

Curriculum Vitae

Personal information

Name Gábor Rétvári
Researcher ID: orcid.org/0000-0002-5958-7817
Date of birth: October 2, 1975
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Education

2007 PhD in Computer Science,
Supervised by Prof. Tibor Cinkler and Prof. József J. Bíró
Budapest University of Technology and Economics, Hungary
1999 MSc in Electrical Engineering
Budapest University of Technology and Economics, Hungary

Current positions

2019– Senior Research Fellow (part-time)
Ericsson Research, Hungary
2013– Senior Research Fellow (equivalent to Associate Professor)
Department of Telecommunications and Media Informatics
Budapest University of Technology and Economics, Hungary
2014– Senior Researcher and Project Supervisor
MTA-BME Information Systems Research Group & MTA-BME Network Softwarization
Research Group

Research interests

programmable HW/SW switch and router design, scalable routing architectures and algorithms, algorithms and data structures for networking, cloud-native computing and cloud networking, software-defined networking and the service mesh

Fellowships and awards

2020 "Dependable Dataplane for the Cloud", Austrian–Hungarian Joint Research Project FWF-30668/OTKA-135606: Co-Principal Investigator (with Prof. Stefan Schmid)
2019 Dagstuhl Seminar 19141 on Programmable Network Data Planes: Invited expert
2016 Distinguished Member of the INFOCOM Technical Program Committee
2013–2014 Google Faculty Research Award
2012–2015 OTKA-PD Postdoctoral Excellence Fellowship, NKFIH, Hungary
2012 Runner-up for Best Paper Award, RNDM 2012, St. Petersburg, Russia
2011 Best Paper Award, DRCN 2011, Krakow, Poland
2008–2011 János Bolyai Research Fellowship, Hungarian Academy of Sciences, Hungary
2007 Best Paper Award, EUNICE 2007, Enschede, The Netherlands

Teaching activities

2014– Main lecturer: The Internet Ecosystem and Evolution (VITMMA00), MSc course, BME
2007– Main lecturer: Applied Optimization and Game Theory (VITMD097), PhD course, BME
2006– Lecturer: Open Source and Free Software (VITMAV66), optional course, BME

Visiting researcher positions

2015	3 months, Ericsson Research, Hungary, [10]
2014–2015	3 months, Michael Schapira, HUJI, Israel, [9]
2000	3 months, Ericsson Research & KTH, Stockholm, Sweden [15]

Recently completed and on-going grants

2013–2017	Optimization methods for cloud computing and communications Hungarian National Research, Development and Innovation Office
2012–2017	High availability Internet Hungarian Academy of Sciences
2012–2017	MTA-BME Information Systems Research Group Hungarian Academy of Sciences
2016–2017	SW-TCAM: Packet classification in software Ericsson Research, Hungary
2015–2016	OpenFlow dataplane measurement study Ericsson Research, Hungary
2012–2015	The geometric theory of network routing OTKA (Hungarian Basic Research Fund)
2013–2014	Searchable compressed data structures for the mainstream Google Faculty Research Award
2012–2014	Compressing IP forwarding tables Ericsson Research, Hungary

Recent publications

- [1] Oliver Michel, Roberto Bifulco, Gábor Rétvári, and Stefan Schmid. “The Programmable Data Plane: Abstractions, Architectures, Algorithms, and Applications”. In: *ACM Comput. Surv.* 54.4 (May 2021). DOI: [10.1145/3447868](https://doi.org/10.1145/3447868).
- [2] T. Lévai, F. Németh, B. Raghavan, and G. Rétvári. “Batchy: Batch-scheduling Data Flow Graphs with Service-level Objectives”. In: *17th USENIX Symposium on Networked Systems Design and Implementation (NSDI 20)*. Santa Clara, CA: USENIX Association, 2020, pp. 633–649. URL: <https://www.usenix.org/conference/nsdi20/presentation/levai>.
- [3] L. Csikor, D.M. Divakaran, M.S. Kang, A. Kőrösi, B. Sonkoly, D. Haja, D. Pezaros, S. Schmid, and G. Rétvári. “Tuple Space Explosion: A Denial-of-service Attack Against a Software Packet Classifier”. In: *ACM CoNEXT*. 2019, pp. 292–304. DOI: [10.1145/3359989.3365431](https://doi.org/10.1145/3359989.3365431).
- [4] L. Linguaglossa, S. Lange, S. Pontarelli, G. Rétvári, D. Rossi, T. Zinner, R. Bifulco, M. Jarschel, and G. Bianchi. “Survey of Performance Acceleration Techniques for Network Function Virtualization”. In: *Proceedings of the IEEE* 107.4 (2019), pp. 746–764. DOI: [10.1109/JPROC.2019.2896848](https://doi.org/10.1109/JPROC.2019.2896848).
- [5] F. Németh, M. Chiesa, and G. Rétvári. “Normal Forms for Match-action Programs”. In: *ACM CoNEXT*. 2019, pp. 44–50. DOI: [10.1145/3359989.3365417](https://doi.org/10.1145/3359989.3365417).
- [6] J. Tapolcai, G. Rétvári, P. Babarcsi, and E. R. Bérczi-Kovács. “Scalable and Efficient Multipath Routing via Redundant Trees”. In: *IEEE Journal on Selected Areas in Communications* 37.5 (May 2019), pp. 982–996. DOI: [10.1109/JSAC.2019.2906742](https://doi.org/10.1109/JSAC.2019.2906742).
- [7] Kashyap Thimmaraju, Saad Hermak, Gábor Rétvári, and Stefan Schmid. “MTS: Bringing Multi-Tenancy to Virtual Networking”. In: *2019 USENIX Annual Technical Conference (USENIX ATC 19)*. Renton, WA: USENIX Association, July 2019, pp. 521–536. ISBN: 978-1-939133-03-8.
- [8] T. Lévai, G. Pongrácz, P. Megyesi, P. Vörös, S. Laki, F. Németh, and G. Rétvári. “The Price for Programmability in the Software Data Plane: The Vendor Perspective”. In: *IEEE Journal on Selected Areas in Communications* 36.12 (Dec. 2018), pp. 2621–2630. ISSN: 0733-8716. DOI: [10.1109/JSAC.2018.2871307](https://doi.org/10.1109/JSAC.2018.2871307).
- [9] M. Chiesa, G. Rétvári, and M. Schapira. “Lying Your Way to Better Traffic Engineering”. In: *ACM CoNEXT*. 2016, pp. 391–398. DOI: [10.1145/2999572.2999585](https://doi.org/10.1145/2999572.2999585).
- [10] L. Molnár, G. Pongrácz, G. Enyedi, Z. L. Kis, L. Csikor, F. Juhász, A. Kőrösi, and G. Rétvári. “Data-plane Specialization for High Performance OpenFlow Software Switching”. In: *ACM SIGCOMM*. 2016, pp. 539–552. DOI: [10.1145/2934872.2934887](https://doi.org/10.1145/2934872.2934887).
- [11] A. Gulyás, J. J. Bíró, A. Kőrösi, G. Rétvári, and D. Krioukov. “Navigable networks as Nash equilibria of navigation games”. In: *Nature Communications* 6.7651 (July 2015). DOI: [10.1038/ncomms8651](https://doi.org/10.1038/ncomms8651).

- [12] G. Rétvári, J. Tapolcai, A. Kőrösi, A. Majdán, and Z. Heszberger. “Compressing IP forwarding tables: Towards entropy bounds and beyond”. In: *ACM SIGCOMM*. 2013, pp. 111–122. DOI: [10.1145/2486001.2486009](https://doi.org/10.1145/2486001.2486009).
- [13] J. Tapolcai and G. Rétvári. “Router virtualization for improving IP-level resilience”. In: *IEEE INFOCOM*. Turin, Italy, Apr. 2013, pp. 935–943. DOI: [10.1109/INFCOM.2013.6566882](https://doi.org/10.1109/INFCOM.2013.6566882).
- [14] G. Rétvári, A. Gulyás, Z. Heszberger, M. Csernai, and J.J. Bíró. “Compact policy routing”. In: *ACM PODC 2011*. San Jose, California, USA: ACM, 2011, pp. 149–158. ISBN: 978-1-4503-0719-2. DOI: <http://doi.acm.org/10.1145/1993806.1993828>.
- [15] A. Császár, G. Enyedi, M. Hidell, G. Rétvári, and P. Sjödin. “Converging the Evolution of Router Architectures and IP Networks”. In: *IEEE Network Magazine, Special Issue on Advances in Network Systems Architecture* 21.4 (July 2007), pp. 8–14. DOI: [10.1109/MNET.2007.386464](https://doi.org/10.1109/MNET.2007.386464).
- [16] G. Rétvári, J. J. Bíró, and T. Cinkler. “Fairness in Capacitated Networks: a Polyhedral Approach”. In: *IEEE INFOCOM 2007*. Anchorage, Alaska, USA, May 2007. DOI: [10.1109/INFCOM.2007.188](https://doi.org/10.1109/INFCOM.2007.188).
- [17] G. Rétvári, J. J. Bíró, T. Cinkler, and T. Henk. “A Precomputation Scheme for Minimum Interference Routing: the Least-Critical-Path-First Algorithm”. In: *IEEE INFOCOM 2005*. Miami, Florida, USA, Mar. 2005. DOI: [10.1109/INFCOM.2005.1497897](https://doi.org/10.1109/INFCOM.2005.1497897).