

Curriculum Vitae



Personal details

Titles, name, surname: Dr.ir. Fernando Kuipers
Date and place of birth: May 16, 1977, The Hague, The Netherlands
Nationality: Dutch and Brazilian

Contact details

Dr.ir. F.A. Kuipers
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Main goals

1. *To build a high-quality research program and team to tackle the challenges in Internet Science.* I address problems in software-defined networking, Internet-of-Things, optical networking, content distribution, and critical infrastructures. My work has received several awards.
 2. *To educate students and help form of a new generation of top networking professionals.* I believe that diversity in the student population, and how they learn, demands flexibility in how we teach and organize curricula. I have been an early-adopter of many novel educational tools, and have actively contributed to the formation of curricula and to controlling educational quality.
 3. *To engage with industry and have societal impact.* I, together with my students, have closely worked with, and received funding from, industry. In addition, I have co-founded PowerWeb, an inter-faculty research initiative working on realizing robust smart grids. And after securing a LoRa gateway, I also co-initiated a Delft community on the Internet-of-Things.
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Academic degrees

Sep. 2004	Ph.D. (<i>cum laude</i> *) Delft University of Technology Thesis: <i>Quality of Service Routing in the Internet – Theory, Complexity and Algorithms</i> Supervisor: Prof. Piet Van Mieghem *At TU Delft, “cum laude” is the highest possible distinction and is only given exceptionally.
June 2000	M.Sc. Delft University of Technology, Electrical Engineering Thesis: <i>Hop-by-hop routing with QoS constraints</i> Grade: 9 out of 10

Employment

Jan. 2017 – present	Associate professor (with tenure) TU Delft, Faculty EEMCS, Dept. Software Technology
Aug. 2010 – Jan. 2017	Associate professor (with tenure) TU Delft, Faculty EEMCS, Dept. Intelligent Systems
Sep. 2004 – Aug. 2010	Assistant professor (from Aug. 2006 with tenure) TU Delft, Faculty EEMCS, Dept. Telecommunications
Sep. 2000 – Sep. 2004	Ph.D. student, TU Delft

Research Visits

- Budapest University of Technology and Economics, Budapest, Hungary, May 14 – 20, 2017. Host: Prof. János Tapolcai
 - Columbia University, New York, USA, Feb. 1 – July 31, 2016. Host: Prof. Gil Zussman
 - Ghent University, Ghent, Belgium, September 15 – 26, 2014. Host: Prof. Piet Demeester
 - Indian Institute of Science, Bangalore, India, Jan. 7 – 11, 2013 & Oct. 16 – 21, 2016 & Feb. 27 – March 3, 2018. Host: Dr. T.V. Prabhakar
 - Technion – Israel Institute of Technology, Haifa, Israel, Jan. 26 – Mar. 26, 2009. Host: Prof. Ariel Orda
 - Alcatel CRC, Antwerp, Belgium, Aug. 12 – Oct. 29, 1999. Host: Dr. Hans De Neve
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Professional responsibilities

2017 – present	Member of the program advisory board of SURFnet on connecting infrastructures
2017 – present	Board member of the section Telecommunication of the Royal Netherlands Society of Engineers (KIVI).
2016 – present	India liaison (for information and strategy w.r.t. our faculty's relations with India)
2016 – present	Co-founder of “The Things Network Delft” community: https://www.thethingsnetwork.org/community/delft/
2015 & 2009 & 2005	Managed the Network Architectures and Services (NAS) group during the 5-month sabbatical of Prof. P. Van

	Mieghem.
2015 – 2016	Chairman of the board of examiners for Electrical Engineering and Computer Engineering. As a chairman, I was also member of the board of examiners of the faculty Electrical Engineering, Mathematics and Computer Science.
2013 – 2014	Member of the curriculum committee to evaluate and outline the curriculum of a new bachelor programme on Energy.
2013	Member of the program committee to re-evaluate the CS track on Media and Knowledge Engineering.
2012 – 2015	Co-founder and steering board member of PowerWeb (http://powerweb.tudelft.nl/), an inter-faculty research initiative working on realizing robust smart grids.
2011 – present	IEEE Counsellor of the IEEE Student Branch Delft.
2011 – 2015	Member of the 3TU board of examiners for the 3TU MSc program Embedded Systems. 3TU refers to a collaboration between the three leading Dutch technical universities.
2010 – 2015	I co-evaluated student applications to the master programs Computer Engineering and Embedded Systems.
2010	Member of the group evaluating the new roles of the board of examiners after a change in the corresponding law.
2009 – present	Executive committee member of the IEEE Benelux chapter on communications and vehicular technology.
2008 – 2015	Chairman (and member since 2005) of the board of examiners for Computer Engineering and Embedded Systems.
2008	Member (as “expert” upon invitation) of the Future Media and 3D Internet Task Force of the European Union.
2007 – 2009	Member of the program committee of Computer Engineering.

Awards, recognitions and nominations (distinguished papers follow on next page)

201{5-8}	I was awarded the distinction of “Distinguished Member of the IEEE INFOCOM Technical Program Committee (TPC) in recognition to excellent service in that TPC.” IEEE INFOCOM is one of the most prestigious conferences in the field of networking.
2014	I was selected to participate in the TU Delft course on academic leadership from September 2014 – January 2015. This is a highly selective course for which only 18 persons (typically full professors or “upcoming” associate professors) from the entire university are selected each year.
2011	Elevated to senior member of the IEEE.
2011	Nomination for teacher of the year in Electrical Engineering at TU Delft. Academic year 2010/2011.
2004	Ph.D. degree cum laude: the highest possible distinction.
2001	Nominated for the Runner-Up award 2001. This is an award for upcoming talent in the telecommunications, media and Internet sector, organized by Telecombrief at the 7th Telecongres in the Netherlands, January 15, 2002.

Distinguished papers

- 2017 Nominated (top 4) for the best paper award at the 20th European Conference on Genetic Programming (EuroGP 2017) with the paper “Symbolic Regression on Network Properties.”
- 2015 **Best paper award** at the 14th International Workshop on Network and Systems Support for Games (NetGames 2015) with the paper “Toxicity Detection in Multiplayer Online Games.”
- 2015 The paper “Shortest Paths in Networks with Correlated Links Weights,” presented at the IEEE INFOCOM Workshop on Inter-Dependent Networks (WIDN 2015), was identified as a top paper and subsequently fast-tracked to the Computational Social Networks journal.
- 2014 Nominated (top 3) for the best paper award at the IEEE Joint Intelligence & Security Informatics Conference (JISIC 2014) with the paper “DNSSEC Misconfigurations: How incorrectly configured security leads to unreachability.” The article was subsequently fast-tracked to the Security Informatics journal and it was nominated for the Dutch Cyber Security best recent Research paper Award.
- 2014 The paper “Availability-Based Path Selection,” presented at the 6th International Workshop on Reliable Networks Design and Modeling (RNDM 2014) was identified as a top paper and was subsequently fast-tracked to the Networks journal.
- 2009 Nominated (top 3) for the best paper award at the 21st International Teletraffic Congress (ITC 2009) with the paper “On-line Survivable Routing in WDM Networks.”
- 2008 **Best paper award** at the 10th IEEE International Symposium on Multimedia (IEEE ISM 2008) with the paper “Analytical Model for Mesh-based P2PVoD.”
- 2008 **Best paper award** at the IEEE International Workshop on Future Multimedia Networking (IEEE FMN 2008) with the paper “On the Quality of Experience of SopCast.”
- 2008 Nominated (top 4) for best paper award at IFIP Networking 2008 with the paper “E2E blocking probability of IPTV and P2PTV.”
- 2006 **Best paper award** at CHINACOM 2006 with the paper “QoS protocol and algorithm join forces.”
- 2003 Nominated (top 10) for best paper award at IEEE INFOCOM 2003 with the paper “The Impact of Correlated Link Weights on QoS Routing.” The article was subsequently fast-tracked to IEEE/ACM Transactions on Networking.
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Scientific Activities

Research interests

My research interests lie in the field of Internet Science, in particular network optimization, network resilience, Quality of Service, and Quality of Experience, and have addressed problems in software-defined networking, Internet-of-Things, optical networking, content distribution, and critical infrastructures. Many of these topics come together in the vision of a Tactile Internet, which includes transporting touch in addition to audio-visual interaction. In order for the Tactile Internet to become a reality, the latency experienced should be very small (< 1 ms) and the connection should be highly reliable (< 1 ms outage per day). This is referred to as the 1 ms challenge. Clearly, realizing the Tactile Internet relies on consolidated advances in many disciplines.

Since the Internet is increasingly connected and interwoven with our society, an Internet scientist should have an affinity for multi-disciplinary work. I have such affinity, which is for example evident from my role in setting up PowerWeb for research on smart energy grids. Moreover, my distinguished papers cover a breadth in research across several networking layers, which testifies that I not only have cross-layer networking expertise, but that my work across those layers is valued.

In addition, as can be seen from the research projects below, I have closely worked with (and received funding from) industry (e.g., SURFnet and Alliander), which has adopted my algorithms and solutions, and through which I have also gained practical experience in optimizing real networks.

Research projects and grants as PI (total € 1.922.707,50)

<i>Source</i>	<i>Topic</i>	<i>Time frame</i>	<i>Budget</i>
KPN – TU Delft	5G robustness/safety when using programmable networks	2018 - 2022	€ 250,000
TU Delft – IISc	Tactile Internet (in collaboration with the Indian Institute of Science)	2016 – 2021	€ 250,000 for one PhD student at TU Delft and one at IISc (co-supervised by me)
SURFnet	Each year I have managed to secure funding. Work covers planning of their optical network, software-defined networking, network resilience, multi-domain routing, and energy efficiency.	2008 – 2017	€ 905.150 + a LoRa gateway, a lightpath for one year, 20000 CPU corehours, and 20TB storage
Alliander	Energy data processing	01/01/2013 – 31/12/2017	€ 300.000
KPN	Network architecture analysis	01/10/2012 – 30/11/2012	€ 9.570
TU Delft (PowerWeb)	Smart grid control	01/09/2012 - 31/08/2016	€ 100.000

ENISA	Good Practices for Resilient Internet Interconnections	16/05/2011 - 31/12/2011	€ 57.987
TRAIL	Multi-constrained Context-Aware Route Planning	01/10/2009 - 30/09/2009	€ 50.000

Additional research projects and grants (total € 1.646.940,51)

<i>Source</i>	<i>Topic</i>	<i>Time frame</i>	<i>Budget for TU Delft</i>
EU NoE project	European Internet Science (EINS)	01/01/2012 - 31/12/2014	€ 114.911
Next Generation Infrastructures foundation	Robustness and Optimization of Complex Networks	01/01/2009 - 31/12/2012	€ 426.895
EU NoE project	Content distribution (CONTENT)	18/05/2006 - 30/06/2009	€ 102.134
STW	Network Dynamics and QoS	01/07/2004 - 30/06/2009	€ 419.000
EU NoE project	Emerging Network Technologies (E-Next)	01/01/2004 - 31/12/2006	€ 384.000
SURFnet	Routing and wavelength assignment	01/01/2005 - 31/12/2007	€ 200.000

Among the projects, there are three EU Network of Excellence projects (EINS, CONTENT, and E-Next), through which I have established an extensive network.

In addition to the above-mentioned industry-funded work, I have also actively collaborated with industry through the co-supervision of students (e.g., with The Things Network, Juniper, Bell-Labs Antwerp, Liberty Global, Agentschap Telecom, SURFnet, TNO-ICT, Alliander, KPN, Heerema, SurfsARA, Unified Streaming, and Fox-IT).

Invited presentations

Selected presentations (in addition to regular conference presentations and presentations at companies and universities):

- Keynote speaker on “An academic perspective on LoRaWAN” at The Things Conference, Amsterdam, The Netherlands, February 1-3, 2018.
- Invited speaker on “ThingPot: an interactive Internet-of-Things honeypot” at the Joint CTTE and CMI conference on Internet of Things – Business Models, Users, and Networks, Aalborg University Copenhagen, Denmark, November 23-24, 2017.
- Invited speaker on “Computing the potential impact of disasters on critical infrastructure networks” at the first ACM International Workshop on Critical Infrastructure Network Security (CINS 2017), Urbana-Champaign, Illinois, USA, June 5th, 2017.
- Invited speaker on “We play, therefore I am - Understanding and recommending play relationships in online social gaming” at the 5th International Conference on COMMunication Systems and NETworks (COMSNETS 2013), Bangalore, India, January 7-10, 2013.
- Invited speaker on “Techniques for measuring QoE” at the 8th International Conference on Wired/Wireless Internet Communications (WWIC 2010), Lulea, Sweden, June 1-3, 2010.

- Presentation for the HERMES partnership on “Communications requirements in low-voltage smart grids,” March 6, 2013.
- Presentation to the Future Media and 3D Internet Task Force of the EU on challenges and opportunities in that direction, June 5, 2008.
- Presentations on PowerWeb at the Delft Institute for Research on ICT (DIRECT) annual meetings on June 13, 2013 and June 14, 2012 and at the PowerWeb industry round table meeting on February 11, 2014.
- Presentation “To Peer or not to Peer? That’s the question!” at the NoE CONTENT industry workshop on Content Distribution Networks, TU Delft, February 19, 2008.
- Presentation on “Quality of Service Routing – Lessons Learned,” annual symposium of the Delft Interdisciplinary Research Consortium on Next Generation Infrastructures, November 21, 2002.

Conference organization

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| 2018 | Topic Preview co-chair of ACM SIGCOMM 2018, Budapest, Hungary, August 20-24, 2018. |
| 2018 | TPC co-chair of IFIP Networking 2018, Zurich, Switzerland, May 14-16, 2018. |
| 2017 | Finance chair of the 15th ACM Conference on Embedded Networked Sensor Systems (ACM SenSys 2017), Delft, the Netherlands, November 6-8, 2017. |
| 2014 | Chair of the IEEE Symposium on Communications and Vehicular Technology (IEEE SCVT 2014), Delft, The Netherlands, November 10, 2014. |
| 2014 | Member of the local organizing committee of the IEEE Sections Congress 2014, Amsterdam, the Netherlands, August 22-24, 2014. |
| 2012 | TPC co-chair (with Prof. Poul Heegaard) of the 6th International Workshop on Self-Organizing Systems, Delft University of Technology, March 15-16, 2012. |
| 2009 | TPC track co-chair (with Prof. Jörg Ott) of the track “Multimedia and QoS” for the IEEE International Conference on Computer Communications and Networks (ICCCN 2009), San Francisco, USA, August 2-6, 2009. |
| 2008 | Organizer of an industry workshop on Content Distribution Networks, Delft University of Technology, February 19, 2008. |

TPC membership

- IEEE INFOCOM: 2018, 2017, 2016, 2015, 2014, 2013, 2012, 2011, 2010.
- IFIP Networking: 2017, 2016, 2015, 2014, 2013, 2012, 2011.
- MMSys 2018 special session on multimedia over 5G networks
- ACM SIGMETRICS international workshop on Critical Infrastructure Network Security (CINS): 2017
- International Conference on Optical Network Design and Modeling (ONDM): 2015
- International Teletraffic Congress (ITC): 2013.
- IEEE Symposium on Communications and Vehicular Technology (SCVT): 2017, 2016, 2013, 2012, 2011, 2010, 2009.
- International Conference on Wired/Wireless Internet Communications (WWIC): 2011, 2010.

- International Workshop on Future Multimedia Networking: 2012, 2009, 2008.
 - International Workshop on Evaluation for Self-Adaptive and Self-Organizing Systems (Eval4SASO): 2012.
 - International Workshop on Modeling, Analysis, and Control of Complex Networks (Cnet): 2011.
 - EINS Workshop on Understanding the inter-play between sustainability, resilience, and robustness in networks (USRR): 2014
 - International conference on User Centric Media (UCMedia): 2009.
 - International conference on advances in multimedia (MMEDIA): 2009.
 - International Conference on Communications and Networking in China (ChinaCom): 2008.
 - International Workshop on QoS Routing (WQoS): 2004.
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Reviewing activities

In addition to having reviewed articles for many top journals (among which IEEE/ACM Transactions on Networking, IEEE JSAC, IEEE Communications Magazine, and IEEE JOCN) and having served in the TPC of many top conferences (among which INFOCOM), I have also acted as reviewer of proposals submitted to the Netherlands Organisation for Scientific Research (NWO), the Israel Science Foundation, the Belgium agency for Innovation by Science and Technology (IWT), the Cyprus Research Promotion Foundation, the King Abdullah University of Science and Technology (KAUST), and the Slovenian Research Agency. For the latter I also appeared in a review panel.

Other scientific activities

- I am currently participating in the EU COST Action CA 15127 on “Resilient communication services protecting end-user applications from disaster-based failures (RECODIS).
 - I have participated in the Network of Excellence E-Net and in the COST 263 action on Quality of Future Internet Services.
 - I have participated in the Dagstuhl workshop on “Benchmarking of Future Content Distribution: Exploring the Limits of Self-organization?” August 26-29, 2008.
 - I attended four IETF Masterclasses on: “Challenge and response: towards tomorrow's Internet” by Brian Carpenter, “Internet Architectural Philosophy and the new business reality” by Scott Bradner, “Security” by Jeff Schiller, “IPv6” by Steve Deering.
 - I participated in the COST 279 summer school on “Routing and Multi-Layer Traffic Engineering in Next Generation IP Networks,” Darmstadt, Germany, Sep. 8-12, 2003.
 - I followed the EIDMA mini-course on “Approximation Schemes for NP-hard Geometric Problems,” by Prof. Sanjeev Arora, Technical University of Eindhoven, The Netherlands, Sep. 1-5, 2003.
 - I attended the ATHENS (Advanced Technological Higher Education Network Socrates) course in Paris, entitled “Discovering the datacommunication networks of the information society of the future,” Nov. 12-21, 1999.
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Academic activities

Docendo discimus (“By teaching, we learn”)

My philosophy of teaching is that no two students are alike, yet all students count. In other words, I believe that the diversity in the student population and how they learn demands flexibility in how we teach (and that we should not be afraid to experiment with that).

For instance, in 2007, I have developed the MSc course on “Measuring and simulating the Internet” after realizing that our curriculum at that time did not offer a course where students could develop their research skills. To fill that gap I chose to develop a project-based course, as one of the first project-based courses in the faculty. I was invited by the Director of Studies to instruct about the research-based approach proposed by this course to the industrial board of the curriculum. The course is intensive but rewarding, as the student and the teacher get to interact closely.

Recently, I developed a novel course “High-Performance Data Networking.” The course has attracted many students who subsequently expressed their interest in doing a thesis work under my supervision.

In addition to teaching, I have been deeply involved in the various aspects of education at TU Delft, namely:

1. I was one of the first teachers at TU Delft to get a University Teaching Qualification.
2. I have taught and built several successful BSc and MSc courses.
3. I have been an early-adopter of many novel educational tools, like wiki, peer assessment, SafeAssign and other anti-plagiarism tools, and social media.
4. I have led by example in various committees to assess or develop curricula.
5. I have supervised many successful MSc and PhD students on their thesis work.
6. I have provided, as doctoral contact person, information and coaching to MSc students.
7. I have been actively involved in the Board of Examiners (safeguarding the process of conferring a diploma).

Courses and teaching experience

High-Performance Data Networking: MSc course, responsible lecturer, started in Nov. 2015. The course combines theory and practice.

Telecommunication Networks: BSc course, responsible lecturer, Sep. 2010 – Aug. 2017. In 2015, I have developed various Mininet/Wireshark exercises for the course.

Measuring and Simulating the Internet: MSc course, responsible lecturer, Feb. 2007 – present. I set up this course to teach students how to perform research. It was one of the first project-based courses in the faculty.

Advances in Networking: MSc course, responsible lecturer (Sep. 2004 – Aug. 2009, October 2014) and guest-lecturer (Nov. 2003 and Oct. 2009 – Oct. 2013).

Complex Networks: MSc course, co-lecturer, Sep. 2010 – Aug. 2012. My part consisted of introducing the students to algorithmic techniques suitable for complex networks.

Ethics and Technology: BSc course, co-lecturer, 2007. I, for one term, helped out the responsible lecturer of this course, who was in dire need of some assistance.

Performance Analysis: MSc course, creating and correcting homework exercises, 2002 – 2005.

Routing: Masterclass for participants from industry, April 22, 2004.

Education-related projects

Academic year 2010/2011 Recipient of a grant of 1000 Euros for the TU Delft Grassroots proposal “Peer evaluation.”

Academic year 2007/2008 Recipient of a grant of 1000 Euros for the TU Delft Grassroots proposal “Wiki meets YouTube.”

PhD and MSc students supervised

I am or have been the supervisor of the following Ph.D. students:

<i>Name</i>	<i>Topic</i>	<i>(Expected) Graduation date</i>	<i>First employment after PhD</i>
Jorik Oostenbrink	Spatiotemporal network resilience	2021	-
Belma Turkovic	Tactile Internet	2021	-
Akbari Indra Basuki	Software-defined networking	2021	-
Kurian Polachan	Tactile Internet (@IISc, co-supervision)	2020	-
Hale Çetinay	Energy data analytics	2018	-
Marcus Märtens	Information Propagation in Complex Networks	Jan. 2018	ESA
Niels van Adrichem	Resilience and Application Deployment in Software-Defined Networks	Feb. 2017	TNO
Muhammad Al Farabi	Routing and Disaster Awareness in Optical Networks	Sep. 2016	Universiti Teknologi Malaysia
Song Yang	Routing in Optical and Stochastic Networks	June 2015	University of Göttingen
Ruud van de Bovenkamp	Epidemic Processes on Complex Networks	Jan. 2015	KPN
Ebisa Negeri	Smart Power Grid: A Holonic Approach	April 2014	Greeniant
Anteneh Beshir	Survivability and Impairment-aware Routing in Optical	April 2011	Profit consulting

	Networks		
Yue Lu	Analysis of streaming media systems	Oct. 2010	Vodafone
Adriaan ter Mors	Multi-agent route planning	March 2010	Delft University of Technology

I am or have been guiding the following M.Sc. thesis students:

1. Priyank Garg – *Scaling LoRaWAN* (with Johan Stokking, The Things Network)
2. Reggie Viset – *Stateful SDN*
3. Yuchen Huang – *QoS with SDN*
4. Nikos Bizanis – *SDN and virtualization solutions for the Internet of Things*
5. Dennis Jansen – *Challenges and best practices in network resilience* (with Ties Dammers, Agentschap Telecom)
6. Lina He – *Online survivability in software defined elastic optical networks* (completed January 2018)
7. Christina Kylili – *Improving the video streaming backend with on-the-fly format conversion and cloud storage* (with Rufael Mekuria, Unified Streaming, completed January 2018)
8. Rizky Dharmawan – *Performance evaluation of a software-defined wireless sensor network* (completed November 2017)
9. Andri Rahmadhani – *Performance evaluation of LoRaWAN: from small-scale to large-scale networks* (completed November 2017)
10. Alp Arda Inan – *Optimization of the locations of virtual network functions* (with Matthijs Klepper, KPN, completed November 2017)
11. Ashwini Shamsundar – *Modeling and performance evaluation of the Thread protocol* (Esko Dijk, Philips, completed November 2017)
12. Jorik Oostenbrink – *Computing the vulnerability of communication networks to large-scale disasters* (completed August 2017)
13. Meng Wang – *Understanding security flaws of IoT protocols through honeypot technologies* (with Javier Santillan, Brightsight, completed August 2017)
14. Ficky Fatturrahman – *SDN controller robustness and distribution framework* (with Niels van Adrichem, completed August 2017)
15. Xueying Yang – *LoRaWAN: vulnerability analysis and practical exploitation* (with Evgenios Karampatzakis, Brightsight, completed July 2017)
16. Marlou Pors – *Investigating current state security of OpenFlow networks* (with Francisco Dominguez, Fox-IT, completed July 2017)
17. Harmjan Treep – *Delftvisor: A network hypervisor for Openflow 1.3* (with Niels van Adrichem, completed June 2017)
18. Bart Jansen – *Performance analysis of WebRTC-based video conferencing* (with Anne Bakker, Liberty Global, completed Aug. 2016)
19. Hedi Krishna – *Providing end-to-end bandwidth guarantees with OpenFlow* (with Niels van Adrichem, completed July 2016)
20. Sulabh Deshmukh – *SDN based approach for multi-VLAN link aggregation over trunk links* (with Ronald van der Pol, SURFnet, completed June 2016)
21. Prashanth Manthena – *NaaS architecture with SDN and NFV for service provider networks* (with Casper van den Broek, TNO-ICT, completed Feb. 2015)
22. Ben van Asten – *Robust software-defined networking* (with Niels van Adrichem, completed Sep. 2014)

23. Emanuel Dias – *A model to evaluate QoE of online social gaming* (with Alexandru Iosup, completed Feb. 2014)
24. Konstantinos Bessas – *Analytics at the speed of light* (with Alexandru Iosup, completed Feb. 2014)
25. Vassil Gourov – *Software-defined networking* (with Niels van Adrichem, completed Aug. 2013)
26. Niels van Adrichem – *Towards a global implementation of named data networking* (completed Aug. 2012)
27. Bob Ran – *Telecommunication requirements in low-voltage smart grids* (with Alliander, completed June 2012)
28. Jose Luis Almodovar Chico – *Analysis of oblivious routing strategies* (completed April 2012)
29. Eyuel Ayele – *Community based data communications* (with TNO-ICT, completed Aug. 2011)
30. Rufael Mekuria – *Synchronization in IPTV* (with TNO-ICT, completed Apr. 2011)
31. Ruud van de Bovenkamp – *Traffic modelling* (with KPN, completed Sep. 2010)
32. Rasjaad Imamdi – *Capacity planning* (with KPN, completed Sep. 2010)
33. Desalegn Segni Abawollo – *Survivable impairment-aware path and regenerator allocation* (with Anteneh Beshir, completed Aug. 2010)
34. Devender Maheshwari – *Robust networks for off-shore unmanned platforms* (with Heerema, completed Jan. 2010)
35. Zhao Yong – *Quality of Video-Conferencing Applications* (with Yue Lu, completed Dec. 2009)
36. Rob Juffermans – *Diverse routing in SRLG networks* (with SurfSARA, completed Sep. 2009)
37. Floris Nicolai – *QoS Solutions for the home networks environment* (with TNO-ICT, completed July 2009)
38. Ebisa Olana Negeri – *Impairment-Aware QoS Routing in Translucent Optical Networks* (with Anteneh Beshir, completed July 2009)
39. Truong Dinh Huy – *Comparison of Optical Inter-Domain Routing Protocols in the Presence of Wavelength Converters* (with Anteneh Beshir, completed July 2009)
40. Zhen Qin – *Quality of Experience in P2PTV* (with Yue Lu, completed Jan. 2009)
41. Fredrick Ezeh – *Delay Tolerant Networking* (with Rangarao Venkatesha Prasad, completed Sep. 2008)
42. Gabriel Martorell Lliteras – *Hierarchical QoS routing* (completed Mar. 2008)
43. Benedetto Fallica – *Measurement Study of the P2PTV application SopCast* (completed Dec. 2007)
44. Arne Brants – *The Efficiency of Network Coding in P2P Content Distribution Systems* (with Jos Weber, completed Sep. 2007)
45. Julià Legido i Català – *Heap Data Structures and Path Length Functions for SAMCRA* (completed Aug. 2007)
46. Ian Hornes – *SAMCRA on road networks with dynamically changing link weights* (completed Sep. 2006)
47. Anteneh Beshir – *Implementation of eps-approximation QoS Routing* (completed July 2006)
48. Ding Chen – *Improving SAMCRA with IPM* (completed Nov. 2005)
49. Xia Guo – *Link-Disjoint Quality of Service Routing* (completed Aug. 2005)

50. Oscar Samuel Espin – *Stability of Paths in a Quality of Service Network* (completed Oct. 2004)
51. Almerima Jamakovic – *Influence of Path Correlation on the Complexity of QoS Routing* (completed Jan. 2004)
52. Hellen Magige – *QoS Routing: Evaluating the performance of Dynamic and Static routing* (completed July 2003)
53. Eguzki Astiz Lezaun – *Stability of Paths in a Dynamic QoS Environment* (completed Apr. 2003)
54. Selma Begtasevic – *On NP-completeness in QoS Routing* (completed Jan. 2003)
55. Sergi Calvet Ceballos – *Improving SAMCRA, a QoS Routing Algorithm, using the Look-Ahead Property* (completed Sep. 2002)
56. Dennis Lansbergen – *Analysis of Quality of Service Mechanisms in IP and Road Networks* (completed Apr. 2002)
57. Vahid Niazian – *A Study of Quality of Service dynamics in the Internet* (completed July 2001)

PhD committees

In addition to having served as a member of the PhD committees of the PhD students I have supervised, I also have been a member of the PhD committees of:

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| Bogdan Mihai | <i>SDN/NFV Control Plane Optimization for Fixed-Mobile Access and Data Center Optical Networking</i> , Technical University of Denmark, November 2017. |
| Diego Montero | <i>Novel Architectures and Strategies for Security Offloading</i> , Universitat Politècnica de Catalunya, November 2017. |
| Marco Cattani | <i>Opportunistic Communication in Extreme Wireless Sensor Networks</i> , Delft University of Technology, September 2016. |
| Siqi Shen | <i>Massivizing Networked Virtual Environments on Clouds</i> , Delft University of Technology, April 2015. |
| Stefan Aust | <i>Advanced Wireless Local Area Networks in the Unlicensed Sub-1GHz ISM-bands</i> , Delft University of Technology, October 2014. |
| Alia Bellabas | <i>Routage Multicast avec Qualité de Service sous Plusieurs Contraintes</i> , Université de Rennes, October 2011. |

Other academic activities and achievements

- Recipient, on June 21 2006, of a BKO certificate for “Didactical Skills in teaching at the University.”
- English language test, taken on 07-03-2007, indicated a CEF level C2, which is the highest attainable level.
- I have followed the course “promoter as coach,” 6 days from September 2009 to January 2010.
- In 2013, I have filled-in for Prof. Houben (chair of the board of examiners for

Computer Science) at the educational review (“onderwijsvisitatie”) of the CS curriculum.

- On December 16, 2008, I organized an excursion with students to SARA and the Amsterdam Internet Exchange. For this trip I had received funding from the Universiteitsfonds.
 - On June 23, 2011, I have given a presentation “Peer evaluation’ evaluation” on my experience with peer assessment.
 - In February 2010, I contributed to the ICTO roadshow with a booth explaining the use of wiki and SafeAssign in education.
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Bibliometrics and publications

Bibliometrics

Among the bibliometric tools available to many, Google Scholar (GS) seems to provide better coverage for computer science than tools like Elsevier Scopus and Thompson-Reuters Web of Science. According to Google Scholar, I have an H-index of 29 and 3392 citations to my papers.

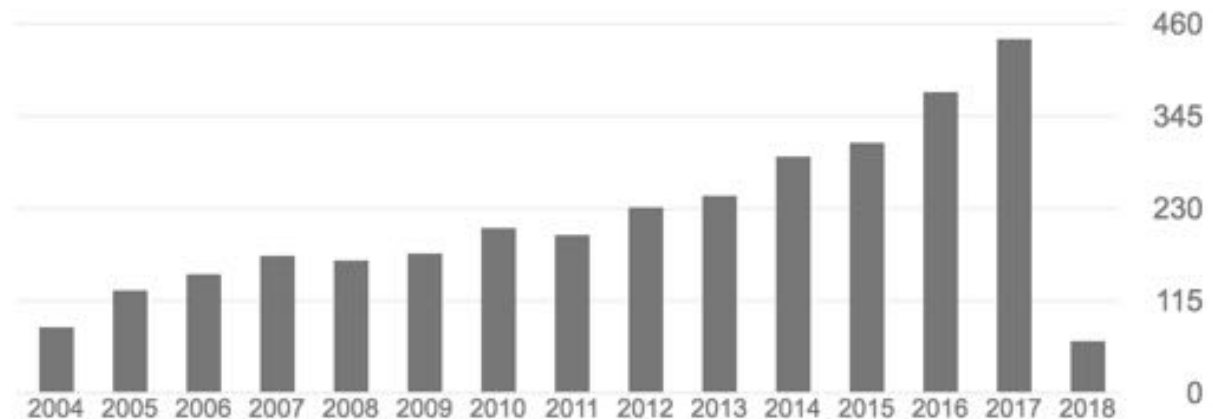


Figure 1. Citations per year according to GS.

Publications

I have published with > 100 co-authors work of high quality, as shown by inclusion in the DBLP curated database [http://dblp.uni-trier.de/pers/hd/k/Kuipers:Fernando A](http://dblp.uni-trier.de/pers/hd/k/Kuipers:Fernando_A).

My publications are ordered as follows:

Books/Proceedings/Journals/Conferences/Reports

Books or contributions to books

- F.A. Kuipers, M. Märtens, E. van der Hoeven, and A. Iosup, “The Power of Social Features in Online Gaming,” Chapter to appear in *Social Interactions in Virtual Worlds*, edited by K. Lakkaraju, G. Sukthankar, and R.T. Wigand, Cambridge University Press.
- F.A. Kuipers, *Quality of Service Routing in the Internet: Theory, Complexity and Algorithms*, PhD thesis, Delft University Press, ISBN 90-407-2523-3, Sep. 2004.
- P. Van Mieghem (ed.), F.A. Kuipers, T. Korkmaz, M. Krunz, M. Curado, E. Monteiro, X. Masip-Bruin, J. Solé-Pareta, and S. Sánchez-López, *Quality of Service Routing*, Chapter 3 in *Quality of Future Internet Services*, EU-COST 263 Final Report, edited by Smirnov et al., Springer LNCS 2856, pp. 80-117, 2003.
- F.A. Kuipers, *Hop-by-hop routing with QoS constraints*, M.Sc. thesis in Electrical Engineering at Delft University of Technology, June 2000.

Proceedings

- Fernando A. Kuipers and Poul E. Heegaard (eds.), *Self-Organizing Systems*, Lecture Notes in Computer Science, vol. 7166, Proc. of the 6th IFIP TC 6 International Workshop, IWSOS 2012, Delft, The Netherlands, March 15-16, 2012, DOI: 10.1007/978-3-642-28583-7.

Journals

- H. Cetinay, S. Soltan, F.A. Kuipers, G. Zussman, and P. Van Mieghem, “Comparing the Effects of Failures in Power Grids under the AC and DC Power Flow Models,” to appear in IEEE Transactions on Network Science and Engineering.
- S. Trajanovski, F.A. Kuipers, Y. Hayel, E. Altman, and P. Van Mieghem, “Designing virus-resistant, high-performance networks: a game-formation approach,” to appear in IEEE Transactions on Control of Network Systems.
- H. Cetinay, F.A. Kuipers, and P. Van Mieghem, “A Topological Investigation of Power Flow,” to appear in IEEE Systems Journal.
- D. van den Berg, R. Glans, D. de Koning, F.A. Kuipers, J. Lugtenburg, K. Polachan, T.V. Prabhakar, C. Singh, B. Turkovic, and B. van Wijk, “Challenges in Haptic Communications over the Tactile Internet,” IEEE Access, vol.5, no. 1, pp. 23502-23518, December 2017.
- J. Oostenbrink and F.A. Kuipers, Computing the Impact of Disasters on Networks, ACM SIGMETRICS Performance Evaluation Review (special issue from the 1st ACM SIGMETRICS International Workshop on Critical Infrastructure Network Security), vol. 45, no. 2, pp. 107-110, September 2017.
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- N. Bizanis and F.A. Kuipers, “SDN and virtualization solutions for the Internet of Things: A survey,” IEEE Access, vol. 4, September 2016.
- S. Yang, S. Trajanovski, and F.A. Kuipers, “Optimization Problems in Correlated Networks,” Computational Social Networks, January 2016.
- S. Yang, S. Trajanovski, and F.A. Kuipers, “Availability-Based Path Selection and Network Vulnerability Assessment,” Wiley Networks, vol. 66, no. 4, pp. 306-319, December 2015.
- A. Lu Jia, S. Shen, R. van de Bovenkamp, A. Iosup, F.A. Kuipers, and D.H.J. Epema, “Socializing by Gaming: Revealing Social Relationships in Multiplayer Online Games,” ACM Transactions on Knowledge Discovery from Data, vol. 10, no. 2, October 2015.
- N.L.M. van Adrichem, N. Blenn, A. Reyes Lúa, X. Wang, M. Wasif, F. Fatturrahman and F.A. Kuipers, “A measurement study of DNSSEC misconfigurations,” Security Informatics, October 2015.
- F. Iqbal and F.A. Kuipers, “Disjoint paths in networks,” Wiley Encyclopedia of Electrical and Electronics Engineering, June 2015 (**invited paper**).
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- S. Trajanovski, F.A. Kuipers, A. Ilic, J. Crowcroft, and P. Van Mieghem, “Finding critical regions and region-disjoint paths in a network,” IEEE/ACM Transactions on Networking, vol. 23, no. 3, pp. 908-921, June, 2015.
- F. Iqbal, J. van der Ham, and F.A. Kuipers, “Technology-Aware Multi-Domain Multi-Layer Routing,” Computer Communications, vol. 62, pp. 85-96, May 2015.
- C. Doerr and F.A. Kuipers, “All quiet on the Internet front?” IEEE Communications Magazine, vol. 52, no. 10, pp. 46-51, October 2014.
- R. van de Bovenkamp, F.A. Kuipers, and P. Van Mieghem, “Domination-time dynamics in susceptible-infected-susceptible virus competition on networks,” Physical Review E, vol. 89, no. 4, April 2014.
- A. Iosup, R. van de Bovenkamp, S. Shen, A.L. Jia, and F.A. Kuipers, “An Analysis of Implicit Social Networks in Multiplayer Online Games,” IEEE Internet Computing,

- special issue on Networked Games, May/June 2014.
- S. Yang and F.A. Kuipers, "Traffic Uncertainty Models in Network Planning," *IEEE Communications Magazine*, vol. 52, no. 2, pp. 172-177, February 2014.
 - S. Trajanovski, F.A. Kuipers, J. Martin-Hernandez, and P. Van Mieghem, "Generating graphs that approach a prescribed modularity," *Computer Communications*, vol. 36, pp. 363-372, 2013.
 - F.A. Kuipers, "An Overview of Algorithms for Network Survivability," *ISRN Communications and Networking*, vol. 2012, Article ID 932456, 19 pages, 2012 (**invited paper**).
 - P. Van Mieghem, D. Stevanovic, F.A. Kuipers, C. Li, R. van de Bovenkamp, D. Liu and H. Wang, "Decreasing the spectral radius of a graph by link removals," *Physical Review E*, vol. 84, no. 1, 2011.
 - P. Van Mieghem, H. Wang, X. Ge, S. Tang, and F.A. Kuipers, "Influence of Assortativity and Degree-preserving Rewiring on the Spectra of Networks," *European Physical Journal B*, vol. 76, no. 4, pp. 643-652, 2010.
 - Y. Lu, B. Fallica, F.A. Kuipers, R.E. Kooij, and P. Van Mieghem, "Assessing the Quality of Experience of SopCast," *Int. J. Internet Protocol Technology*, vol. 4, no. 1, pp. 11-23, 2009.
 - F.A. Kuipers and F. Dijkstra, "Path selection in multi-layer networks," *Computer Communications*, vol. 32, no. 1, pp. 78-85, January 2009.
 - X. Masip-Bruin, M. Yannuzzi, J. Domingo-Pascual, A. Fonte, M. Curado, E. Monteiro, F. Kuipers, P. Van Mieghem, S. Avallone, G. Ventre, P. Aranda-Gutierrez, M. Hollick, R. Steinmetz, L. Iannone and K. Salamatian, "Research Challenges in QoS Routing," *Computer Communications*, NoE E-Next special issue, vol. 29, no. 5, March 2006.
 - F.A. Kuipers and P. Van Mieghem, "Conditions that Impact the Complexity of QoS Routing," *IEEE/ACM Transaction on Networking*, vol. 13, no. 4, pp. 717-730, August 2005.
 - F.A. Kuipers and P. Van Mieghem, "Non-Dominance in QoS Routing: an Implementational Perspective," *IEEE Communications Letters*, vol. 9, no. 3, March 2005.
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- J. Tapolcai, B. Vass, Z. Heszberger, J. Biro, D. Hay, F.A. Kuipers, and L. Ronyai, “A Tractable Stochastic Model of Correlated Link Failures Caused by Disasters,” Proc. of IEEE INFOCOM, Honolulu, Hawaii, USA, April 15-19, 2018.
- M. Wang, J. Santillan, and F.A. Kuipers, “ThingPot: an interactive Internet-of-Things honeypot,” Proc. of the joint CTTE and CMI conference, Copenhagen, Denmark, November 23-24, 2017 (**invited paper**).
- H. Cetinay, S. Soltan, F.A. Kuipers, G. Zussman, and P. Van Mieghem, “Analyzing Cascading Failures in Power Grids under the AC and DC Power Flow Models,” Proc. of the 35th International Symposium on Computer Performance, Modeling, Measurements and Evaluation (IFIP Performance 2017), New York, USA, November 13-17, 2017.
- B. Jansen, T. Goodwin, V. Gupta, F.A. Kuipers, and G. Zussman, “Performance evaluation of WebRTC-based video conferencing,” Proc. of the 35th International Symposium on Computer Performance, Modeling, Measurements and Evaluation (IFIP Performance 2017), New York, USA, November 13-17, 2017.
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- H. Cetinay, T. Kekec, F.A. Kuipers, and D. M. J. Tax, “Markov Random Field for Wind Farm Planning,” Proc. of the 5th IEEE International Conference on Smart Energy Grid Engineering (SEGE 2017), Oshawa, Canada, August 14-17, 2017.
- M. Märtens, F.A. Kuipers, and P. Van Mieghem, “Symbolic Regression on Network Properties,” Proc. of the 20th European Conference on Genetic Programming (EuroGP 2017), Amsterdam, The Netherlands, April 19-21, 2017(**nominated for best paper award** – top 4).
- H. Krishna, N.L.M. van Adrichem, and F.A. Kuipers, “Providing Bandwidth Guarantees with OpenFlow,” Proc. of the 23rd Annual Symposium on Communications and Vehicular Technology (IEEE SCVT 2016), Mons, Belgium, November 22, 2016.
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- T. Gomes, J. Tapolcai, C. Esposito, D. Hutchison, F.A. Kuipers, J. Rak, A. de Sousa, A. Iossifides, R. Travanca, J. Andre, L. Jorge, L. Martins, P. Ortiz Ugalde, A. Pasic, D. Pezaros, S. Jouet, S. Secci, and M. Tornatore, “A survey of strategies for communication networks to protect against large-scale natural disasters,” Proc. of the 8th International Workshop on Reliable Networks Design and Modeling (RNDM 2016), Halmstad, Sweden, September 13-15, 2016.
- C. Mas Machuca, S. Secci, P. Vizarrreta, F.A. Kuipers, A. Gouglidis, D. Hutchison, S. Jouet, D. Pezaros, A. Elmokashfi, P. Heegaard, and S. Ristov, “Technology-related Disasters: A Survey towards Disaster-resilient Software Defined Networks,” Proc. of the 8th International Workshop on Reliable Networks Design and Modeling (RNDM 2016), Halmstad, Sweden, September 13-15, 2016.
- F. Iqbal and F.A. Kuipers, “Spatiotemporal risk-averse routing,” Proc. of the IEEE INFOCOM Workshop on Cross-Layer Cyber Physical Systems Security (CPSS), San Francisco, USA, April 11, 2016.

- F. Iqbal, S. Trajanovski, and F.A. Kuipers, “Detection of Spatially-Close Fiber Segments in Optical Networks,” Proc. of the 12th International Conference on Design of Reliable Communication Networks (DRCN 2016), Paris, France, March 14-17, 2016.
- M. Märtens, S. Shen, A. Iosup, and F.A. Kuipers, “Toxicity Detection in Multiplayer Online Games,” Proc. of the 14th International Workshop on Network and Systems Support for Games (NetGames 2015), Zagreb, Croatia, December 3-4, 2015 (**best paper award**).
- S. Trajanovski, F.A. Kuipers, Y. Hayel, E. Altman, and P. Van Mieghem, “Designing virus-resistant networks: a game-formation approach,” Proc. of the 54th IEEE Conference on Decision and Control (CDC 2015), Osaka, Japan, December 15-18, 2015.
- F. Iqbal, R. Smets, and F.A. Kuipers, “A Pragmatic Approach to Impairment Awareness in Optical Networks,” Proc. of the 20th European conference on Network and Optical Communications (NOC 2015), London, UK, June 30 - July 2, 2015.
- S. Yang, S. Trajanovski, and F.A. Kuipers, “Shortest Paths in Networks with Correlated Links Weights,” Proc. of the IEEE INFOCOM Workshop on Inter-Dependent Networks (WIDN), Hong Kong, April 27, 2015 (**fast-tracked to Computational Social Networks journal**).
- N. van Adrichem and F.A. Kuipers, “NDNFlow: Software-Defined Named Data Networking,” Proc. of the 1st IEEE Conference on Network Softwarization (IEEE NetSoft 2015), London, UK, April 13-17, 2015.
- M.P.V. Manthena, N. van Adrichem, C. van den Broek, and F.A. Kuipers, “An Evolutionary Approach to Network-as-a-Service,” Proc. of the 1st IEEE Conference on Network Softwarization (IEEE NetSoft 2015), London, UK, April 13-17, 2015.
- S. Yang, S. Trajanovski, and F.A. Kuipers, “Availability-Based Path Selection,” Proc. of the 6th International Workshop on Reliable Networks Design and Modeling (RNDM 2014), Barcelona, Spain, November 17-19, 2014 (**fast-tracked to Networks journal**).
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- N. van Adrichem, A. Reyes Lúa, X. Wang, M. Wasif, F. Faturrahman, and F.A. Kuipers, “DNSSEC Misconfigurations: How incorrectly configured security leads to unreachability,” Proc. of the IEEE Joint Intelligence & Security Informatics Conference (IEEE JISIC 2014), the Hague, the Netherlands, September 24-26, 2014 (**nominated for best paper award – top 3 – and fast-tracked to Security Informatics journal**).
- N. van Adrichem, B. van Asten, and F.A. Kuipers, “Fast Recovery in Software-Defined Networks,” Proc. of the European Workshop on Software Defined Networking (EWSDN 2014), Budapest, Hungary, September 1-3, 2014.
- N. van Adrichem, C. Doerr, and F.A. Kuipers, “OpenNetMon: Network Monitoring in OpenFlow Software-Defined Networks,” Proc. of IEEE/IFIP Network Operations and Management Symposium (IEEE/IFIP NOMS 2014), Krakow, Poland, May 5-9, 2014.
- R. van de Bovenkamp and F.A. Kuipers, “A Toolkit for Real-time Analysis of Dynamic Large-scale Networks,” Proc. of the 20th Annual Symposium on Communications and Vehicular Technology (IEEE SCVT 2013), Namur, Belgium, November 21, 2013 (**invited paper**).
- F. Iqbal, S. Yang, and F.A. Kuipers, “Energy Considerations in EoS-over-WDM Network Configuration,” Proc. of SustainIT, EINS paper, Palermo, Italy, October 30-31, 2013.
- R. van der Pol, M. Bredel, A. Barczyk, B. Overeinder, N. van Adrichem, and F.A.

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- S. Trajanovski, F.A. Kuipers, P. Van Mieghem, A. Ilic, and J. Crowcroft, “Critical regions and region-disjoint paths in a network,” Proc. of IFIP Networking 2013, Brooklyn, New York, USA, May 22-24, 2013.
 - S. Trajanovski, F.A. Kuipers, and P. Van Mieghem, “Finding critical regions in a network,” Proc. of the 5th IEEE INFOCOM Workshop on Network Science for Communication Networks (NetSciCom 2013), Turin, Italy, April 19, 2013.
 - N.L.M. van Adrichem and F.A. Kuipers, “Globally Accessible Names in Named Data Networking,” Proc. of the 2nd IEEE INFOCOM Workshop on Emerging Design Choices in Name-Oriented Networking (NOMEN 2013), Turin, Italy, April 19, 2013.
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 - S. Yang and F.A. Kuipers, “Impairment-Aware Routing in Translucent Spectrum-Sliced Elastic Optical Path Networks,” Proc. of the 17th European Conference on Network and Optical Communications (NOC 2012), Vilanova i la Geltru, Spain, June 19-22, 2012.
 - R. van de Bovenkamp, F.A. Kuipers, and P. Van Mieghem, “Gossip-based counting in dynamic networks,” Proc. of IFIP Networking 2012, Prague, Czech Republic, May 21-25, 2012.
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 - F.A. Kuipers, R.E. Kooij, D. De Vleeschauwer, and K. Brunnstrom, “Techniques for

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- A.A. Beshir and F.A. Kuipers, “Variants of the Min-Sum Link-Disjoint Paths Problem,” Proc. of the 16th Annual Symposium on Communications and Vehicular Technology, Louvain-la-Neuve, Belgium, November 19, 2009.
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- S. Tang, Y. Lu, J. Martín Hernández, F.A. Kuipers, and P. Van Mieghem, “Topology Dynamics in a P2PTV network,” Proc. of IFIP Networking 2009, Aachen, Germany, May 11-15, 2009.
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- F.A. Kuipers, A. Orda, D. Raz, and P. Van Mieghem, “A comparison of exact and ϵ -approximation algorithms for constrained routing,” Proc. of Networking 2006 - Fifth IFIP Networking Conference, Coimbra, Portugal, May 15-19, 2006.
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- F.A. Kuipers and P. Van Mieghem, “Bi-directional Search in QoS Routing,” Proc. of the fourth COST 263 International Workshop on Quality of Future Internet Services, QofIS2003, edited by G. Karlsson and M. I. Smirnov in Springer LNCS2811, KTH, Stockholm, Sweden, pp. 102-111, October 1-3, 2003.
- F.A. Kuipers and P. Van Mieghem, “The Impact of Correlated Link Weights on QoS Routing,” Proc. of IEEE INFOCOM 2003, San Francisco, USA, vol. 2, pp. 1425-1434, March 30 - April 3, 2003 (**nominated for best paper award** – top 10 out of 1078 submissions – and **fast-tracked to IEEE/ACM Transactions on Networking**).
- M. Janic, F.A. Kuipers, X. Zhou and P. Van Mieghem, “Implications for QoS Provisioning based on Traceroute Measurements,” Proc. of 3rd International Workshop on Quality of Future Internet Services, QofIS2002, Zurich, Switzerland, October 16-18, 2002.
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