

Marco ZIMMERLING

Independent Research Group Leader
TU Dresden

Helmholtzstrasse 18
01069 Dresden, Germany
marco.zimmerling@tu-dresden.de
+49 351 463 43728
wwwpub.zih.tu-dresden.de/~mzimmerl

Education

- 10/2015 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*

Positions and Experience

- 11/2015– Independent Research Group Leader, **TU Dresden**, Germany
I lead the *Networked Embedded Systems Lab* in the Center for Advancing Electronics Dresden. I am also affiliated with the Computer Science faculty. My position is non-tenured and funded by my Emmy Noether Grant, with the right to independently advise PhD students.
- 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

Honors and Awards

- 2020 **Future Prize**
Ewald Marquardt Foundation
- 2019 **ACM/IEEE ICCPS Best Paper Award**
International Conference on Cyber-Physical Systems
- 2019 **ACM/IEEE IPSN Best Demo Award**
International Conference on Information Processing in Sensor Networks
- 2018 **DFG Emmy Noether Grantee**
German Research Foundation (1.7 M Euro for 5 years)

- 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
- 2015 **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
- 2012 **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
- 2009 **DAAD Scholarship**
German Academic Exchange Service (for doing Diploma thesis in Sweden)
- 2008 **GI Informatiktage Best Paper Award**
Conference of the German Informatics Society

External Funding

Total grants awarded € 2,870,830 including € 2,251,680 as PI for my research group.

- 12/2018–11/2023 **DFG Emmy Noether Grant**, German Research Foundation
Understanding and exploiting synchronous transmissions, sole PI, € 1,682,580.
- 02/2020–01/2023 **DFG Project Grant**, German Research Foundation, Phase II of Priority Program 1914
Event-based control for cyber-physical systems, co-PI, € 648,550 (my share € 297,350).
- 02/2017–01/2020 **DFG Project Grant**, German Research Foundation, Phase I of Priority Program 1914
Event-based control for cyber-physical systems, co-PI, € 539,700 (my share € 272,900).

Invited Talks and Events

1 keynote presentation, 27 invited talks, 2 invitation-only seminars.

- Keynotes International Workshop on Very Large Internet of Things (VLIoT). August 2017.
- Invited talks University of Freiburg. 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. 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.

Invitation-only
seminars

Dagstuhl Seminar *Control of Networked Cyber-Physical Systems*. May 2019.
 Dagstuhl Seminar *Analysis, Design & Control of Predictable Interconnected Syst.* March 2019.

Teaching Experience

Winter 2016/2017

Co-Lecturer, **Introduction to Computer Engineering**, TU Dresden, Germany
 Newly designed lectures, seminars, and labs on the principles of wireless real-time systems.

Spring 2010–2015

Teaching Assistant, **Embedded Systems**, ETH Zurich, Switzerland
 Held several lab sessions and designed written exam questions.

Fall 2010–2014

Teaching Assistant, **Computer Engineering I**, ETH Zurich, Switzerland
 Held several discussion sessions and designed written exam questions.

Spring 2005

Teaching Assistant, **Software Technology I**, TU Dresden, Germany
 Supervised two groups of five students each throughout a collaborative software project.

Advising and Mentoring

PhDs

Kai Geissdoerfer 02/2018–
 Carsten Herrmann 02/2017–
 Fabian Mager 04/2016–

PostDocs

Johannes Richter 10/2017–12/2018 first job at SCALE

Engineers

Ingmar Splitt 07/2020–

Interns

Friedrich Schmidt 09/2019–
 Justus Paulick 08/2019–02/2020

Visitors	Pranav Mani	05/2020–07/2020 ^a	from NIT Trichy, India	DAAD WISE Scholarship
	Vivien Joly	05/2020–07/2020 ^a	from Université Angers, France	
	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	

^aCanceled due to COVID-19 pandemic.

Theses	Prateek Gautam	2020	master thesis	
	Justus Paulick	2019	diploma thesis	
	Tim Taubert	2019	diploma thesis	
	Alex Bereza	2017	diploma thesis	GI KuVS Best MSc Thesis Award
	Johannes Neumann	2016	diploma thesis	
	Javier Acevedo	2016	master thesis	
	Andreas Buechel	2014	semester thesis	
	Reto Da Forno	2013	master thesis	
	Reto Da Forno	2013	semester thesis	
	Nemanja Popovic	2012	master thesis	
	Dominic Just	2011	semester thesis	
	David Hasenfratz	2010	master thesis	
Dmitry Lukyantsev	2010	semester thesis		

PhD Thesis Committee

2020	Saad Ahmed, LUMS, Pakistan. Advisor: Prof. Muhammad Hamad Alizai.
2019	Victor Millnert, Lund University, Sweden. Advisor: Prof. Johan Eker.
2017	Timofei Istomin, University of Trento, Italy. Advisor: Prof. Gian Pietro Picco.

Professional Service

Organizing
committee
member

- PhD Forum Co-Chair of ACM International Conference on Embedded Wireless Systems and Networks (EWSN), 2021
- General Co-Chair of International Workshop on Benchmarking Cyber-Physical Systems and Internet of Things (CPS-IoTBench), 2020
- PhD Forum Co-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 Co-Chair of ACM International Conference on Embedded Wireless Systems and Networks (EWSN), 2019
- Poster Co-Chair of ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN), 2018
- Program Co-Chair of IEEE International Workshop on Benchmarking Cyber-Physical Networks and Systems (CPSBench), 2018
- Poster and Demo Co-Chair of ACM International Conference on Embedded Wireless Systems and Networks (EWSN), 2017
- General Co-Chair of International Workshop on Resilient Systems, 2017

- Publication Co-Chair of International Workshop on Real-World Wireless Sensor Networks (REALWSN), 2013
- Panel member
- 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
- 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 (HumanSys), 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 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
 - ACM Transactions on Internet of Things, 2018
 - 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
 - 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

Member

- Association for Computing Machinery (ACM)
- ACM Special Interest Group on Embedded Systems (ACM SIGBED)
- Institute of Electrical and Electronics Engineers (IEEE)
- 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.

SHEPHERD

Portable testbed for the batteryless Internet of Things

<https://shepherd.nes-lab.org>

MIXER

Many-to-all broadcast primitive for dynamic wireless mesh networks

<https://mixer.nes-lab.org/>

TTW

Time-triggered architecture for multi-mode wireless cyber-physical systems

<https://github.com/romain-jacob/TTW-Artifacts>

BOLT

Stateful processor interconnect for low-power embedded platforms

<http://bolt.ethz.ch/>

BLEACH

IPv6-over-BLE network stack

<http://spoerk.github.io/contiki/>

STAFFETTA

Smart duty-cycling mechanism for opportunistic data collection

<https://github.com/cattanimarco/Staffetta-Sensys-2016>

LWB

Communication protocol providing a shared-bus abstraction in wireless multi-hop networks

<https://github.com/ETHZ-TEC/LWB-Baseline> original TelosB port

<https://github.com/ETHZ-TEC/LWB> 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

66 publications, 34 without PhD advisor, incl.:

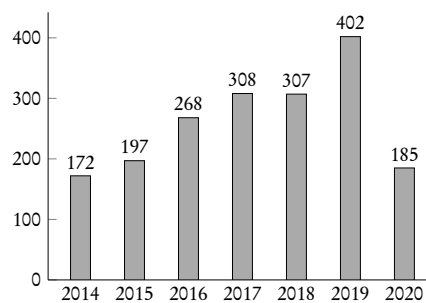
- 24 peer-reviewed conference papers
- 5 peer-reviewed journal papers
- 6 peer-reviewed workshop papers
- 20 refereed demo/poster/comp. abstracts

Citations: **2146**

h-index: **18**

i10-index: **27**

*numbers as of July 22, 2020
according to Google Scholar*



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

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

Most of these are conferences—the primary venue for dissemination in computer science—with competitive acceptance rates of 15–25%. According to the [CORE 2018 Conference Ranking](#) I have published 16 full peer-reviewed papers at A or A* international conferences.

As of Jul. 2020, [Google Scholar](#) reports a total of 2146 citations—about 75% of which have been obtained in the last five years—18 papers cited 18 or more times (h-index) and 27 papers cited at least 10 times (i10-index). My three top-cited papers have 594, 283, and 244 citations.

Best paper awards at all top international conferences in cyber-physical systems (ACM/IEEE ICCPS) and networked embedded systems (ACM SenSys, ACM/IEEE IPSN). **Future Prize of the Ewald Marquardt Foundation** recognizing “the potential for innovation and industrial applications” of our research on fast feedback control and coordination over low-power wireless multi-hop networks with closed-loop stability guarantees. Two highly prestigious international awards from different research communities for my doctoral dissertation.

I regularly serve on the technical program committees of top conferences in cyber-physical, real-time, and networked embedded systems including ACM/IEEE IPSN 2021–2019, ACM/IEEE ICCPS 2020, ACM SenSys 2020 and 2019, IEEE RTAS 2019, and IEEE RTSS 2017. I also regularly review for leading international journals in these fields and help organize conferences, workshops, doctoral colloquia, and technical sessions.

Five Selected Peer-Reviewed Publications

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

- SenSys 2019 [Shepherd: A Portable Testbed for the Batteryless IoT](#)
Kai Geissdoerfer, Mikołaj Chwalisz, Marco Zimmerling
ACM Conf. on Embedded Networked Sensing Systems
Introduces the problem of exploiting spatio-temporal dependence in harvested energy across batteryless nodes, and details the first HW/SW tool that allows to systematically investigate it.
- ICCPs 2019 [Feedback Control Goes Wireless: Guaranteed Stability over Low-power Multi-hop Networks](#)
Fabian Mager, Dominik Baumann, Romain Jacob, Lothar Thiele, Sebastian Trimpe, Marco Zimmerling
ACM/IEEE Int. Conf. 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.
- IPSN 2019 [Getting More Out of Energy-harvesting Systems: Energy Management under Time-varying Utility with PreAct](#)
Kai Geissdoerfer, Raja Jurdak, Brano Kusy, Marco Zimmerling
ACM/IEEE Int. Conf. on Information Processing in Sensor Networks
Introduces the concept of time-varying utility and proposes an energy-management algorithm for energy-harvesting devices that exploits this concept for optimized application performance.
- SenSys 2018 [Mixer: Efficient Many-to-All Broadcast in Dynamic Wireless Mesh Networks](#)
Carsten Herrmann, **Fabian Mager**, Marco Zimmerling
ACM Conf. on Embedded Networked Sensing 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, Olga Saukh
ACM/IEEE Int. Conf. on Information Processing in Sensor Networks (**Best Paper Award**)
Influential paper (563 citations on [Google Scholar](#)) introducing the disruptive approach of synchronous transmissions, which has been adopted by over a hundred wireless embedded protocols.

Peer-Reviewed Conference Papers

- [C24] Romain Jacob, Licong Zhang, **Marco Zimmerling**, Samarjit Chakraborty, and Lothar Thiele. “The Time-Triggered Wireless Architecture.” In *Proceedings of the 32nd Euromicro Conference on Real-Time Systems (ECRTS)*, Modena, Italy, 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, 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, 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 (MASCOOTS)*, 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, Mar. 2008. **Best Paper Award.**

- [C1] **Marco Zimmerling**, Walteneus 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.

Peer-Reviewed Journal Papers

- [J5] **Marco Zimmerling**, Luca Mottola, and Silvia Santini. “Synchronous Transmissions in Low-Power Wireless: A Survey of Communication Protocols and Network Services.” To appear in *ACM Computing Surveys*.
- [J4] 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.
- [J3] 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, November 2019.
- [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.

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, 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 (HotWireless—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 (COCO—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.

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.**

Refereed Demonstration, Poster, and Competition Abstracts

These are shorter papers, nonetheless peer-reviewed by the chairs or a dedicated program committee.

- [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)*, Sydney, Australia, 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, 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.

Edited Books

- [B1] Koen Langendoen, Wen Hu, Federico Ferrari, **Marco Zimmerling**, and Luca Mottola. *Proceedings of the 5th International Workshop on Real-World Wireless Sensor Networks (REAL-WSN)*, Como, Italy, September 2013.

Invited Papers

- [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.

Technical Reports

- [R4] Romain Jacob, Licong Zhang, **Marco Zimmerling**, Jan Beutel, Samarjit Chakraborty, and Lothar Thiele. “[TTW: A Time-Triggered-Wireless Design for CPS \[Extended Version \].](#)” *arXiv:1711.05581*, March 2018.

- [R3] **Marco Zimmerling**, Pratyush Kumar, Luca Mottola, Federico Ferrari, and Lothar Thiele. “Adaptive Real-Time Communication for Wireless Cyber-physical Systems.” *TIK Report 356*, ETH Zurich, Switzerland, February 2016.
- [R2] **Marco Zimmerling**, Federico Ferrari, Luca Mottola, Thiemo Voigt, and Lothar Thiele. “pTunes: Runtime Parameter Adaptation for Low-Power MAC Protocols.” *TIK Report 325*, ETH Zurich, Switzerland, April 2012.
- [R1] Federico Ferrari, **Marco Zimmerling**, and Lothar Thiele. “Accuracy and Duty-Cycle of FTSP on an LPL MAC.” *TIK Report 319*, ETH Zurich, Switzerland, February 2010.