

# Dr. André Bauer

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

## Curriculum Vitae

### RESEARCH INTEREST

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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

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#### 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

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#### 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

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#### 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*

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

## FUNDING

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

## TEACHING ACTIVITIES

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

## SCIENCE COMMUNICATION

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### **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

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### **Organization committee**

- The Second International Workshop on Performance-Data Analytics and Data-Management
- The First International Workshop on Performance-Data Analytics and Data-Management

*October 2022 — February 2023*

*October 2021 — April 2022*

### **Program committee**

- 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 (Artefakt Evaluation)
- Workshop on Evaluations and Measurements in Self-Aware Computing Systems 2019

*since March 2023*

*since February 2023*

*since November 2022*

*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*

*since April 2017*

*October 2018 — May 2021*

## REVIEWING ACTIVITIES

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### **Journals**

- Empirical Software Engineering
- Empirical Software Engineering
- Journal of Systems & Software
- Transactions on Cloud Computing
- Transactions on Services Computing
- Journal of Parallel and Distributed Computing
- Journal of Future Generation Computer Systems
- Transactions on Network and Service Management
- Journal of Systems and Software

*May 2023*

*November 2022*

*September 2022*

*May 2021*

*February 2020*

*December 2019*

*March 2019*

*November 2018*

*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 (54 TOTAL)

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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)*. To be appear.

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

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**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

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**Pen Pal Program**

Chicago, United States

OFFICE OF DIVERSITY AND INCLUSION UNIVERSITY OF CHICAGO

since February 2023

### **Mentoring for students**

ALUMNIVEREIN UNIVERSITY OF WÜRZBURG

### **Supervision of scouts**

SCHWARZER HAUFEN WÜRZBURG (BDP E.V.)

### **Volunteer tutoring**

NACHBARSCHAFTSHILFE GROMBÜHL

### **Student council**

FRIEDRICH-FISCHER SCHULE

### **Volunteer fire brigade**

FFW HORHAUSEN E.V.

*Würzburg, Germany*

*November 2019 — October 2022*

*Würzburg, Germany*

*July 2019 — February 2020*

*Würzburg, Germany*

*September 2013 — September 2014*

*Schweinfurt, Germany*

*September 2010 — August 2011*

*Horhausen, Germany*

*April 2003 — August 2009*

## **LANGUAGES**

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**German** Mother tongue

**English** Business fluent