

Marco Chiesa | Curriculum Vitae

Place Saint Barbe, 2, 1348, Louvain-la-neuve, Belgium

+32 470 593383 • marco.chiesa@uclouvain.be

dia.uniroma3.it/ chiesa

Postdoctoral researcher at the Université catholique de Louvain broadly interested in several Internet routing aspects ranging from inter-domain **routing security and privacy** to intra-domain **network design and optimization**. Currently involved as a leading contributor to the ENDEAVOUR (H2020 EU funded) project, which aims to bring SDN functionality to the interdomain routing.

Academics

- **Université catholique de Louvain** **Louvain-la-neuve, Belgium**
Postdoctoral researcher, "Endeavour" H2020 EU funded project *August 2015–now*
Advisor: Prof. Marco Canini

Designed, built, and evaluated SIXPACK [w19] [u20], an interdomain route dispatching system that leverages Secure Multi-Party Computation (SMPC) techniques to keep the routing policies of the Internet entities connect to an Internet eXchange Point confidential. Contributed to the Endeavour IXP platform [j13], a new SDN-based infrastructure that enables advanced Internet services at Internet eXchange Points. Collaborated on ez-Segway [w18] [u23], a distributed network update architecture wherein a central controller is only responsible for computing the intended final network configurations while the switches are responsible for performing the network update in a distributed manner.
- **Hebrew University of Jerusalem** **Jerusalem, Israel**
Postdoctoral researcher, I-CORE "Fibonacci" fellowship *March 2014–August 2015*
Advisor: Prof. Michael Schapira.

Designed, built, and evaluated COYOTE [c1][u21], a readily deployable Traffic-Engineering scheme for robust and efficient network utilization. Designed, built, and evaluated novel static fast-reroute algorithms in a variety of models [c2] [c3] [j11]: deterministic routing, routing with packet-duplication, routing with packet-header-rewriting, and randomized routing.
- **ICSI/UC Berkeley** **Berkeley, CA, US**
Visiting Ph.D. student *Aug 2013–Dec 2013*
Host: Prof. Scott Shenker
- **Hebrew University of Jerusalem** **Jerusalem, Israel**
Visiting Ph.D. student *Oct 2012–Apr 2013*
Host: Prof. Michael Schapira
- **Roma Tre University** **Rome, Italy**
Ph.D. in computer science *2011–2013*
Advisor: Prof. Giuseppe di Battista
Degree Thesis: The Role of Routing Policies in the Internet: Stability, Security, and Load-Balancing
- **Roma Tre University** **Rome, Italy**
B.sc and M.sc. in computer science *2005–2010*
Advisor: Prof. Giuseppe di Battista
Degree Thesis: Inter-domain routing: relating the expressive power of router configuration languages to the complexity of stability-related decision problems
Rating: 110/110 with honors

Publications

International conference publications.....

- [c1] **M. Chiesa**, G. Retvari, M. Schapira. Lying Your Way to Better Traffic Engineering. In **CoNEXT**, 2016.
- [c2] **M. Chiesa**, I. Nikolaevskiy, S. Mitrovic, A. Gurtov, A. Madry, A. Panda, M. Schapira, S. Shenker. The Quest for Resilient Static Forwarding Tables. In **INFOCOM**, IEEE, 2016.
- [c3] **M. Chiesa**, I. Nikolaevskiy, S. Mitrovic, A. Gurtov, A. Madry, M. Schapira, S. Shenker. On the Resiliency of Randomized Routing Against Multiple Edge Failures. In **ICALP**, 2016.
- [c4] **M. Chiesa**, G. Kindler, M. Schapira. Traffic Engineering with Equal-Cost-Multipath: an Algorithmic Perspective. In **INFOCOM**, IEEE, 2014.
- [c5] **M. Chiesa**, L. Cittadini, Laurent Vanbever, S. Vissicchio, G. Di Battista. Using Routers to Build Logic Circuits: How Powerful is BGP?. In **ICNP**, IEEE, 2013. **Best Paper Award**.
- [c6] **M. Chiesa**, G. Lospoto, M. Rimondini, G. Di Battista. Intra-Domain Pathlet Routing. In **ICCCN**, IEEE, 2013.
- [c7] **M. Chiesa**, G. Di Battista, T. Erlebach, M. Patrignani. Computational Complexity of Traffic Hijacking under BGP and S-BGP. In **ICALP**, 2012.
- [c8] **M. Chiesa**, L. Cittadini, G. Di Battista, S. Vissicchio. Local Transit Policies and the Complexity of BGP Stability Testing. In **INFOCOM**, IEEE, 2011.
- [c9] A. Dainotti, C. Squarcella, E. Aben, K. C. Claffy, **M. Chiesa**, M. Russo, A. Pescapé. Analysis of Country-wide Internet Outages Caused by Censorship. In **IMC**, ACM, 2011. **Applied Network Research Prize**.
- [c10] P. Angelini, T. Bruckdorfer, **M. Chiesa**, F. Frati, M. Kaufmann, C. Squarcella. On the Area Requirements of Euclidean Minimum Spanning Trees. In **WADS**, 2011.

International journal publications.....

- [j11] **M. Chiesa**, I. Nikolaevskiy, S. Mitrovic, A. Gurtov, A. Madry, M. Schapira, S. Shenker. On the Resiliency of Static Forwarding Tables. In *IEEE/ACM Transactions on Networking (ToN)*. 2016. To appear.
- [j12] **M. Chiesa**, G. Kindler, M. Schapira. Traffic engineering with Equal-Cost-Multipath: An algorithmic perspective. In *IEEE/ACM Transactions on Networking (ToN)*. 2016. To appear.
- [j13] **M. Chiesa**, C. Dietzel, G. Antichi, M. Bruyere, I. Castro, M. Gusat, T. King, A. W. Moore, T. D. Nguyen, P. Owezarski, S. Uhlig, M. Canini. Inter-domain Networking Innovation on Steroids: Empowering IXPs with SDN Capabilities. In *IEEE Communications Magazine special issue on SDN Use Cases for Service Provider Networks (IEEE Comm. Mag.)*. 2016. To appear.
- [j14] **M. Chiesa**, G. Di Battista, T. Erlebach, M. Patrignani. Computational Complexity of Traffic Hijacking under BGP and S-BGP. In *Theoretical Computer Science (TCS)*. 600:143-154. 2015.
- [j15] A. Dainotti, C. Squarcella, E. Aben, K. C. Claffy, **M. Chiesa**, M. Russo, A. Pescapé. Analysis of Country-wide Internet Outages Caused by Censorship. In *IEEE/ACM Transactions on Networking (ToN)*. 22(6):1964-1977. 2014.
- [j16] **M. Chiesa**, G. Lospoto, M. Rimondini, G. Di Battista. Intra-Domain Routing with Pathlets. In *Computer Communications (Comp. Comm.)*. 46:76-86. 2014.
- [j17] P. Angelini, T. Bruckdorfer, **M. Chiesa**, F. Frati, M. Kaufmann, C. Squarcella. On the Area Requirements of Euclidean Minimum Spanning Trees. In *Computational Geometry: Theory and Applications (CG)*. 47(2):200-213. 2014. Special Issue on Selected Papers from WADS '11.

Workshop papers, extended abstracts, and posters.....

- [w18] T. D. Nguyen, **M. Chiesa**, M. Canini. Towards Decentralized Fast Consistent Updates. In *Applied Networking Research Workshop (ANRW)*, 2016. Workshop paper.
- [w19] **M. Chiesa**, D. Demmler, M. Canini, M. Schapira, T. Schneider. Towards Securing Internet eXchange Points Against Curious onlookers. In *Applied Networking Research Workshop (ANRW)*, 2016. Extended abstract and poster.

Under submission.....

- [u20] **M. Chiesa**, D. Demmler, M. Canini, M. Schapira, T. Schneider. Securing Internet eXchange Points Against Curious onlookers. Submitted to **NSDI**. 2017.
- [u21] **M. Chiesa**, G. Retvari, M. Schapira. Oblivious Traffic Engineering in IP networks. Submitted to *Transaction on Networking (ToN)*.
- [u22] **M. Chiesa**, R. di Lallo, G. Lospoto, H. Mostafei, M. Rimondini, G. di Battista. PrIXP: Preserving the Privacy of Routing Policies at Internet eXchange Points. Submitted to **IM**. 2017.
- [u23] T. D. Nguyen, **M. Chiesa**, M. Canini. Decentralized Fast Consistent Updates. Submitted to **SOSR**. 2017.

Talks

- **CoNEXT** **Santa Clara, CA, US**
Lying Your Way to Better Traffic Engineering *Planned: Dec 2016*
- **Fraunhofer SIT Institute** **Darmstadt, Germany**
Tentative: Towards a Secured Privacy-Preserving Interdomain Routing *Planned: Nov 2016*
- **Amsterdam Internet eXchange Point (AMS-IX)** **Amsterdam, Netherlands**
Securing Interdomain Routing Against Curious onlookers *Oct 2016*
- **Applied Networking Research Workshop (ANRW)** **Berlin, Germany**
Towards Decentralized Fast Consistent Updates *Jul 2016*
- **Applied Networking Research Workshop (ANRW)** **Berlin, Germany**
Towards Securing Interdomain Routing Against Curious onlookers *Jul 2016*
- **INFOCOM** **San Francisco, CA, US**
The Quest for Resilient Static Forwarding Tables *Apr 2016*
- **Deutscher Commercial Internet Exchange (DE-CIX)** **Frankfurt, Germany**
Securing Interdomain Routing Against Curious onlookers *Mar 2016*
- **Summer Networking at the Hebrew University of Jerusalem** **Jerusalem, Israel**
Towards Optimized and Reliable Interdomain Routing *Jul 2015*
- **Budapest University of Technology and Economics** **Budapest, Hungary**
Towards Optimized and Reliable Interdomain Routing *Jun 2015*
- **Université catholique de Louvain** **Louvain-la-neuve, Belgium**
Towards Optimized and Reliable Interdomain Routing *May 2015*
- **Roma Tre University** **Rome, Italy**
The Role of Routing Policies in the Internet: Stability, Security, and Load-Balancing *Jun 2014*
- **INFOCOM** **Toronto, Canada**
Traffic Engineering with Equal-Cost-Multipath: an Algorithmic Perspective *Apr 2014*

- **I-CORE Algo Day** **Tel Aviv, Israel**
Traffic Engineering with Equal-Cost-Multipath: an Algorithmic Perspective *Apr 2014*
- **ICNP** **Göttinghem, Germany**
Using Routers to Build Logic Circuits: How Powerful is BGP? *Oct 2013*
- **ICALP** **Warwick, UK**
Computational Complexity of Traffic Hijacking under BGP and S-BGP *Jul 2012*
- **University of Leicester** **Leicester, UK**
Computational Complexity of Traffic Hijacking under BGP and S-BGP *Jul 2012*
- **INFOCOM** **Shanghai, China**
Local Transit Policies and the Complexity of BGP Stability Testing *Apr 2011*
- **AlgoDEEP** **Rome, Italy**
Local Transit Policies and the Complexity of BGP Stability Testing *Apr 2011*

Teaching Experience

- **Students supervision** **Université catholique de Louvain**
Currently advising two master students *Autumn 2016*
- **INGI2347 Computer System Security** **Université catholique de Louvain**
Guest lectured graduate course *Spring 2016*
- **INGI2349 Network and Communication Seminar** **Université catholique de Louvain**
Graded students oral presentations *Autumn 2015*
- **Advanced seminars on Oblivious Routing** **Hebrew University of Jerusalem**
Organized and taught seminars for postgraduate students *Spring 2015*
- **Students supervision** **Roma Tre University**
Advised two bachelor and master students *2012–2013*
Published one conference [c6] and one journal [j16] paper
- **Thesis reviewer** **Roma Tre University**
Read, reviewed, and graded 11 external B.sc./M.sc. thesis *2011–2013*

Professional Service

- **Program Committee**
ITC 2016
- **External Reviewer**
INFOCOM 2016–2017, Transaction on Networking (ToN), Transactions on Network and Service Management (TNSM), ICALP 2016, Symposium on Experimental Algorithms (SEA) 2013, Graph Drawing 2012
- **Affiliations**
ACM, Association for Computing Machinery; IEEE Institute of Electrical and Electronics Engineers

Awards

- **Best Paper**
ICNP 2013

- **IETF Applied Research Networking Prize 2012**
“Analysis of Country-wide Internet Outages Caused by Censorship”
- **IETF Applied Research Networking Prize 2013 external nomination**
“Using Routers to Build Logic Circuits: How Powerful is BGP?”
- **Travel Grants**
INFOCOM 2011, ICNP 2013
- **National Mathematics Competitions 2005**
4th placement at the Italian Kangourou mathematics competition (Mirabilandia, Italy)
Honorable mention at the Italian championship in mathematics (Cesenatico, Italy)

Research Visits \geq 10 days

- **Hebrew University of Jerusalem** **Jerusalem, Israel**
Invited visitor, Department of Computer Science
Host: Prof. Michael Schapira
Keywords: oblivious routing
Mar 2016
- **Budapest University of Technology and Economics** **Budapest, Hungary**
Invited visitor, Department of Computer Science
Host: Dr. Gábor Rétvári
Keywords: oblivious routing
May 2015–Jun 2015
- **UC Berkeley** **Berkeley, CA, US**
Invited visitor, Department of Computer Science
Host: Prof. Scott Shenker
Keywords: data-plane connectivity
Aug 2014
- **International Computer Science Institute and UC Berkeley** **Berkeley, CA, US**
Visiting Research Fellow, Department of Computer Science
Host: Prof. Scott Shenker
Keywords: deflection switching, network utilization
Aug 2012–Dec 2013
- **Hebrew University of Jerusalem** **Jerusalem, Israel**
Visiting Research Fellow, Department of computer Science
Host: Prof. Michael Schapira
Keywords: traffic-engineering, ECMP
Oct 2012–Apr 2013
- **University of Leicester** **Leicester, UK**
Visiting Student, Department of Computer Science
Host: Prof. Thomas Erlebach
Keywords: routing, bgp, migrations, algorithms
July 2012
- **Université catholique de Louvain** **Louvain-la-neuve, Belgium**
Visiting Student, IP Networking Lab, Department of Computer Science
Host: Prof. Stefano Vissicchio/Prof. Laurent Vanbever
Keywords: routing, bgp, migrations, point-of-presence design
May 2012

Languages

Italian: Mother tongue

English: Proficient

fluent (writing, speaking, reading)

Polish: Independent

intermediate (writing, speaking, reading)

French: Beginner/Independent

basic (writing, speaking); intermediate (reading); level A1 certification

Hebrew: Beginner

basic (writing, speaking, reading)