

Curriculum vitae with track record

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Personal information

First name, Surname:	Michael Welzl		
Date of birth:	14. 08. 1973	Sex:	Male
Nationality:	Austria		
Researcher unique identifier(s) (ORCID, ResearcherID, etc.):	https://orcid.org/0000-0001-8179-599X		
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Education

Year	Faculty/department - University/institution - Country
2007	Habilitation, Telecooperation Lab, Informatics, Technical University Darmstadt, Germany
2002 (dissertation defended)	Ph.D., Telecooperation Lab, Informatics, Technical University Darmstadt, Germany
1998	Master, Telekooperation, Faculty of Technical and Natural Sciences, Johannes Kepler University of Linz, Austria

Positions - current and previous

(Academic sector/research institutes/industrial sector/public sector/other)

Year	Job title – Employer - Country
2009-	Professor (Associate Professor May-August 2009), University of Oslo, Norway
1999-2009	Ph.D. student, University of Linz, Austria, 1999-2001; Ph.D. student, University of Innsbruck, 2001-2002; Postdoc, University of Innsbruck, 2002-2009

Project management experience

(Academic sector/research institutes/industrial sector/public sector/other. Please list the most relevant.)

Year	Project owner - Project - Role - Funder
2016-2021	University of Oslo, OCARINA, PI, Norwegian Research Council (“Toppforsk” scheme)
2015-2018	University of Oslo, NEAT, technical manager, EC H2020
2014-2016	University of Oslo, PRISTINE, partner’s key person, EC FP7
2012-2015	University of Oslo, RITE, partner’s key person, EC FP7

2006-2009	University of Innsbruck, EC-GIN, coordinator, EC FP6
2004-2007	University of Innsbruck, Tailor-made Congestion Control, PI, Austrian Science Fund (FWF)

Supervision of students

(Total number of students)

Master's students	Ph.D. students	University/institution - Country
10	5	University of Oslo, Norway
12	5	University of Innsbruck, Austria
2		University of Linz, Austria

Other relevant professional experiences

(E.g. institutional responsibilities, organisation of scientific meetings, membership in academic societies, review boards, advisory boards, committees, major research or innovation collaborations, other commissions of trust in public or private sector)

Year	Description - Role
2006-2017	Chair, IRTF Internet Congestion Control Research Group (ICCRG)
2017	TPC co-chair, IEEE ComSoc / ACM SIGCOMM NetSys, Göttingen, Germany
2013	Session organizer, IEEE Packet Video workshop, San Jose, CA USA
2013	Panel organizer, ACM SIGMM MMSys, Oslo, Norway
2010	Program Vice Chair on "Grid Networking", ACM / IEEE Grid 2010, Brussels, Belgium
2010	Steering committee member PFLDnet, Lancaster, PA USA
2009	Panel organizer & steering committee member, PFLDnet, Tokyo, Japan
2008	TPC co-chair & steering committee member PFLDnet, Manchester, UK
2008	General co-chair & steering committee member ACM SIGARCM GridNets, Beijing, China
2007	TPC co-chair & local chair IEEE / IFIP WONS, Obergurgl, Austria
2007	General co-chair & steering committee member ACM SIGARCM GridNets, Lyon, France
2006	General co-chair & steering committee member IEEE GridNets, San Jose, CA USA

Track record

Publications

29 journal papers, 88 normal-length papers in conference / workshop proceedings, 19 abstracts, posters, short papers, 33 standards contributions (11 published RFCs, 20 Internet-drafts, 2 published OGF documents), 9 technical reports, 3 “general interest” publications, 2 theses, 2 books, 2 book chapters.

As of February 10 2021, my Google Scholar profile shows citation counts of 323, 173, and 106 for the three most cited publications, a total number of citations of 2452, and a Hirsch index of 26.

10 selected publications

Book

- [1] Michael Welzl: "Network Congestion Control: Managing Internet Traffic", John Wiley & Sons, July 2005, 282 pages. ISBN 0-470-02528-X.

Journal papers

- [2] Peyman Teymoori, David Hayes, Michael Welzl, Stein Gjessing: "Estimating an Additive Path Cost with Explicit Congestion Notification", accepted for publication, IEEE Transactions on Control of Network Systems, 2021.
- [3] Giuseppe Bianchi, Michael Welzl, Angelo Tulumello, Francesco Gringoli, Giacomo Belocchi, Marco Faltelli, Salvatore Pontarelli: "XTRA: Towards Portable Transport Layer Functions", in IEEE Transactions on Network and Service Management, On page(s): 1-15, Print ISSN: 1932- 4537, Online ISSN: 1932-4537, DOI: 10.1109/TNSM.2019.2948467, October 2019.
- [4] Giorgos Papastergiou, Gorry Fairhurst, David Ros, Anna Brunstrom, Karl-Johan Grinnemo, Per Hurtig, Naeem Khademi, Michael Tuexen, Michael Welzl, Dragana Damjanovic and Simone Mangiante, "De-ossifying the Internet Transport Layer: A Survey and Future Perspectives", IEEE Communications Surveys & Tutorials 19(1), 2017.
- [5] Bob Briscoe, Anna Brunstrom, Andreas Petlund, David Hayes, David Ros, Ing-Jyh Tsang, Stein Gjessing, Gorry Fairhurst, Carsten Griwodz, Michael Welzl: "Reducing Internet Latency: A Survey of Techniques and their Merits", IEEE Comm. Surveys & Tutorials 18 (3), Q3 2016.
- [6] Michael Schier, Michael Welzl: "Optimizing Selective ARQ for H.264 Live Streaming: A Novel Method for Predicting Loss-Impact in Realtime", IEEE Transactions on Multimedia 14(2), 2012.
- [7] Dragana Damjanovic, Michael Welzl: "An Extension of the TCP Steady-State Throughput Equation for Parallel Flows and its Application in MultFRC", IEEE/ACM Transactions on Networking 19(6), December 2011.

Conference / workshop papers

- [8] Safiqul Islam, Michael Welzl, Kristian Hiorth, David Hayes, Grenville Armitage, Stein Gjessing: "ctrlTCP: Reducing Latency through Coupled, Heterogeneous Multi-Flow TCP Congestion Control", IEEE INFOCOM Global Internet Symposium (GI) workshop (GI 2018), Honolulu, HI, April 2018. Best of workshop presentation award given to presenter Kristian Hiorth

- [9] Naeem Khademi, Grenville Armitage, Michael Welzl, Sebastian Zander, Gorrry Fairhurst, David Ros: "Alternative Backoff: Achieving Low Latency and High Throughput with ECN and AQM", IFIP NETWORKING 2017, Stockholm, Sweden, 11 June 2017. Best paper award.
- [10] Safiqul Islam, Michael Welzl, Stein Gjessing, Naeem Khademi: "Coupled Congestion Control for RTP Media", ACM SIGCOMM Capacity Sharing Workshop (CSWS 2014), 18 August 2014. Best paper award; also published by invitation in ACM SIGCOMM CCR 44(4), October 2014.

Awards

- 2007 "Recognition Award" for the habilitation thesis (the Wiley book "Network Congestion Control", still the only textbook on the topic), received from the University of Innsbruck
- 2004 "GI/ITG KuVS Award" received from German GI/ITG Group "Communication and Distributed Systems (KuVS)" in recognition of the Ph. D. Thesis, 2004. This award is given to one Ph.D. student in computer networks from any German University per year.
- 2003 "NATWI-Award for Young Researchers", in recognition of the Ph.D. thesis, received from the University of Innsbruck

Best paper awards: INFOCOM GI Symposium 2018 "Best of workshop presentation" award, NETWORKING 2017, IEEE IMCEC2016, SIGCOMM 2014 CSWS Workshop.

Standards contributions

- I led the effort to create the IETF Transport Services (TAPS) Working Group. Apple's "Network.framework" API, follows the design recommendations by the TAPS WG. Network.framework is Apple's recommended API for all application developers since the beta for iOS 12 and macOS Mojave.
- I gave the inspiration¹ for the "RACK-TLP" TCP loss recovery algorithm, which Google has been using in its datacenters since 2014. RACK-TLP is enabled by default in Linux, making millions of servers around the world perform better.
- My team and I have also made contributions to the "WebRTC" standard for real-time communication between web browsers (RFCs 8382 and 8699).
- Various other IETF contributions: author of 11 RFCs; RMCAT and TAPS BOF chair; reviews and other contributions to various transport area groups; minor contributions to RFCs by other authors

Invited presentations

Excluding presentations of accepted papers at conferences or workshops, I have given 59 invited talks in the last 10 years. These include talks at IETF meetings and during research visits as well as the following fora:

- MAKI Distinguished Lecture Series, Darmstadt, Germany (virtual), 16 July 2020.
- Italian Networking Workshop (INW) 2020, Cavalese, Italy, 31 January 2020.
- Tutorial, IEEE ICNC 2019, Honolulu, HI USA, 18 February 2019.
- 5th International RINA Workshop, Barcelona, Spain, 23 May 2018.
- Italian Networking Workshop 2018 (INW 2018), Courmayeur, Italy, 15 January 2018.
- The 1st International NorNet Users Workshop (NNUW-1), Fornebu Norway, 18 September 2013.
- Capacity Sharing workshop, 13 October 2011, Stuttgart, Germany.

¹ Acknowledged in section 12 of: Yuchung Cheng, Neil Cardwell, Nandita Dukkhipati, and Priyaranjan Jha. 2021. The RACK-TLP loss detection algorithm for TCP. Internet-draft draft-ietf-tcpm-rack-15, Work in Progress.