# Martin Kumm

*Professor for Embedded Systems*

## Personal Information


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| Office Address | Fulda University of Applied Sciences, Germany<br>Faculty of Applied Computer Science<br>Leipziger Str. 123<br>36037 Fulda |
| Phone | +49 170 5464276 |
| E-Mail | kumm@uni-kassel.de |
| Born | 19.03.1980 in Fulda, Germany |
| Nationality | German |


## Education

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|---|---|
| 09/1999–07/2003 | **Dipl.-Ing. (FH), Electrical Engineering and Information Technology**, *Fachhochschule Fulda, Germany* |
| Grading | 1.4 |
| Thesis Topic | "FPGA-Realisierung eines Offset-Lokaloszillators basierend auf PLL- und DDS-Technologien" |
| 04/2004–09/2007 | **Dipl.-Ing., Electrical Engineering and Information Technology**, *Technical University of Darmstadt* |
| Grading | 1.96 |
| Thesis Topic | "Hardware- und Software-Entwicklung einer Mikrocontroller-Leiterplatte für eine automatische Verstärkungsregelung" |

## Work Experience

10/2003–02/2009 **R&D Engineer**, *GSI Helmholtz Centre for Heavy Ion Research*, Darmstadt, Division of Radio Frequency Technology and Accelerator Structures
Tasks: Circuit design (analog/digital), architecture design for FPGAs, Software Engineering
07/2007–02/2009: Team Leader "Electronics & Control Systems" (Expert Group with about 10 R&D engineers)

## Scientific Career

03/2009–05/2009 **Scientific Staff**, *Technical University of Darmstadt*, Faculty of Computer Science, Prof. Dr.-Ing. Andreas Koch

06/2009–10/2015 **Scientific Staff**, *University of Kassel*, Kassel, Faculty of Electrical Engineering and Computer Science, Prof. Dr.-Ing. Peter Zipf

10/2015 **Dissertation (Dr.-Ing.)**, *University of Kassel*, Kassel, Faculty of Electrical Engineering and Computer Science

Topic Multiple Constant Multiplication Optimizations for Field Programmable Gate Arrays

Supervisor Prof. Dr.-Ing. Peter Zipf

Grading Summa Cum Laude

11/2015–12/2018 **Scientific Staff (Post-Doc)**, *University of Kassel*, Kassel, Faculty of Electrical Engineering and Computer Science, Prof. Dr.-Ing. Peter Zipf

01/2019–present **Full Professor**, *University of Applied Sciences Fulda*, Fulda, Faculty of Applied Computer Science, Embedded Systems

## Metrics

05/2024 h-index=24
citations=1429
(according to Google Schoolar)

## Awards

2018 **Best Paper Award**, M. Kumm, O. Gustafsson, F. de Dinechin, J. Kappauf & P. Zipf, *Karatsuba with Rectangular Multipliers for FPGAs*, IEEE Symposium on Computer Arithmetic (ARITH), 2018

2019 **Best Paper Award**, G. Gambardella, J. Kappauf, M. Blott, C. Doehring, M. Kumm, P. Zipf and K. Vissers, *Efficient Error-Tolerant Quantized Neural Network Accelerators*, IEEE Symposium on Defect and Fault Tolerance in VLSI and Nanotechnology Systems (DFT), 2019

2020 **Nomination as Best Paper Candidate**, P. Sittel, J. Wickerson, M. Kumm & P. Zipf, *Modulo Scheduling with Rational Initiation Intervals in Custom Hardware Design*, Asia and South Pacific Design Automation Conference (ASP-DAC), 2020

2020 **Best Paper Award**, L. Sommer, L. Weber, M. Kumm, & A. Koch, *Comparison of Arithmetic Number Formats for Inference in Sum-Product Networks on FPGAs*, International Symposium on Field-Programmable Custom Computing Machines (FCCM), IEEE, 2020

## Memberships

since 2011 Institute of Electrical and Electronics Engineers (IEEE)

since 2017 VLSI Systems & Applications Technical Committee (VSATC) of the IEEE Circuits and Systems (CAS) Society

since 2023 Member of the High Performance, Edge and Cloud Computing (HiPEAC) Network

since 2024 Member of the Hessian Center for Artificial Intelligence (hessian.AI)

## Professional Activity

### Conferences

2017–2024 Technical Program Committee, IEEE International Conference on Computer Arithmetic (ARITH), 2017–2024

2018 Review Committee, IEEE International Conference on Circuits and Systems (ISCAS), 2018, 2019

2018 Technical Program Committee (SC7 Digital Circuits and Embedded Systems), IEEE International Conference on Electronics, Circuits and Systems (ICECS), 2018

2019, 2023 Area Chair, IEEE International Conference on Artificial Intelligence Circuits and Systems (AICAS), 2019, 2023

2019 Review Committee, IEEE International Conference on Artificial Intelligence Circuits and Systems (AICAS) 2020

2021 Technical Program Committee, IEEE International Conference on Field-Programmable Technology (FPT), 2021

2022–2024 Technical Program Committee, IEEE International Conference on Field Programmable Logic (FPL), 2022–2024

2022 Special Session Co-chair, IEEE Asia Pacific Conference on Circuits and Systems (APCCAS), 2022

2023–2024 Technical Program Committee, IFIP/IEEE Conference on Very Large-Scale Integration (VLSI-SoC), 2023–2024

2024 Technical Program Committee, IEEE International Conference on Application-Specific Systems, Architectures, and Processors (ASAP), 2024

## Reviewer Activities

### Journals

since 05/2010 Transactions on Circuits and Systems I (IEEE)

since 03/2012 Transactions on Circuits and Systems II (IEEE)

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|---|---|
| since 12/2016 | Transactions on Computers (IEEE) |
| since 08/2017 | Transactions on Computer-Aided Design of Integrated Circuits and Systems (IEEE) |
| since 08/2017 | Transactions on Very Large Scale Integration Systems (IEEE) |
| since 10/2017 | Access (IEEE) |
| since 06/2017 | EURASIP Journal on Advances in Signal Processing (Springer) |
| since 12/2017 | EURASIP Journal on Wireless Communications and Networking (Springer) |
| since 12/2017 | Journal of Signal Processing Systems (Springer) |
| since 08/2015 | Integration, the VLSI Journal (Elsevier) |
| since 10/2015 | Digital Signal Processing (Elsevier) |
| since 05/2016 | Microprocessors and Microsystems (Elsevier) |
| since 08/2017 | Computers and Electrical Engineering (Elsevier) |
| since 11/2019 | Transactions on Reconfigurable Technology and Systems (ACM) |
| since 01/2020 | Transactions on Very Large Scale Integration Systems (IEEE) |
| since 08/2021 | Transactions on Signal Processing (IEEE) |
| since 04/2022 | Transactions on Artificial Intelligence (IEEE) |
| since 10/2023 | Computing Surveys (ACM) |
| since 11/2023 | Embedded Systems Letters (IEEE) |
| since 01/2024 | Transactions on Neural Networks and Learning Systems (IEEE) |
| since 02/2024 | Journal of Supercomputing (Springer) |
| since 02/2024 | Transactions on Circuits and Systems for Video Technology (IEEE) |

Fulda, May 5, 2024