

# Marco ZIMMERLING

Full Professor  
TU Darmstadt

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## Education

- 07/2015 PhD in Computer Engineering (Dr. sc.), **ETH Zurich**, Switzerland  
Advisor: Prof. Lothar Thiele. Referee: Prof. Tarek Abdelzaher.  
Dissertation: *End-to-end Predictability and Efficiency in Low-power Wireless Networks*
- 08/2009 Diploma in Computer Science (Dipl.-Inf.), **TU Dresden**, Germany  
Minor: Mathematics. Specialization: Software Engineering.  
Thesis: *Automatic Parameter Optimization of Sensor Network MAC Protocols*

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## Positions and Experience

- 04/2023– Full Professor (W3), **TU Darmstadt**, Germany  
I am heading the *Networked Embedded Systems Lab* at the Department of Computer Science.
- 04/2022–03/2023 Full Professor (W3), **University of Freiburg**, Germany  
Department of Computer Science
- 11/2015–03/2022 Independent Research Group Leader, **TU Dresden**, Germany  
Center for Advancing Electronics Dresden and Faculty of Computer Science
- 11/2009–10/2015 Research and Teaching Assistant, **ETH Zurich**, Switzerland  
Department of Information Technology and Electrical Engineering
- 01/2009–08/2009 Visiting Student, **RISE SICS Kista** and **Uppsala University**, Sweden  
Networked Embedded Systems Group and Department of Information Technology
- 06/2006–11/2006 Intern, **IBM T.J. Watson Research Center**, Hawthorne, NY, USA  
Sensors and Actuators Department
- 10/2005–05/2006 Intern, **IBM Research and Development**, Böblingen, Germany  
Sensors and Actuators Solutions Department
- 08/2003–01/2004 Intern, **Infineon Technologies**, Munich and Dresden, Germany  
Backend Engineering and Unit Process Development Department

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## Honors and Awards

- 2023 **ACM/IEEE IPSN Best Artifact Award**  
International Conference on Information Processing in Sensor Networks
- 2022 **ACM SenSys Test-of-Time Award**  
International Conference on Embedded Networked Sensor Systems
- ACM SIGBED Early Career Researcher Award**  
Special Interest Group on Embedded Systems of the Association for Computing Machinery

- USENIX NSDI Community Award**  
Symposium on Networked Systems Design and Implementation
- EWSN Best Paper Award**  
International Conference on Embedded Wireless Systems and Networks
- 2019 **Future Prize**  
Ewald Marquardt Foundation
- ACM/IEEE ICCPS Best Paper Award**  
International Conference on Cyber-Physical Systems
- ACM/IEEE IPSN Best Demo Award**  
International Conference on Information Processing in Sensor Networks
- 2018 **DFG Emmy Noether Grantee**  
German Research Foundation
- 2016 **EDAA Outstanding Dissertation Award**  
European Design and Automation Association
- 2015 **ACM SIGBED Paul Caspi Memorial Dissertation Award**  
Special Interest Group on Embedded Systems of the Association for Computing Machinery
- GI KuVS Best PhD Thesis Award**  
Communication and Distributed Systems Group of the German Informatics Society
- 2013 **ACM SenSys Best Paper Award**  
International Conference on Embedded Networked Sensor Systems
- 2012 **ACM/IEEE IPSN Best Paper Award Runner-up**  
International Conference on Information Processing in Sensor Networks
- ACM SenSys Best Poster Award**  
International Conference on Embedded Networked Sensor Systems
- 2011 **ACM/IEEE IPSN Best Paper Award**  
International Conference on Information Processing in Sensor Networks
- 2009 **SensorNets Best MSc Thesis Award**  
School on Cyber-Physical and Sensor Networks
- DAAD Scholarship**  
German Academic Exchange Service
- 2008 **GI Informatiktage Best Paper Award**  
Conference of the German Informatics Society

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### **Awards Received by Students Under My Supervision**

- 2024 **Sick Prize for Measurement and Sensor Technology**, Kai Geissdoerfer  
Gisela and Erwin Sick Foundation and School of Engineering Sciences, TU Dresden
- 2023 **D3TN Dissertation Award**, Kai Geissdoerfer  
D3TN and Faculty of Computer Science, TU Dresden
- 2017 **GI KuVS Best MSc Thesis Award**, Alex Bereza  
Communication and Distributed Systems Group of the German Informatics Society

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## External Funding

Total grants awarded € 21,030,000 including € 4,680,000 as PI for my research group.

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|-----------------|--|
| 02/2025–01/2029 | <b>EU MSCA Doctoral Network</b> , Horizon Europe Framework Programme ANT: Embedded AI systems and applications, PI, € 4,000,000 (my share € 260,000).                        |
| 01/2024–12/2026 | <b>LOEWE Center</b> , Research Promotion Program of Hesse emergenCITY: The resilient digital city, PI, € 14,000,000 (my share € 2,000,000).                                  |
| 12/2020–11/2022 | <b>SMWK Project Grant</b> , Saxon State Ministry for Science, Culture and Tourism Methods and tools for battery-free embedded systems, sole PI, € 140,000.                   |
| 02/2020–01/2023 | <b>DFG Project Grant</b> , German Research Foundation, Phase II of Priority Program 1914 Event-based control for cyber-physical systems, PI, € 650,000 (my share € 300,000). |
| 12/2018–11/2024 | <b>DFG Emmy Noether Grant</b> , German Research Foundation Understanding and exploiting synchronous transmissions, sole PI, € 1,700,000.                                     |
| 02/2017–01/2020 | <b>DFG Project Grant</b> , German Research Foundation, Phase I of Priority Program 1914 Event-based control for cyber-physical systems, PI, € 540,000 (my share € 280,000).  |

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## Invited Talks and Events

35 invited talks, 1 keynote presentation, 3 invitation-only seminars, 1 tutorial.

### Invited talks

- TU Darmstadt, Germany. Host: Prof. Matthias Hollick. July 2022.
- TU Munich, Germany. Host: Prof. Andreas Herkersdorf. May 2022.
- TU Darmstadt, Germany. Host: Prof. Matthias Hollick. May 2022.
- TU Darmstadt, SFB MAKI Scientific Workshop, Germany. March 2022.
- ETH Zurich, NCCR Automation Seminar Series, Switzerland. February 2022.
- University of Southampton, UK. Host: Prof. Geoff Merrett. September 2021.
- SimulaMet, Norway. Host: Prof. Olav Lysne. April 2021.
- Seminar Series *Design & Programming Cyber-Physical Systems and IoT Applications*. Nov. 2020.
- University of Freiburg, Germany. Host: Prof. Peter Thiemann. July 2020.
- ETH Zurich, Switzerland. Host: Prof. Angelika Steger. March 2020.
- Imperial College London, UK. Host: Prof. Julie A. McCann. December 2019.
- Lund University, Sweden. Host: Prof. Johan Eker. September 2019.
- Dagstuhl Seminar *Analysis, Design & Control of Predictable Interconnected Syst.* March 2019.
- Toshiba Research Europe, Bristol, UK. Host: Prof. Mahesh Sooriyabandara. February 2019.
- Workshop at ACM/IEEE IPSN'19 program committee meeting, Milan, Italy. January 2019.
- TU Dresden, Germany. Host: Prof. Gerhard Weber. October 2018.
- TU Munich, Germany. Host: Prof. Samarjit Chakraborty. June 2018.
- TU Dortmund, Germany. Host: Prof. Jian-Jia Chen. May 2018.
- University of Edinburgh, UK. Host: Prof. Johanna D. Moore. April 2017.
- University of Cambridge, UK. Host: Prof. Peter Robinson. March 2017.
- Stanford University, CA, USA. Host: Prof. Philip Levis. November 2016.
- TU Dresden, Germany. Host: Prof. Ivo Sbalzarini. August 2016.
- University of Freiburg, Germany. Host: Prof. Hannah Bast. May 2016.
- TU Graz, Austria, Host: Prof. Kay Römer. February 2016.
- TU Darmstadt, Germany. Host: Prof. Matthias Hollick. April 2015.
- TU Dresden, Germany. Host: Prof. Gerhard Fettweis. February 2015.
- Microsoft Research Cambridge, UK. Host: Antony Rowstron. February 2015.
- TU Darmstadt, Germany. Host: Prof. Matthias Hollick. December 2014.

Uppsala University, Sweden. Host: Prof. Thiemo Voigt. November 2014.  
 KTH Royal Inst. of Technology, Stockholm, Sweden. Host: Prof. K. H. Johansson. Nov. 2014.  
 SICS Swedish ICT, Kista, Sweden. Host: Prof. Thiemo Voigt. November 2014.  
 ABB Corporate Research, Västerås, Sweden. Host: Tomas Lennval. October 2014.  
 ETH Zurich, Switzerland. Host: Prof. Lothar Thiele. August 2009.  
 University of Lübeck, Germany. Host: Prof. Kay Römer. June 2009.  
 FU Berlin, Germany. Host: Prof. Jochen Schiller. June 2009.

Keynotes	International Workshop on Very Large Internet of Things (VLIoT), August 2017.
Invitation-only seminars	Dagstuhl Seminar on <i>Novel Scenarios for the Wireless Internet of Things</i> , May 2023. Dagstuhl Seminar on <i>Control of Networked Cyber-Physical Systems</i> , May 2019. Dagstuhl Seminar on <i>Analysis, Design &amp; Control of Predictable Interconnected Syst</i> , March 2019.
Tutorials	I have co-authored the tutorial <i>Supporting Replicable Networking Experiments with TriScale</i> , which has been presented at the following major scientific venues: <ul style="list-style-type: none"> <li>■ Embedded Systems Week, Online, October 2021.</li> <li>■ ACM SIGCOMM Conference, Online, August 2021.</li> <li>■ CPS-IoT Week, Online, May 2021.</li> </ul>

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## Teaching Experience as Lecturer

Winter 2024/2025	<b>Networked and Low-Power Embedded Systems</b> Integrated course at TU Darmstadt with up to 40 students. <b>Software Engineering</b> Integrated course at TU Darmstadt with 700 students. Co-taught with Reiner Haehnle. <b>Advanced Seminar in Networked Embedded Systems</b> Advanced seminar at TU Darmstadt with up to 9 students.
Summer 2024	<b>Seminar in Networked Embedded Systems</b> Seminar at TU Darmstadt with 4 students.
Winter 2023/2024	<b>Networked and Low-Power Embedded Systems</b> Integrated course at TU Darmstadt with 24 students. Newly designed. <b>Advanced Seminar in Networked Embedded Systems</b> Advanced seminar at TU Darmstadt with 4 students.
Summer 2023	<b>Seminar in Networked Embedded Systems</b> Seminar at TU Darmstadt with 7 students.
Winter 2022/2023	<b>Introduction to Embedded Systems</b> Lectures and exercises at University of Freiburg with 150 students. Newly designed. <b>Proseminar in Networked Embedded Systems</b> Proseminar at University of Freiburg with 12 students.
Summer 2022	<b>Hardware Lab</b> Lectures and labs at University of Freiburg with 120 students. <b>Networked Embedded Systems</b> Seminar at University of Freiburg with 12 students. Newly designed.
Winter 2016/2017	<b>Introduction to Computer Engineering</b> Lectures, exercises, and labs at TU Dresden with 25 students. Newly designed.

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## Research Group

PhDs	Matthias Sokolowski	05/2024–	
	Max Granzow	01/2024–	
	Carsten Herrmann	02/2017–	
	Fabian Mager	04/2016–06/2023	
	Kai Geissdoerfer	02/2018–11/2022	
PostDocs	Fabian Mager	07/2023–06/2024	
	Kai Geissdoerfer	12/2022–07/2023	first job as embedded systems freelancer
	Johannes Richter	10/2017–12/2018	first job at SCALE
Research engineers	Ingmar Splitt	07/2020–	
Lab engineers	Aron Heinecke	09/2023–02/2024	
Student assistants	Domin Menne	04/2024–	
	Zekerya Yoldas	11/2023–03/2024	
	Jamshaid Iqbal	11/2023–03/2024	
	Juergen Mattheis	10/2022–03/2023	
	Pascal Walter	10/2022–03/2023	
	Bastian Harder	10/2022–11/2022	
	Vishal Sivakumar	07/2022–09/2022	
	Ifediora Elochukwu	06/2022–08/2022	
	Pavan Joshi	06/2022–07/2022	
	Friedrich Schmidt	09/2019–08/2021	
Justus Paulick	08/2019–02/2020		
Visitors	Milan Deumer	05/2022–06/2022	from Fraunhofer HHI Berlin, Germany
	Diego Hortelano	04/2018–07/2018	from Universidad de Castilla-La Mancha, Spain
	Olivier Wavrin	04/2016–07/2016	from Université Paris-Sud, France
	Adnan Mlika	06/2010–08/2010	from University of Bern, Switzerland

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## PhD Theses

2023	Fabian Mager, TU Dresden	“Design and Real-World Evaluation of Dependable Wireless Cyber-Physical Systems”
2022	Kai Geissdoerfer, TU Dresden	“Methods and Tools for Battery-free Wireless Networks” Sick Prize for Measurement and Sensor Technology, D3TN Dissertation Award

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## Master and Bachelor Theses

17 master or diploma theses [M], 4 bachelor theses [B], 8 semester theses or study projects [S].

2024	[M]	Jonas Kubicki (supervised jointly with I. Splitt)	“Designing a Parameterized Virtual Power Source to Accurately Emulate Energy Environments for Battery-Free Applications”
	[B]	Maximilian Majchrzyk (supervised jointly with I. Splitt)	“Designing a High-speed, High-precision Digital Signal Recorder for the Shepherd Testbed”

- [B] Isabelle Sauer (supervised jointly with M. Sokolowski and I. Splitt)  
“Remote Radio Interface Design for a Low-power RF-System-on-Chip Platform”
- [B] Jan Stiefel  
“Developing and Evaluating Machine Learning Inference on Battery-Free Systems”
- [M] Julian Mathes (supervised jointly with F. Mager)  
“Development of a Cost-efficient and Scalable Localization System for High-density Battery Module Production in the Automotive Industry”
- 2023 [M] Niklas Tittjung (supervised jointly with C. Herrmann)  
“Runtime Behavior Prediction of Low-power Wireless Network Protocols using Probabilistic Model Checking Approaches”
- [M] Bastian Harder (supervised jointly with K. Geissdoerfer)  
“Design and Implementation of a Battery-free GNSS Receiver”
- [M] Jannik Maeder (supervised jointly with C. Herrmann)  
“Enabling Protocol Logic Emulation with the TrafficBench Tool Suite”
- [S] Marco Beck (supervised externally with P. Scholl)  
“Automated Production Line for the TecDays”
- [S] Niklas Tittjung (supervised jointly with C. Herrmann)  
“Experimental Validation of Theoretical Outage Probability Predictions in Low-power Wireless Mesh Networks”
- [M] Pavan Shashikant Joshi (supervised jointly with K. Geissdoerfer)  
“Design and Implementation of a Vision-based Environmental Monitoring System”
- [M] Prasad Ramachandra Lakshmi (supervised jointly with F. Mager)  
“Development of a Network Simulator to Analyze Communication Strategies in WSN”
- 2022 [M] Sachin Shibu Dominic (supervised externally with P. Scholl)  
“Vibration Data Forecasting and Anomaly Detection for Industrial Ventilators”
- [B] Dominic Rueb (supervised externally with F. Mager)  
“Development of a Data Logger for the Secure Data Transfer with Electrical Actuators”
- [S] Shreyas Manoj Kotian (supervised jointly with K. Geissdoerfer)  
“Design and Implementation of a Sound-based Environmental Monitoring System”
- [S] Victor Marchat (supervised jointly with B. Voelker)  
“Semi-automatic Labeling of Events in Energy Data”
- 2020 [M] Prateek Gautam (supervised jointly with F. Mager)  
“Network Management in Wireless Cyber-Physical Systems”
- 2019 [M] Justus Paulick (supervised jointly with K. Geissdoerfer)  
“Utility-dependent Energy Management on Real Sensor Nodes”
- [M] Tim Taubert (supervised jointly with C. Herrmann)  
“Kalman Filter Design for Channel State Tracking in IEEE 802.15.4 Multi-Packet Receivers”
- 2017 [M] Alex Bereza (supervised jointly with U. Wetzker)  
“Enabling Cross-technology Communication in the 2.4 GHz ISM Band”  
**GI KuVS Best MSc Thesis Award**
- 2016 [M] Johannes Neumann (supervised jointly with C. Herrmann and F. Mager)  
“Network Coding in Low-power Wireless Multi-hop Networks”

- [M] Javier Acevedo  
“Real-time Scheduling on Resource-constrained Embedded Devices”
- 2014 [S] Andreas Buechel (supervised jointly with R. Lim and C. Walser)  
“Making Sense of FlockLab Testbed Data”
- 2013 [M] Reto Da Forno (supervised jointly with F. Sutton)  
“A Voice-activated Wireless Patient Monitoring System”
- [S] Reto Da Forno (supervised jointly with F. Ferrari)  
“Wireless Yet Reliable Patient Notification System: GUI and Backend”
- 2012 [M] Nemanja Popovic (supervised jointly with F. Ferrari)  
“Timely Localization and Multi-Object Tracking for Sensor Networks”
- 2011 [S] Dominic Just (supervised jointly with R. Lim and C. Walser)  
“Interface Development for Next Generation FlockLab”
- 2010 [M] David Hasenfratz (supervised jointly with A. Meier and M. Woehrle)  
“Push vs. Pull in Wireless Sensor Networks”
- [S] Dmitry Lukyantsev (supervised jointly with F. Ferrari)  
“Implementation of an Adaptive Dissemination Protocol on Sensor Nodes”

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### PhD Thesis Committees

- 2023 Jasper de Winkel, TU Delft, The Netherlands. Advisor: Prof. Koen Langendoen.
- 2023 Andrea Maioli, Politecnico di Milano, Italy. Advisor: Prof. Luca Mottola.
- 2022 Davide Vecchia, University of Trento, Italy. Advisor: Prof. Gian Pietro Picco.
- 2020 Saad Ahmed, LUMS, Pakistan. Advisor: Prof. Hamad Alizai.
- 2019 Victor Millnert, Lund University, Sweden. Advisor: Prof. Johan Eker.
- 2017 Timofei Istomin, University of Trento, Italy. Advisor: Prof. Gian Pietro Picco.

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### Professional Service

13 organizing committees, 5 panels and editorial boards, 30 program committees.

- Organizer
- Dagstuhl Seminar on Sensors in the Body and Oceans: Novel Scenarios for the Wireless Internet of Things, 2023
  - General Chair of ACM International Workshop on Benchmarking Cyber-Physical Systems and Internet of Things (CPS-IoTBench), 2021
  - PhD Forum Chair of ACM International Conference on Embedded Wireless Systems and Networks (EWSN), 2021
  - General Chair of IEEE International Workshop on Benchmarking Cyber-Physical Systems and Internet of Things (CPS-IoTBench), 2020
  - PhD Forum Chair and EU Region Chair for Live Virtual Event of ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN), 2020
  - General Chair of ACM International Workshop on Benchmarking Cyber-Physical Systems and Internet of Things (CPS-IoTBench), 2019
  - Demo Chair of ACM/IEEE International Conference on Internet of Things Design and Implementation (IoTDI), 2019

- Workshop Chair of ACM International Conference on Embedded Wireless Systems and Networks (EWSN), 2019
  - Poster Chair of ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN), 2018
  - Program Chair of IEEE International Workshop on Benchmarking Cyber-Physical Networks and Systems (CPSBench), 2018
  - Poster and Demo Chair of ACM International Conference on Embedded Wireless Systems and Networks (EWSN), 2017
  - General Chair of International Workshop on Resilient Systems, 2017
  - Publication Chair of International Workshop on Real-World Wireless Sensor Networks (REALWSN), 2013
- Editor
- Associate Editor of ACM Transactions on Internet of Things, 06/2023–
  - Editorial Board Member of Journal of Systems Research, 02/2021–
- Panel member
- PhD Forum of ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN), 2021
  - Doctoral Colloquium of ACM International Conference on Embedded Networked Sensor Systems (SenSys), 2018
  - Doctoral Colloquium of ACM International Conference on Embedded Networked Sensor Systems (SenSys), 2017
- Program committee member
- USENIX Symposium on Networked Systems Design and Implementation (NSDI), 2025
  - ACM Int. Conf. on Embedded Wireless Systems and Networks (EWSN), 2024
  - ACM Int. Conference on Embedded Networked Sensor Systems (SenSys), 2023
  - ACM Int. Conf. on Embedded Wireless Systems and Networks (EWSN), 2023
  - Euromicro Conference on Real-Time Systems (ECRTS), 2023
  - ACM Int. Conf. on Embedded Wireless Systems and Networks (EWSN), 2022
  - ACM Int. Workshop on Benchmarking Cyber-Physical Systems and Internet of Things (CPS-IoTBench), 2022
  - ACM Int. Conference on Embedded Networked Sensor Systems (SenSys), 2021
  - ACM Int. Conf. on Mobile Systems, Applications, and Services (MobiSys), 2021
  - ACM/IEEE Int. Conf. on Information Processing in Sensor Networks (IPSN), 2021
  - ACM Int. Conference on Embedded Networked Sensor Systems (SenSys), 2020
  - IEEE Int. Conference on Distributed Computing Systems (ICDCS), 2020
  - ACM Int. Workshop on Edge Systems, Analytics and Networking (EdgeSys), 2020
  - ACM/IEEE Int. Conference on Cyber-Physical Systems (ICCPs), 2020
  - ACM/IEEE Int. Conf. on Information Processing in Sensor Networks (IPSN), 2020
  - IEEE Int. Conference on Parallel and Distributed Systems (ICPADS), 2019
  - ACM Int. Conference on Embedded Networked Sensor Systems (SenSys), 2019
  - IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS), 2019
  - ACM/IEEE Int. Conf. on Information Processing in Sensor Networks (IPSN), 2019
  - IEEE Workshop on Cyber-Physical Networking (CPN), 2019
  - Workshop on Real-World Embedded Wireless Systems and Networks (RealWSN), 2018
  - IEEE Int. Conference on Distributed Computing in Sensor Systems (DCOSS), 2018
  - ACM Int. Conf. on Embedded Networked Sensor Systems (SenSys), external PC, 2017
  - IEEE Real-Time Systems Symposium (RTSS), 2017
  - IEEE Int. Conference on Computer Communication and Networks (ICCCN), 2017
  - Workshop on Human-Centered Sensing, Networking, and Systems (HHumanSys), 2017



- Poster/demo program committee member
- IEEE Int. Conference on Distributed Computing in Sensor Systems (DCOSS), 2018
  - ACM/IEEE Int. Conf. on Internet of Things Design and Implementation (IoTDI), 2018
  - ACM Int. Conference on Embedded Wireless Systems and Networks (EWSN), 2018
  - ACM Int. Conference on Embedded Wireless Systems and Networks (EWSN), 2016
- External reviewer
- IEEE Real-Time Systems Symposium (RTSS), 2021
  - IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS), 2017
  - IEEE International Conference on Industrial Informatics (INDIN), 2016
  - ACM/IEEE Int. Conf. on Information Processing in Sensor Networks (IPSN), 2013
  - IEEE Int. Symp. on Personal, Indoor and Mobile Radio Communications (PIMRC), 2013
  - European Conference on Wireless Sensor Networks (EWSN), 2010
  - IEEE International Symposium on Industrial Embedded Systems (SIES), 2010
  - International Conference on Networked Sensing Systems (INSS), 2010
- Reviewer for international journals
- ACM Transactions on Cyber-Physical Systems, 2018, 2022
  - ACM Transactions on Internet of Things, 2018, 2023
  - ACM Transactions on Sensor Networks, 2016, 2017, 2019
  - IEEE/ACM Transactions on Networking, 2015–2018, 2020
  - IEEE Transactions on Control Systems Technology, 2016
  - IEEE Transactions on Industrial Informatics, 2016
  - IEEE Transactions on Mobile Computing, 2017, 2021
  - IEEE Transactions on Parallel and Distributed Systems, 2016, 2017
  - IEEE Transactions on Signal Processing, 2016
  - IEEE Transactions on Wireless Communications, 2013
  - IEEE Embedded Systems Letters, 2019
  - IEEE Wireless Communications Letters, 2017
  - IEEE Pervasive Computing, 2017, 2018
  - Springer Wireless Networks, 2013, 2016
  - Springer Real-Time Systems, 2019
- Reviewer for funding agencies
- German Research Foundation (DFG), 2022
- University service
- Member of the Doctoral Examination Board of the Department of Computer Science, TU Darmstadt, 09/2023–
  - Member of the Admission Committee for the Study Program on Intelligent Embedded Microsystems, University of Freiburg, 04/2022–03/2023
  - Member of the Council of the Center for Advancing Electronics Dresden, TU Dresden, 01/2018–
- Professional societies
- Association for Computing Machinery (ACM)
  - ACM Special Interest Group on Embedded Systems (ACM SIGBED)
  - Information Technology Society of the Association for Electrical, Electronic and Information Technologies (VDE-ITG)
  - German Informatics Society (GI)
  - German Association of University Professors and Lecturers (DHV)

## Open Source

My group and collaborators make research artifacts available as open source whenever possible.

RIOTEE	Hardware and software platform for battery-free Internet of Things devices <a href="https://riotee.nes-lab.org">https://riotee.nes-lab.org</a>
DEMOS	Robust network orchestration for autonomous low-power wireless multi-hop networking <a href="https://gitlab.ethz.ch/tec/public/demos">https://gitlab.ethz.ch/tec/public/demos</a>
HYDRA	Decentralized coordination for low-power wireless communication with formal guarantees <a href="https://gitlab.ethz.ch/tec/public/hydra">https://gitlab.ethz.ch/tec/public/hydra</a>
RSSISPY	Continuous RSSI measurements with bit-level resolution in parallel to packet receptions <a href="https://gitlab.com/nes-lab/rssispy">https://gitlab.com/nes-lab/rssispy</a>
TRAFFICBENCH	Tool suit that facilitates the experimental exploration of concurrent transmissions <a href="https://gitlab.com/nes-lab/trafficbench">https://gitlab.com/nes-lab/trafficbench</a>
BUTLER	Synchronization mechanism to increase the availability of low-power wireless protocols <a href="https://gitlab.com/nes-lab/butler">https://gitlab.com/nes-lab/butler</a>
BONITO	Connection protocol for effective communication between battery-free devices <a href="https://bonito.nes-lab.org">https://bonito.nes-lab.org</a>
FIND & FLYNC	Efficient neighbor discovery and synchronization for distributed battery-free systems <a href="https://find.nes-lab.org">https://find.nes-lab.org</a>
SHEPHERD	Portable testbed for the batteryless Internet of Things <a href="https://shepherd.nes-lab.org">https://shepherd.nes-lab.org</a>
TRISCALE	Framework for design and analysis of replicable networking experiments <a href="http://triscale.ethz.ch">http://triscale.ethz.ch</a>
CONTROL	Fast closed-loop control and coordination over multi-hop low-power wireless networks <a href="https://gitlab.com/fmag/wireless_control_public">https://gitlab.com/fmag/wireless_control_public</a>
MIXER	Many-to-all broadcast primitive for dynamic wireless mesh networks <a href="https://mixer.nes-lab.org/">https://mixer.nes-lab.org/</a>
TTW	Time-triggered architecture for multi-mode wireless cyber-physical systems <a href="https://github.com/romain-jacob/TTW-Artifacts">https://github.com/romain-jacob/TTW-Artifacts</a>
BOLT	Stateful processor interconnect for low-power embedded platforms <a href="http://bolt.ethz.ch/">http://bolt.ethz.ch/</a>
BLEACH	IPv6-over-BLE network stack <a href="http://spoerk.github.io/contiki/">http://spoerk.github.io/contiki/</a>
STAFFETTA	Smart duty-cycling mechanism for opportunistic data collection <a href="https://github.com/cattanimarco/Staffetta-Sensys-2016">https://github.com/cattanimarco/Staffetta-Sensys-2016</a>
LWB	Communication protocol providing a shared-bus abstraction in wireless multi-hop networks <a href="https://github.com/ETHZ-TEC/LWB-Baseline">https://github.com/ETHZ-TEC/LWB-Baseline</a> original TelosB port <a href="https://github.com/ETHZ-TEC/LWB">https://github.com/ETHZ-TEC/LWB</a> CC430 port

- CHAOS                    Primitive for all-to-all data sharing and in-network processing  
<https://github.com/olafland/chaos>
- PTUNES                 Framework for runtime adaptation of low-power MAC protocol parameters  
<https://github.com/mzimmerling/ptunes>
- GLOSSY                 Primitive for one-to-all network flooding and time synchronization  
<https://sourceforge.net/p/contiki/projects/code/HEAD/tree/ethz.ch/glossy/>

## Summary of Impact

86 publications including:

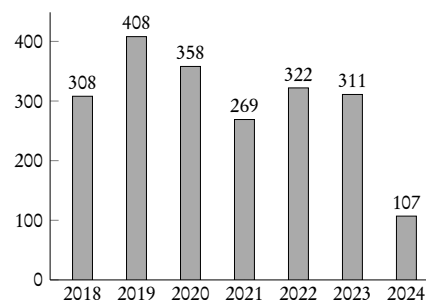
- 31 peer-reviewed conference papers
- 9 peer-reviewed journal papers
- 6 peer-reviewed workshop papers
- 23 refereed demo and poster abstracts

Citations: 3400

h-index: 26

i10-index: 38

*numbers as of July 12, 2024  
according to Google Scholar*



My publications have appeared at top venues of multiple research communities, including:

- networked and distributed systems      USENIX NSDI, IEEE SRDS
- embedded sensing systems              ACM SenSys, ACM/IEEE IPSN
- cyber-physical systems                  ACM/IEEE ICCPS, ACM TCPS
- real-time systems                          IEEE RTSS, ECRTS

Most of these are conferences—the primary venue for dissemination in computer science—with competitive acceptance rates of 15–25 %. According to the [CORE 2020](#) ranking, I have published 18 full peer-reviewed papers at A or A\* conferences. I have also published in the leading international journals in electrical engineering and computer science, such as ACM Computing Surveys, Proceedings of the IEEE, and Communications of the ACM.

As of July 2024, [Google Scholar](#) reports a total of 3499 citations—about 60 % of which have been obtained in the last five years—26 papers cited 26 or more times (h-index) and 38 papers cited at least 10 times (i10-index). My three top-cited papers have 826, 383, and 310 citations.

I am the recipient of the **ACM SIGBED 2022 Early Career Researcher Award** “recognizing outstanding contributions by early career investigators in the area of embedded, real-time, and cyber-physical systems” and the **ACM SenSys 2022 Test-of-Time Award** (for the paper *Low-Power Wireless Bus*) for “rethinking the networking architecture of low-power wireless systems and offering a simpler, more efficient flooding-based alternative to mainstream network stacks.” I have also received **Best Paper Awards** at all leading international conferences in cyber-physical systems (ACM/IEEE ICCPS 2019) and embedded sensing systems (ACM SenSys 2012, ACM/IEEE IPSN 2011, and ACM EWSN 2022). The quality, extent, and significance of our open-source releases have been recognized by the **USENIX NSDI 2022 Community Award** and the **ACM/IEEE IPSN 2023 Best Artifact Award**.

I regularly serve on the technical program committees of top conferences in cyber-physical, real-time, mobile, and networked embedded systems, including USENIX NSDI 2025, ACM SenSys 2019–21, 2023, ACM EWSN 2022–24, ACM MobiSys 2021, ACM/IEEE IPSN 2019–2021, and ACM/IEEE ICCPS 2020. I regularly review for top international journals in these fields and help organize conferences, workshops, doctoral colloquia, and technical sessions.

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## Selected Peer-Reviewed Publications

Sorted by date, authors whose name is **bold** are PhD students in my research group and advised by me.

- NSDI 2022 [Learning to Communicate Effectively Between Battery-free Devices](#)  
**Kai Geissdoerfer** and Marco Zimmerling  
 USENIX Symp. on Networked Systems Design and Implementation (**Community Award**)  
*Proposes the first protocol enabling efficient and reliable wireless communication between battery-free devices despite the devices' time-varying intermittent operation.*
- EWSN 2022 [RSSISpy: Inspecting Concurrent Transmissions in the Wild](#)  
**Carsten Herrmann** and Marco Zimmerling  
 ACM Int. Conference on Embedded Wireless Systems and Networks (**Best Paper Award**)  
*Proposes a novel method to study concurrent transmissions at unprecedented levels of detail on low-power platforms and relates measurements to analytical results in previously unknown ways.*
- TCPS 2022 [Scaling Beyond Bandwidth Limitations: Wireless Control With Stability Guarantees Under Overload](#)  
**Fabian Mager**, Dominik Baumann, **Carsten Herrmann**, Sebastian Trimpe, Marco Zimmerling  
 ACM Transactions on Cyber-Physical Systems  
*Presents an alternative method to classical event-triggered control that guarantees the stability of distributed control over severely constrained battery-powered low-power wireless networks.*
- NSDI 2021 [Bootstrapping Battery-free Wireless Networks: Efficient Neighbor Discovery and Synchronization in the Face of Intermittency](#)  
**Kai Geissdoerfer** and Marco Zimmerling  
 USENIX Symposium on Networked Systems Design and Implementation  
*Proposes novel hardware-software methods that enable for the first time fast neighbor discovery and efficient synchronization to powerline-induced brightness variations of widely used lamps.*
- ICCCPS 2019 [Feedback Control Goes Wireless: Guaranteed Stability over Low-power Multi-hop Networks](#)  
**Fabian Mager**, Dominik Baumann, Romain Jacob, Lothar Thiele, Sebastian Trimpe, and Marco Zimmerling  
 ACM/IEEE International Conference on Cyber-Physical Systems (**Best Paper Award**)  
*Demonstrates for the first time fast feedback control and coordination of multiple physical systems over low-power wireless multi-hop networks with formal guarantees on closed-loop stability.*
- SenSys 2018 [Mixer: Efficient Many-to-All Broadcast in Dynamic Wireless Mesh Networks](#)  
**Carsten Herrmann**, **Fabian Mager**, and Marco Zimmerling  
 ACM Conference on Embedded Networked Sensor Systems  
*Presents the first many-to-all communication protocol whose latency approaches the order-optimal scaling with the number of messages to be exchanged in real dynamic wireless mesh networks.*
- IPSN 2011 [Efficient Network Flooding and Time Synchronization with Glossy](#)  
 Federico Ferrari, Marco Zimmerling, Lothar Thiele, and Olga Saukh  
 ACM/IEEE Int. Conf. on Information Processing in Sensor Networks (**Best Paper Award**)  
*Influential paper (826 citations on [Google Scholar](#)) introducing the disruptive approach of synchronous transmissions, which has been adopted by over hundred wireless embedded protocols.*

## Peer-Reviewed Conference Papers

These are full papers (10–14 pages in two-column format), peer-reviewed by 3–5 program committee members, and often subject to shepherding before being published in the main conference proceedings.

- [C31] Andreas Biri, **Marco Zimmerling**, and Lothar Thiele. “[Demos: Robust Orchestration for Autonomous Networking.](#)” In *Proceedings of the 20th International Conference on Embedded Wireless Systems and Networks (EWSN)*, Rende, Italy, September 2023.
- [C30] Milan Deumer, Moid Sandhu, Sara Khalifa, Brano Kusy, Kai Geissdoerfer, **Marco Zimmerling**, and Raja Jurdak. “[A Battery-free Wearable System for On-device Human Activity Recognition Using Kinetic Energy Harvesting.](#)” In *Proceedings of the 20th International Conference on Embedded Wireless Systems and Networks (EWSN)*, Rende, Italy, September 2023.
- [C29] Andreas Biri, Reto Da Forno, Tobias Kuonen, Fabian Mager, **Marco Zimmerling**, and Lothar Thiele. “[Hydra: Concurrent Coordination for Fault-tolerant Networking.](#)” In *Proceedings of the 22nd ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN)*, San Antonio, Texas, USA, May 2023.
- [C28] Carsten Herrmann and **Marco Zimmerling**. “[RSSISpy: Inspecting Concurrent Transmissions in the Wild.](#)” In *Proceedings of the 19th International Conference on Embedded Wireless Systems and Networks (EWSN)*, Linz, Austria, October 2022. **Best Paper Award.**
- [C27] Fabian Mager, Andreas Biri, Lothar Thiele, and **Marco Zimmerling**. “[Butler: Increasing the Availability of Low-Power Wireless Communication Protocols.](#)” In *Proceedings of the 19th International Conference on Embedded Wireless Systems and Networks (EWSN)*, Linz, Austria, October 2022.
- [C26] Kai Geissdoerfer and **Marco Zimmerling**. “[Learning to Communicate Effectively Between Battery-free Devices.](#)” In *Proceedings of the 19th USENIX Symposium on Networked Systems Design and Implementation (NSDI)*, Renton, WA, USA, April 2022. **Community Award.**
- [C25] Kai Geissdoerfer and **Marco Zimmerling**. “[Bootstrapping Battery-free Wireless Networks: Efficient Neighbor Discovery and Synchronization in the Face of Intermittency.](#)” In *Proceedings of the 18th USENIX Symposium on Networked Systems Design and Implementation (NSDI)*, Online, April 2021.
- [C24] Romain Jacob, Licong Zhang, **Marco Zimmerling**, Jan Beutel, Samarjit Chakraborty, and Lothar Thiele. “[The Time-Triggered Wireless Architecture.](#)” In *Proceedings of the 32rd Euro-micro Conference on Real-Time Systems (ECRTS)*, Online, July 2020.
- [C23] Kai Geissdoerfer, Mikołaj Chwalisz, and **Marco Zimmerling**. “[Shepherd: A Portable Testbed for the Batteryless IoT.](#)” In *Proceedings of the 17th ACM International Conference on Embedded Networked Sensor Systems (SenSys)*, New York, NY, USA, November 2019.
- [C22] Fabian Mager, Dominik Baumann, Romain Jacob, Lothar Thiele, Sebastian Trimpe, and **Marco Zimmerling**. “[Feedback Control Goes Wireless: Guaranteed Stability over Low-power Multi-hop Networks.](#)” In *Proceedings of the 10th ACM/IEEE International Conference on Cyber-Physical Systems (ICCPS)*, Montreal, QC, Canada, April 2019. **Best Paper Award.**
- [C21] Kai Geissdoerfer, Raja Jurdak, Brano Kusy, and **Marco Zimmerling**. “[Getting More Out of Energy-harvesting Systems: Energy Management under Time-varying Utility with PreAct.](#)” In *Proceedings of the 18th ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN)*, Montreal, QC, Canada, April 2019.

- [C20] Carsten Herrmann, Fabian Mager, and **Marco Zimmerling**. “Mixer: Efficient Many-to-All Broadcast in Dynamic Wireless Mesh Networks.” In *Proceedings of the 16th ACM Conference on Embedded Networked Sensor Systems (SenSys)*, Shenzhen, China, November 2018.
- [C19] Romain Jacob, Licong Zhang, **Marco Zimmerling**, Jan Beutel, Samarjit Chakraborty, and Lothar Thiele. “TTW: A Time-Triggered-Wireless Design for CPS.” In *Proceedings of the ACM/IEEE/EDAA Conference on Design, Automation and Test in Europe (DATE)*, Dresden, Germany, March 2018.
- [C18] Michael Spoerk, Carlo Alberto Boano, **Marco Zimmerling**, and Kay Roemer. “BLEach: Exploiting the Full Potential of IPv6 over BLE in Constrained Embedded IoT Devices.” In *Proceedings of the 15th ACM International Conference on Embedded Networked Sensor Systems (SenSys)*, Delft, The Netherlands, November 2017.
- [C17] Abdelrahman Abdelkader, Johannes Richter, Eduard A. Jorswieck, and **Marco Zimmerling**. “Multi-Flow Glossy: Physical-Layer Network Coding Meets Embedded Wireless Systems.” In *Proceedings of the 26th IEEE International Conference on Computer Communications and Networks (ICCCN)*, Vancouver, BC, Canada, July 2017.
- [C16] Romain Jacob, **Marco Zimmerling**, Pengcheng Huang, Jan Beutel, and Lothar Thiele. “End-to-End Real-Time Guarantees in Wireless Cyber-Physical Systems.” In *Proceedings of the 37th IEEE Real-Time Systems Symposium (RTSS)*, Porto, Portugal, December 2016.
- [C15] Marco Cattani, Andreas Loukas, **Marco Zimmerling**, Marco Zuniga, and Koen Langendoen. “Staffetta: Smart Duty-Cycling for Opportunistic Data Collection.” In *Proceedings of the 14th ACM Conference on Embedded Networked Sensor Systems (SenSys)*, Stanford, CA, USA, November 2016.
- [C14] Ulf Wetzker, Ingmar Splitt, **Marco Zimmerling**, Carlo Alberto Boano, and Kay Roemer. “Troubleshooting Wireless Coexistence Problems in the Industrial Internet of Things.” In *Proceedings of the 14th IEEE/IFIP International Conference on Embedded and Ubiquitous Computing (EUC)*, Paris, France, August 2016.
- [C13] Romain Jacob, **Marco Zimmerling**, Pengchen Huang, Jan Beutel, and Lothar Thiele. “Towards Real-Time Wireless Cyber-Physical Systems.” In *Work-in-Progress Proceedings of the 28th Euromicro Conference on Real-Time Systems (ECRTS)*, Toulouse, France, July 2016.
- [C12] Felix Sutton, **Marco Zimmerling**, Reto Da Forno, Romain Lim, Tonio Gsell, Georgia Giannopoulou, Federico Ferrari, Jan Beutel, and Lothar Thiele. “Bolt: A Stateful Processor Interconnect.” In *Proceedings of the 13th ACM International Conference on Embedded Networked Sensor Systems (SenSys)*, Seoul, South Korea, November 2015.
- [C11] Romain Lim, **Marco Zimmerling**, and Lothar Thiele. “Passive, Privacy-Preserving Real-Time Counting of Unmodified Smartphones via ZigBee Interference.” In *Proceedings of the 11th IEEE International Conference on Distributed Computing in Sensor Systems (DCOSS)*, Fortaleza, Brazil, June 2015.
- [C10] Olaf Landsiedel, Federico Ferrari, and **Marco Zimmerling**. “Chaos: Versatile and Efficient All-to-All Data Sharing and In-Network Processing at Scale.” In *Proceedings of the 11th ACM Conference on Embedded Networked Sensor Systems (SenSys)*, Rome, Italy, November 2013. **Best Paper Award.**
- [C9] Federico Ferrari, **Marco Zimmerling**, Luca Mottola, and Lothar Thiele. “Virtual Synchrony Guarantees for Cyber-Physical Systems.” In *Proceedings of the 32nd IEEE International Symposium on Reliable Distributed Systems (SRDS)*, Braga, Portugal, October 2013.

- [C8] Marco Zimmerling, Federico Ferrari, Luca Mottola, and Lothar Thiele. “On Modeling Low-Power Wireless Protocols Based on Synchronous Packet Transmissions.” In *Proceedings of the 21st IEEE International Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems (MASCOTS)*, San Francisco, CA, USA, August 2013.
- [C7] Romain Lim, Federico Ferrari, **Marco Zimmerling**, Christoph Walser, Philipp Sommer, and Jan Beutel. “FlockLab: A Testbed for Distributed, Synchronized Tracing and Profiling of Wireless Embedded Systems.” In *Proceedings of the 12th ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN)*, Philadelphia, PA, USA, April 2013.
- [C6] Federico Ferrari, **Marco Zimmerling**, Luca Mottola, and Lothar Thiele. “Low-Power Wireless Bus.” In *Proceedings of the 10th ACM Conference on Embedded Networked Sensor Systems (SenSys)*, Toronto, ON, Canada, November 2012.
- [C5] **Marco Zimmerling**, Federico Ferrari, Luca Mottola, Thiemo Voigt, and Lothar Thiele. “pTunes: Runtime Parameter Adaptation for Low-Power MAC Protocols.” In *Proceedings of the 11th ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN)*, Beijing, China, April 2012. **Best Paper Award Runner-up.**
- [C4] Federico Ferrari, **Marco Zimmerling**, Lothar Thiele, and Olga Saukh. “Efficient Network Flooding and Time Synchronization with Glossy.” In *Proceedings of the 10th ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN)*, Chicago, IL, USA, April 2011. **Best Paper Award.**
- [C3] Andreas Meier, Matthias Woehrle, **Marco Zimmerling**, and Lothar Thiele. “ZeroCal: Automatic MAC Protocol Calibration.” In *Proceedings of the 6th IEEE International Conference on Distributed Computing in Sensor Systems (DCOSS)*, Santa Barbara, CA, USA, June 2010.
- [C2] **Marco Zimmerling**. “An Energy-Efficient Routing Protocol for Linear Wireless Sensor Networks.” In *Proceedings of the GI Informatiktage*, Bonn, Germany, March 2008. **Best Paper Award.**
- [C1] **Marco Zimmerling**, Walteneagus Dargie, and Johnathan M. Reason. “Energy-efficient Routing in Linear Wireless Sensor Networks.” In *Proceedings of the 4th IEEE International Conference on Mobile Ad-hoc and Sensor Systems (MASS)*, Pisa, Italy, October 2007.

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## Peer-Reviewed Journal Papers

- [J9] Saad Ahmed, Muhammad Hamad Alizai, Josiah Hester, Bashima Islam, Brandon Lucia, Luca Mottola, Przemyslaw Pawelczak, Jacob Sorber, Kasim Sinan Yildirim, and **Marco Zimmerling**. “The Internet of Batteryless Things.” *Communications of the ACM*, volume 67, number 3, February 2024.
- [J8] Fabian Mager, Dominik Baumann, Carsten Herrmann, Sebastian Trimpe, and **Marco Zimmerling**. “Scaling Beyond Bandwidth Limitations: Wireless Control With Stability Guarantees Under Overload.” *ACM Transactions on Cyber-Physical Systems*, volume 6, number 3, July 2022.
- [J7] Romain Jacob, **Marco Zimmerling**, Carlo Alberto Boano, Laurent Vanbever, and Lothar Thiele. “Designing Replicable Networking Experiments With TriScale.” *Journal of Systems Research*, volume 1, number 1, November 2021.



- [J6] Dominik Baumann, Fabian Mager, Ulf Wetzker, Lothar Thiele, **Marco Zimmerling**, and Sebastian Trimpe. “Wireless Control for Smart Manufacturing: Recent Approaches and Open Challenges.” *Proceedings of the IEEE*, volume 109, number 4, April 2021.
- [J5] **Marco Zimmerling**, Luca Mottola, and Silvia Santini. “Synchronous Transmissions in Low-Power Wireless: A Survey of Communication Protocols and Network Services.” *ACM Computing Surveys*, volume 53, number 6, December 2020.
- [J4] Dominik Baumann, Fabian Mager, Romain Jacob, Lothar Thiele, **Marco Zimmerling**, and Sebastian Trimpe. “Fast Feedback Control over Multi-hop Wireless Networks with Mode Changes and Stability Guarantees.” *ACM Transactions on Cyber-Physical Systems*, volume 4, number 2, February 2020.
- [J3] Dominik Baumann, Fabian Mager, **Marco Zimmerling**, and Sebastian Trimpe. “Control-guided Communication: Efficient Resource Arbitration and Allocation in Multi-hop Wireless Control Systems.” *IEEE Control Systems Letters*, volume 4, number 2, January 2020.
- [J2] Jens Karschau, **Marco Zimmerling**, and Benjamin M. Friedrich. “Renormalization Group Theory for Percolation in Time-Varying Networks.” *Scientific Reports*, volume 8, article number 8011, May 2018.
- [J1] **Marco Zimmerling**, Luca Mottola, Pratyush Kumar, Federico Ferrari, and Lothar Thiele. “Adaptive Real-Time Communication for Wireless Cyber-Physical Systems.” *ACM Transactions on Cyber-Physical Systems*, volume 1, number 2, February 2017.

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### Peer-Reviewed Workshop Papers

- [W6] Romain Jacob, Carlo Alberto Boano, Usman Raza, **Marco Zimmerling**, and Lothar Thiele. “Towards a Methodology for Experimental Evaluation in Low-Power Wireless Networking.” In *Proceedings of the 2nd ACM Workshop on Benchmarking Cyber-Physical Systems and Internet of Things (CPS-IoTBench—part of CPS-IoT Week)*, Montreal, QC, Canada, April 2019.
- [W5] Dominik Baumann, Fabian Mager, Harsoveet Singh, **Marco Zimmerling**, and Sebastian Trimpe. “Evaluating Low-Power Wireless Cyber-Physical Systems.” In *Proceedings of the 1st IEEE Workshop on Benchmarking Cyber-Physical Networks and Systems (CPSBench—part of CPS Week)*, Porto, Portugal, April 2018.
- [W4] Fabian Mager, Carsten Herrmann, and **Marco Zimmerling**. “One for All, All for One: Toward Efficient Many-to-Many Broadcast in Dynamic Wireless Networks.” In *Proceedings of the 4th ACM Workshop on Hot Topics in Wireless (Hot Wireless—co-located with ACM MobiCom)*, Snowbird, UT, USA, October 2017.
- [W3] Abdelrahman Abdelkader, Eduard A. Jorswieck, and **Marco Zimmerling**. “Centralized and Distributed Optimum Power Control and Beam-Forming in Network Flooding.” In *Proceedings of the 2nd International Workshop on Competitive and Cooperative Approaches for 5G Networks (COCOA—co-located with European Wireless)*, Dresden, Germany, May 2017.
- [W2] Federico Ferrari, **Marco Zimmerling**, Lothar Thiele, and Luca Mottola. “The Bus goes Wireless: Routing-Free Data Collection with QoS Guarantees in Sensor Networks.” In *Proceedings of the 4th International Workshop on Information Quality and Quality of Service for Pervasive Computing (IQ2S—co-located with IEEE PerCom)*, Lugano, Switzerland, March 2012.

- [W1] **Marco Zimmerling**, Walteneus Dargie, and Johnathan M. Reason. “Localized Power-aware Routing in Linear Wireless Sensor Networks.” In *Proceedings of the 2nd ACM International Workshop on Context-Awareness for Self-Managing Systems (CASEMANS—co-located with Pervasive)*, Sydney, Australia, May 2008.

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## Theses

- [T2] **Marco Zimmerling**. “End-to-end Predictability and Efficiency in Low-power Wireless Networks.” *Doctoral Dissertation*, ETH Zurich, Department of Information Technology and Electrical Engineering, Zurich, Switzerland, October 2015. **ACM SIGBED Paul Caspi Memorial Dissertation Award**. **EDAA Outstanding Dissertation Award**. **GI KuVS Best PhD Thesis Award**.
- [T1] **Marco Zimmerling**. “Automatic Parameter Optimization of Sensor Network MAC Protocols.” *Diploma Thesis*, TU Dresden, Faculty of Computer Science, Dresden, Germany, August 2009. **SensorNets Best MSc Thesis Award**.

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## Refereed Demonstration, Poster, and Competition Abstracts

These are shorter papers (2 pages in two-column format), nonetheless peer-reviewed by the chairs or a dedicated program committee, and published as part of the main conference proceedings.

- [A23] Max Granzow, Alexander Heinrich, Matthias Hollick, and **Marco Zimmerling**. “Leveraging Apple’s Find My Network for Large-Scale Distributed Sensing.” In *Proceedings of the 22nd ACM Annual International Conference on Mobile Systems, Applications and Services (MobiSys)*, Tokyo, Japan, June 2024.
- [A22] Kai Geissdoerfer, Ingmar Splitt, and **Marco Zimmerling**. “Building Battery-free Devices with Riotee.” In *Proceedings of the 22nd ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN)*, San Antonio, Texas, USA, May 2023.
- [A21] Carsten Herrmann and **Marco Zimmerling**. “Exploring Concurrent Transmissions with RSSISpy and TrafficBench.” In *Proceedings of the 19th International Conference on Embedded Wireless Systems and Networks (EWSN)*, Linz, Austria, October 2022.
- [A20] Kai Geissdoerfer, Friedrich Schmidt, Brano Kusy, and **Marco Zimmerling**. “Bootstrapping Batteryless Networks Using Fluorescent Light Properties.” In *Proceedings of the 19th ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN)*, Online, April 2020.
- [A19] Kai Geissdoerfer, Mikołaj Chwalisz, and **Marco Zimmerling**. “Detailed Recording and Emulation of Spatio-temporal Energy Environments with Shepherd.” In *Proceedings of the 17th ACM International Conference on Embedded Networked Sensor Systems (SenSys)*, New York, NY, USA, November 2019.
- [A18] Fabian Mager, Dominik Baumann, Romain Jacob, Lothar Thiele, Sebastian Trimpe, and **Marco Zimmerling**. “Fast Feedback Control and Coordination with Mode Changes for Wireless Cyber-Physical Systems.” In *Proceedings of the 18th ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN)*, Montreal, QC, Canada, April 2019. **Best Demo Award**.
- [A17] Fabian Mager, Romain Jacob, Reto Da Forno, and **Marco Zimmerling**. “Low-Power Wireless Bus Baseline.” In *Proceedings of the 16th ACM International Conference on Embedded Wireless Systems and Networks (EWSN)*, Beijing, China, February 2019.

- [A16] Fabian Mager, Dominik Baumann, Sebastian Trimpe, and **Marco Zimmerling**. “Toward Fast Closed-loop Control over Multi-hop Low-power Wireless Networks.” In *Proceedings of the 17th ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN)*, Porto, Portugal, April 2018.
- [A15] Romain Jacob, Licong Zhang, **Marco Zimmerling**, Samarjit Chakraborty, Jan Beutel, and Lothar Thiele. “Stalwart—A Predictable Reliable Adaptive and Low-latency Real-time Wireless Protocol.” In *Proceedings of the 15th ACM Conference on Embedded Networked Sensor Systems (SenSys)*, Delft, The Netherlands, November 2017.
- [A14] Alex Bereza, Ulf Wetzker, Carsten Herrmann, Carlo Alberto Boano, and **Marco Zimmerling**. “Cross-Technology Communication between BLE and Wi-Fi using Commodity Hardware.” *Proceedings of the 14th ACM International Conference on Embedded Wireless Systems and Networks (EWSN)*, Uppsala, Sweden, February 2017.
- [A13] Fabian Mager, Johannes Neumann, Carsten Herrmann, **Marco Zimmerling**, and Frank Fitzek. “All-to-all Communication in Multi-Hop Wireless Networks with Mixer.” *Proceedings of the 14th ACM Conference on Embedded Networked Sensor Systems (SenSys)*, Stanford, CA, USA, November 2016.
- [A12] Simon Duquennoy, Olaf Landsiedel, Carlo Alberto Boano, **Marco Zimmerling**, Jan Beutel, Mun Choon Chan, Omprakash Gnawali, Mobashir Mohammad, Luca Mottola, Lothar Thiele, Mobashir Vilajosana, Thiemo Voigt, and Thomas Watteyne. “A Benchmark for Low-Power Wireless Networking.” *Proceedings of the 14th ACM Conference on Embedded Networked Sensor Systems (SenSys)*, Stanford, CA, USA, November 2016.
- [A11] Felix Sutton, **Marco Zimmerling**, Reto Da Forno, Roman Lim, Tonio Gsell, Georgia Giannopoulou, Federico Ferrari, Jan Beutel, and Lothar Thiele. “Building Reliable Wireless Embedded Platforms using the Bolt Processor Interconnect.” In *Proceedings of the 13th ACM Conference on Embedded Networked Sensor Systems (SenSys)*, Seoul, South Korea, November 2015.
- [A10] Felix Sutton, Reto Da Forno, **Marco Zimmerling**, Roman Lim, Toni Gsell, Federico Ferrari, Jan Beutel, and Lothar Thiele. “Predictable Wireless Embedded Platforms.” In *Proceedings of the 14th ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN)*, Seattle, WA, USA, April 2015.
- [A9] Felix Jonathan Oppermann, Carlo Alberto Boano, **Marco Zimmerling**, and Kay Roemer. “Automatic Configuration of Controlled Interference Experiments in Sensornet Testbeds.” In *Proceedings of the 12th ACM Conference on Embedded Networked Sensor Systems (SenSys)*, Memphis, TN, USA, November 2014.
- [A8] Felix Sutton, Reto Da Forno, Roman Lim, **Marco Zimmerling**, and Lothar Thiele. “Automatic Speech Recognition for Resource-Constrained Embedded Systems.” In *Proceedings of the 13th ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN)*, Berlin, Germany, April 2014.
- [A7] **Marco Zimmerling**, Federico Ferrari, Luca Mottola, and Lothar Thiele. “Synchronous Transmissions Enable Simple Yet Accurate Protocol Modeling.” In *Proceedings of the 11th ACM Conference on Embedded Networked Sensor Systems (SenSys)*, Rome, Italy, November 2013.
- [A6] **Marco Zimmerling**, Federico Ferrari, Roman Lim, Olga Saukh, Felix Sutton, Reto Da Forno, Remo S. Schmidt, and Marc Andre Wyss. “A Reliable Wireless Nurse Call System:

- Overview and Pilot Results from a Summer Camp for Teenagers with Duchenne Muscular Dystrophy.” In *Proceedings of the 11th ACM Conference on Embedded Networked Sensor Systems (SenSys)*, Rome, Italy, November 2013.
- [A5] Olaf Landsiedel, Federico Ferrari, and **Marco Zimmerling**. “Capture Effect Based Communication Primitives.” In *Proceedings of the 10th ACM Conference on Embedded Networked Sensor Systems (SenSys)*, Toronto, ON, Canada, November 2012. **Best Poster Award**.
- [A4] Roman Lim, Christoph Walser, Federico Ferrari, **Marco Zimmerling**, and Jan Beutel. “Distributed and Synchronized Measurements with FlockLab.” In *Proceedings of the 10th ACM Conference on Embedded Networked Sensor Systems (SenSys)*, Toronto, ON, Canada, November 2012.
- [A3] Federico Ferrari, **Marco Zimmerling**, Lothar Thiele, and Luca Mottola. “The Low-Power Wireless Bus: Simplicity is (Again) the Soul of Efficiency.” In *Proceedings of the 11th ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN)*, Beijing, China, April 2012.
- [A2] David Hasenfratz, Andreas Meier, Matthias Woehrle, **Marco Zimmerling**, and Lothar Thiele. “If You Have Time, Save Energy with Pull.” In *Proceedings of the 8th ACM Conference on Embedded Networked Sensor Systems (SenSys)*, Zurich, Switzerland, November 2010.
- [A1] **Marco Zimmerling**, Federico Ferrari, Matthias Woehrle, and Lothar Thiele. “Exploiting Protocol Models for Generating Feasible Communication Stack Configurations.” In *Proceedings of the 9th ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN)*, Stockholm, Sweden, April 2010.

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## Invited Papers

- [I6] Haitham Hassanieh, Kyle Jamieson, Luca Mottola, Longfei Shangguan, Xia Zhou, and Marco Zimmerling. “Novel Scenarios for the Wireless Internet of Things (Dagstuhl Seminar 23222).” *Dagstuhl Reports*, volume 67, issue 5, November 2023.
- [I5] Kai Geissdoerfer, Mikołaj Chwalisz, and **Marco Zimmerling**. “Taking a Deep Dive into the Batteryless Internet of Things with Shepherd.” *ACM GetMobile: Mobile Computing and Communications Review*, volume 24, number 3, September 2020.
- [I4] Carlo Alberto Boano, Simon Duquennoy, Anna Foerster, Omprakash Gnawali, Romain Jacob, Hyung-Sin Kim, Olaf Landsiedel, Ramona Marfievici, Luca Mottola, Gian Pietro Picco, Xavier Vilajosana, Thomas Watteyne, and **Marco Zimmerling**. “IoT Bench: Towards a Benchmark for Low-Power Wireless Networking.” In *Proceedings of the 1st IEEE Workshop on Benchmarking Cyber-Physical Networks and Systems (CPSBench—part of CPS Week)*, Porto, Portugal, April 2018.
- [I3] Jan Beutel, Bernhard Buchli, Federico Ferrari, Matthias Keller, Lothar Thiele, and **Marco Zimmerling**. “X-Sense: Sensing in Extreme Environments.” In *Proceedings of Design, Automation and Test in Europe Conference and Exhibition (DATE)*, Grenoble, France, March 2011.
- [I2] **Marco Zimmerling**. “Energieeffizientes Routing in linearen Sensornetzwerken.” *GI Informatik Spektrum*, volume 32, number 5, August 2008.
- [I1] Walteneus Dargie and **Marco Zimmerling**. “Wireless Sensor Networks in the Context of Developing Countries.” In *Proceedings of the 3rd IFIP World Information Technology Forum (WITFOR)*, Addis Ababa, Ethiopia, August 2007.

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## Edited Books

- [B4] Carlo Alberto Boano, Michael Breza, Romain Jacob, Ramona Marfievici, and **Marco Zimmerling**. *Proceedings of the 3rd Workshop on Benchmarking Cyber-Physical Systems and Internet of Things (CPS-IoTBench—co-located with ACM MobiCom)*, London, UK, September 2020.
- [B3] **Marco Zimmerling**, Ramona Marfievici, and Usman Raza. *Proceedings of the 2nd Workshop on Benchmarking Cyber-Physical Systems and Internet of Things (CPS-IoTBench—part of CPS-IoT Week)*, Montreal, QC, Canada, April 2019.
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