (PROF. FOSTER)   *since November 2022*

- Supervision of Ph.D. students
- Establishment of collaborations

University of Würzburg   *Würzburg, Germany*

RESEARCH GROUP LEADER (PROF. KOUNEV)   *January 2021 — October 2022*

- Supervision of students
  - 4 PhD students (co-supervision)
  - 5 Bachelor students
  - 4 Master students
- Establishment of collaborations
- Support for teaching
- Acquisition of third-party funding

University of Würzburg   *Würzburg, Germany*

RESEARCH ASSISTANT   *October 2016 — December 2020*

- Supervision of students
  - 14 Bachelor students
  - 3 Master students
- Establishment of collaborations
- Support for teaching

SCHOOL & ACADEMIC EDUCATION

University of Würzburg   *Würzburg, Germany*

HABILITATION   *since July 2022*

University of Würzburg   *Würzburg, Germany*

DOCTORAL CANDIDATE, DR. RER. NAT. (COMPUTER SCIENCE)   *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   *Würzburg, Germany*

MASTER OF SCIENCE IN COMPUTER SCIENCE   *October 2014 — September 2016*

Blekinge Institute of Technology   *Karlskrona, Sweden*

SEMESTER ABROAD (ERASMUS PROGRAM)   *August 2015 — January 2016*

University of Würzburg   *Würzburg, Germany*

BACHELOR OF SCIENCE IN COMPUTER SCIENCE   *October 2012 — October 2014*

AWARDS & SCHOLARSHIPS

2023 SPECtacular Award, Standard Performance Evaluation Corporation (SPEC)   *Gainesville, United States*

The SPECtacular Award is given to individuals who have significantly exceeded expectations in their   *February 2023*
contributions to SPEC.

Leadership Academy Fellowship, German Scholars Organization
Berlin, Germany
The Leadership Academy Fellowship is awarded to 25 outstanding researchers from all disciplines.
January 2023

SPEC Kaivalya Dixit Distinguished Dissertation Award, SPEC
Gainesville, United States
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.
April 2022

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

Fundings

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

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

Co-Lecturer with Dr. Herbst of this bachelor's/master's course (German).

Würzburg, Germany

October 2020 — March 2021

Software-Engineering Seminar, University of Würzburg

Instructor of this bachelor's/master's course (German).

Würzburg, Germany

October 2016 — March 2021

Operating Systems (Exercise), University of Würzburg

Coordinator & instructor of this bachelor's/master's course (German).

Würzburg, Germany

October 2016 — March 2021

Practical Course in Software, University of Würzburg

Coordinator & instructor of this bachelor's course (German).

Würzburg, Germany

October 2016 — September 2020

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 Second International Workshop on Performance-Data Analytics and Data-Management   *October 2022 — February 2023*
- The First International Workshop on Performance-Data Analytics and Data-Management   *October 2021 — April 2022*

Program committee

- International conference on Data Science Technology and Applications 2023   *since March 2023*
- International Conference on Time Series and Forecasting 2023   *since February 2023*
- International Symposium on Cluster, Cloud and Internet Computing 2023   *since November 2022*
- International Conference on Utility and Cloud Computing 2022   *June 2022 — December 2022*
- Int'l Conference on Autonomic Computing and Self-Organizing Systems 2022 (Posters und Demos)   *June 2022 — September 2022*
- Symposium on Software Performance 2022   *April 2022 — November 2022*
- International conference on Time Series and Forecasting 2022   *April 2022 — July 2022*
- International Conference on Performance Engineering 2020 (Artefakt Evaluation)   *March 2019 — April 2020*
- Workshop on Evaluations and Measurements in Self-Aware Computing Systems 2019   *January 2019 — June 2019*

Publicity chair

- International Conference on Performance Engineering 2020   *November 2018 — April 2020*
- Workshop on Evaluations and Measurements in Self-Aware Computing Systems 2019   *January 2019 — June 2019*

Standard Performance Evaluation Corporation

- Founder and chair of the SPEC RG Predictive Data Analytics Working Group   *since June 2021*
- Elected editor of the annual SPEC RG newsletter   *since April 2017*
- Elected release manager of the SPEC RG Cloud Working Group   *October 2018 — May 2021*

REVIEWING ACTIVITIES

Journals

- 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

- 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

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, 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.

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.

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, 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)*.

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)*. To be appear.

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, 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)*.

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 IF CHICAGO   *since February 2023*

Mentoring for students

Alumniverein University of Würzburg

Würzburg, Germany

November 2019 — October 2022

Supervision of scouts

Schwarzer Haufen Würzburg (BdP e.V.)

Würzburg, Germany

July 2019 — February 2020

Volunteer tutoring

Nachbarschaftshilfe Grombühl

Würzburg, Germany

September 2013 — September 2014

Student council

Friedrich-Fischer Schule

Schweinfurt, Germany

September 2010 — August 2011

Volunteer fire brigade

FFW Horhausen e.V.

Horhausen, Germany

April 2003 — August 2009

Languages

German Mother tongue

English Business fluent