Dr. Wolfgang Kellerer

Professor

Technical University of Munich (TUM)
Department of Electrical and Computer Engineering
Chair of Communication Networks

Personal Data

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Research

H-Index (Google Scholar): 57

Internationally recognized fundamental research in the area of adaptive, programmable communication networks. Focus is on flexible and adaptive resource management and control of communication systems to support heterogeneous requirements including ultra-low latencies, tactile control, energy efficiency and resilience. Therefore, he defined the world-first metric for the measurement of flexibility in communication networks. Research methods include measurements, optimization, cross-layer-design, performance evaluation and artificial intelligence for networking.

Selected Research Projects with Leadership Position

since 2021   Co-coordinator of the German BMBF 6G Research Hub 6G-life (70 Mio €)
since 2021   Coordinator of the 6G Future Lab Bavaria (StMWi, 4 Mio €)
since 2020   Scientific chairman of the plattform "Thinknet 6G"
since 2019   Coordinator of the 5G Testbed Bavaria with focus on eHealth (1,5 Mio €)
2015   DFG SPP „Cyber Physical Networking" (Co-author of this DFG priority program)
2015 - 2021   European Commission ERC Consolidator Grant FlexNets (2 Mio €)
                „Quantifying Flexibility in Communication Networks"

Scientific Positions and Contributions

since 07/2012   Full Professor for Communication Networks, Department of Electrical and Computer Engineering (ECE), Technical University of Munich (TUM)
since 10/2021   Speaker of the Study Deans of the TUM School of Computation, Information and Technology (CIT) (in the course of formation)
since 10/2020   Dean of Studies of the ECE department
2002 – 2012   DOCOMO Communications Laboratories Europe GmbH
                European research institute of the Japanese Mobile Operator NTT DOCOMO
                Last position: director of the research unit for communications engineering and

	mobile networks (ca. 30 research staff)
2003 – 2012	External lecturer at TUM „Advanced Network Architectures and Services"
2002	Obtained Dr.-Ing. degree in Electrical Engineering from TUM
2001	Research Scholar at Standford University, California USA
1996 – 2001	Memeber of the research staff at TUM ECE and PhD student
1990 – 1995	Studies in Electrical Engineering and Information Technology, TUM

Scientific Awards (Selection)

2020	Teaching Award of the ECE Department 2020
2020	VDE award for outstanding community contributions 2020 (German EE society)
2020	IEEE ComSoc Selected Publication Award
2019	ACM SIGCOMM Best of CCR 2019 Award
2018	IEEE ICC 2018 Best Paper Award
2015	ERC Consolidator Grant FlexNets
	„Quantifying Flexibility in Communication Networks"
2011	DOCOMO Euro-Labs Company Award 2011
2008	VDE ITG-Award 2008 für hervorragende Veröffentlichung (VDE ITG)

Contributions to Societies and Memberships

since 2021	Core Member Munich Data Science Institute (MDSI)
2018-21	Guest Editor-in-Chief für IEEE Transactions on Network and Service Management Special Issues (2018, 2019, 2021 und 2022) on Softwarized Networks
2018-20	Scientific Director TUM/LMU Center for Digital Technology and Management
since 2018	Member of the Munich Institute for Robotics and Machine Intelligence (MIRMI)
since 2018	Member of the Scientific Advisory Board d. Max-Planck-Institute for Informatics
since 2018	Area Editor Network Virtualization und member of the Editorial Board IEEE COMST
since 2018	Member of the Editorial Board IEEE TNSM
2018 – 2020	Member of the Editorial Board IEEE Networking Letters
since 2017	Member of the Scientific Committee for Regulatory Affairs of the German FCC (Bundesnetzagentur)
2015-20	Member of the Advisory Board of Fraunhofer FOKUS, Berlin
since 2013	Member of the Board of Directors des LMU/TUM CDTM
since 2012	Member of the VDE/ITG Focus Group 5.2 Communication Networks
since 2009	Member of the GI/ITG Focus Group Communication and Distributed Systems
2009	IETF RFC RFC 5631: Session Initiation Protocol (SIP) Session Mobility
2005	Co-founder of the IEEE Conference on Peer-to-Peer Networks
since 2002	Member in more than 100 Program Committees of international conferences, e.g. IEEE INFOCOM, IEEE P2P, IEEE ICC, IEEE Globecom, ACM Multimedia, ACM CoNEXT, ITC

Selected Publications

1. W. Kellerer, P. Kalmbach, A. Blenk, A. Basta, M. Reisslein, S. Schmid. Adaptable and data-driven softwarized networks: Review, opportunities, and challenges. Proceedings of the IEEE 107 (4), 711-731

2. M. Gürsu, M. Vilgelm, A. Martinez Alba, M. Berioli, W. Kellerer: Admission Control Based Traffic-Agnostic Delay-Constrained Random Access (AC/DC-RA) for M2M Communication. IEEE Transactions on Wireless Communications (Volume: 18, Issue: 5), 2019, 2858 - 2871

3. A. Basta, A. Blenk, M. Hoffmann, H. Morper, M. Hoffmann, W. Kellerer. Towards a Cost Optimal Design for a 5G Mobile Core Network based on SDN and NFV. IEEE Transactions on Network and Service Management (TNSM). 2017.

4. AS. Thyagaturu, A. Mercian, MP. McGarry, M. Reisslein, W. Kellerer Software defined optical networks (SDONs): A comprehensive survey, IEEE Communications Surveys & Tutorials 18 (4), 2738-2786, 2016

5. J. Guck, M. Reisslein, W. Kellerer. Function Split between Delay-Constrained Routing and Resource Allocation for Centrally Managed QoS in Industrial Networks. IEEE Transactions on Industrial Informatics. 2016; 12(6): 2050 - 2061.

6. A. Blenk, A. Basta, M. Reisslein, W. Kellerer. Survey on network virtualization hypervisors for software defined networking. IEEE Communications Surveys & Tutorials 18 (1), 655-685, 2015

7. M. Jarschel, T. Zinner, T. Hoßfeld, P. Tran-Gia, W. Kellerer. Interfaces, attributes, and use cases: A compass for SDN. IEEE Communications Magazine 52 (6), 210-217, 2014

8. K. Römer, B. Ostermaier, F. Mattern, M. Fahrmair, W. Kellerer. Real-Time Search for Real-World Entities: A Survey. Proceedings of the IEEE. Special Issue on Sensor Network Applications. 2010; 98(11): 1887 - 1902.

9. R. Shacham, H. Schulzrinne, S. Thakolsri, W. Kellerer. Ubiquitous Device Personalization: The Next Generation of IP Telephony. ACM Transactions on Multimedia Computing, Communications, and Applications (TOMCCAP). 2007; 3(2): Article No. 12.

10. S. Khan, M. Sgroi, Y. Peng, E. Steinbach, W. Kellerer. Application-driven Cross Layer Optimization for Video Streaming over Wireless Networks. IEEE Communications Magazine. Special Issue on Cross-Layer Protocol Engineering. 2006; 44(1): 122-130.

Patents

more than 45 international patent applications, of which 37 are granted to date

Press and Media (selection)

- Prof. Wolfgang Kellerer zur Entwicklung der nächsten Mobilfunkgeneration „Bei 6G wird der Mensch im Mittelpunkt stehen" (TUM, 24.3.2021)
- Wirtschaftsminister begrüßt Förderzusage - Aiwanger: "Mit einer gezielten Förderung können wir Bayerns Vorreiterrolle beim Thema 6G ausbauen" (30.6.2021)
- 6G-LIFE - BMBF FUNDS 6G RESEARCH HUB IN DRESDEN AND MUNICH WITH 70 MILLION EUROS (30.6.2021)
- Bayerische Staatsregierung (24.3.2021): https://www.bayern.de/bayerns-wirtschaftsstaatssekretaer-gibt-startschuss-zur-umsetzung-der-bayerischen-6g-initiative/
- 250 Millionen Euro für die 6G-Entwicklung (FAZ 28.6.2021)
- Bayerischer Rundfunk: TU München erforscht neuen Mobilfunkstandard: Was bringt uns 6G? | BR24 (24.3.2021)
- FAZ Podcast: Warum wir jetzt 6G erforschen, sagt Wolfgang Kellerer (faz.net)
- Deutschlandfunk Computer und Kommunikation (Podcast): Zukunftslabor: Die TU München will sich schwerpunktmäßig mit 6G beschäftigen
- Süddeutsche Zeitung vom 26.3.2021 – Bayern – Leute des Tages: Wolfgang Kellerer