

# JELENA DIAKONIKOLAS

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## RESEARCH INTERESTS

Optimization, algorithms, networking, wireless systems.

## ACADEMIC APPOINTMENTS

- Visiting Scholar* **Fall 2017**, Simons Institute for the Theory of Computing, Berkeley, CA  
Program on Bridging Continuous and Discrete Optimization
- Postdoctoral Associate* **2016–Present**, Boston University, Boston, MA,  
College of Arts and Sciences, Department of Computer Science  
Host: Prof. Lorenzo Orecchia
- Visiting Scholar* **2016–2017**, Massachusetts Institute of Technology, Cambridge, MA  
Laboratory for Information & Decision Systems  
Host: Prof. Eytan Modiano

## EDUCATION

- Ph.D. in Electrical Engineering* **2012–2016**, Columbia University, New York, NY  
Graduate School of Arts and Sciences, Department of Electrical Engineering  
Cumulative GPA: 4.11/4.0, M.Phil. awarded in Oct. 2015  
Thesis: Resource Allocation in Wireless Networks: Theory and Applications  
Advisors: Prof. Gil Zussman and Prof. Cliff Stein
- M.S. in Electrical Engineering* **2011–2012**, Columbia University, New York, NY  
School of Engineering and Applied Science, Department of Electrical Engineering  
Final GPA: 4.09/4.0  
Master of Science Award of Excellence
- B.S. in Electrical Engineering and Computing* **2007–2011**, University of Belgrade, Belgrade, Serbia  
School of Electrical Engineering  
Major: Communication Systems and Microwave Engineering  
Final GPA: 9.82/10.0 (top 2%)  
Thesis: Antenna Array Optimization Using a Genetic Algorithm  
Thesis advisor: Prof. Dragan Olćan

## AWARDS & HONORS

- Academic Honors* **2017**, [Morton B. Friedman Memorial Prize for Excellence at Columbia Engineering](#)  
**2017**, Columbia University, EE dept. Collaborative Research Award  
**2013**, Columbia University, EE dept. Master of Science Award of Excellence  
**2013**, Columbia University, EE dept. Jacob Millman Prize for Excellence in Teaching Assistance
- Recognitions* **2016**, Networking Networking Women, [10 Women in Networking/Communications That You Should Watch](#)  
**2015**, [MIT EECS Rising Star](#)
- Fellowship Awards* **2015**, [Qualcomm Innovation Fellowship](#)  
**2010**, Government of the Republic of Serbia, Ministry of Youth and Sports, *Dositeja* Fellowship  
(Awarded annually to top 1% of senior undergraduate students from Serbian universities.)  
**2009**, Government of the Republic of Serbia, Ministry of Education and Science – Republic

Foundation for the Development of Scientific and Artistic Youth Fellowship  
(Awarded annually to 35 students from all engineering schools in Serbia.)

*Best Paper Award*

**2013**, [GENI GREE2013 Best Educational Paper Award](#)

*Scholarship  
Awards*

**2013**, Dr Miloš Babić Scholarship Award

(Awarded annually to one student from the City of Kraljevo, Serbia.)

**2012**, Yahoo! Yodel Your Thoughts Scholarship Award

*Leadership Awards*

**2010**, Microsoft Student Partners, Most Valuable Partner (MVP MSP)

(Awarded annually to one MSP out of all active MSPs from Serbia.)

*Competitions*

**2010**, *Elektrijada*, Čanj, Montenegro, 1<sup>st</sup> place in Telecommunications

**2009**, *Elektrijada*, Budva, Montenegro, 2<sup>nd</sup> place in Fundamentals of Electrical Engineering  
(*Elektrijada* is the largest annual electrical engineering students' meeting in Europe. It gathers over 2000 students from about 30 schools, and includes various competitions.)

## PUBLICATIONS

*Working Papers/In  
Submission*

J. Diakonikolas and L. Orecchia, "The Approximate Duality Gap Technique: A Unified Theory of First-Order Methods," 2017. Available at: <https://arxiv.org/abs/1712.02485>.

J. Diakonikolas and L. Orecchia, "Solving Packing and Covering Linear Programs in  $\tilde{O}(\epsilon^{-2})$  Distributed Iterations with a Single Algorithm and Simpler Analysis," arXiv preprint, arXiv:1710.09002, 2017.

M. Xu, J. Diakonikolas, E. Modiano, S. Subramaniam, "A Hierarchical and Reconfigurable WDM-based Data Center Network Architecture" 2017, in submission.

J. Diakonikolas, M. Fazel, L. Orecchia, "Width-Independence Beyond Linear Objectives," working paper, 2017.

*Conference  
Proceedings &  
Refereed  
Workshops*

J. Diakonikolas and L. Orecchia, "Accelerated Extra-Gradient Descent: A Novel Accelerated First-Order Method," in Proc. ITCS'18, 2018, to appear.

T. Chen, J. Diakonikolas, J. Ghaderi, G. Zussman, "Hybrid Scheduling in Heterogeneous Half- and Full-Duplex Wireless Networks" in Proc. IEEE INFOCOM'18, 2018, to appear.

J. Marašević, C. Stein, G. Zussman, "A Fast Distributed Stateless Algorithm for  $\alpha$ -Fair Packing Problems," in Proc. ICALP'16, 2016.

J. Marašević, T. Chen, J. Zhou, N. Reiskarimian, H. Krishnaswamy, and G. Zussman, "Full-Duplex Wireless: Algorithms and Rate Improvement Bounds for Integrated Circuit Implementations," In Proc. ACM HotWireless'16, Oct. 2016, **invited paper**.

H. Krishnaswamy, G. Zussman, J. Zhou, J. Marašević, T. Dinc, N. Reiskarimian, and T. Chen, "Full-Duplex in a Hand-held Device - From Fundamental Physics to Complex Integrated Circuits, Systems, and Networks: An Overview of the Columbia FlexICoN Project," In Proc. Asilomar'16, 2016, **invited paper**.

J. Marašević, G. Zussman, "On the Capacity Regions of Single-Channel and Multi-Channel Full-Duplex Links," In Proc. ACM MobiHoc'16, 2016.

J. Marašević, J. Zhou, H. Krishnaswamy, Y. Zhong, G. Zussman, "Resource Allocation and Rate Gains in Practical Full-Duplex Systems," In Proc. ACM SIGMETRICS'15, 2015.

J. Marašević, C. Stein, G. Zussman, "Max-min Fair Rate Allocation and Routing in Energy Harvesting Networks: Algorithmic Analysis," In Proc. ACM MobiHoc'14, 2014.

J. Marašević, J. Janak, H. Schulzrinne, G. Zussman, "WiMAX in the Classroom: Designing a Cellular Networking Hands-on Lab," In Proc. The Second GENI Research and Educational Experiment Workshop (GREE2013), Mar. 2013, **Best Educational Paper Award**.

*Journal and  
Magazine  
Publications*

N. Reiskarimian, T. Dinc, J. Zhou, M. B. Dastjerdi, T. Chen, J. Diakonikolas, G. Zussman, H. Krishnaswamy, "Integrated Antenna Interfaces and Magnetic-Free Non-Reciprocal

Components for Full Duplex Wireless," *submitted to IEEE Microwave Magazine*, 2017, **invited paper**.

J. Marašević and G. Zussman, "On the Rate Regions of Single-Channel and Multi-Channel Full-Duplex Links," *IEEE/ACM Transactions on Networking*, 2017, to appear.

J. Zhou, N. Reiskarimian, J. Diakonikolas, T. Dinc, T. Chen, G. Zussman, H. Krishnaswamy, "Integrated Full-Duplex Radios," *IEEE Communications Magazine*, vol. 55, no. 4, pp. 142-151, 2017, **invited paper**.

J. Marašević, C. Stein, G. Zussman, "Max-min Fair Rate Allocation and Routing in Energy Harvesting Networks: Algorithmic Analysis," *Algorithmica*, vol. 78, no. 2, pp. 521-557, 2017.

J. Marašević, J. Zhou, H. Krishnaswamy, Y. Zhong, G. Zussman, "Resource Allocation and Rate Gains in Practical Full-Duplex Systems," *IEEE/ACM Transactions on Networking*, vol. 25, no. 1, pp. 292-305, Feb. 2017.

*Non-Refereed Workshops*

J. Zhou, J. Marašević, G. Zussman, H. Krishnaswamy, "Co-design of Full-duplex RFIC and Resource Allocation Algorithms," *IEEE Power Amplifier Symposium*, Sept. 2015.

*Demos*

T. Chen, J. Zhou, M. B. Dastjerdi, J. Diakonikolas, H. Krishnaswamy, G. Zussman, "Demo Abstract: Full-Duplex with a Compact Frequency Domain Equalization-based RF Canceller," in *Proc. IEEE INFOCOM'17*, 2017.

T. Chen, J. Zhou, N. Grimwood, R. Fogel, J. Marašević, H. Krishnaswamy, G. Zussman, "Demo: Full-Duplex Wireless based on a Small Form-Factor Analog Self-Interference Canceller," in *Proc. ACM MobiHoc'16*, 2016.

T. Chen, J. Zhou, J. Marasevic, H. Krishnaswamy, and G. Zussman, "Double-Talk: Full-Duplex Wireless for Next-Generation Communications," presented at NYC Media Lab's Annual Summit, Columbia University, New York, NY, Sept. 2016, **Honorable Mention Award**.\*

\*Selected among the total of 13 awarded demos out of about 140 presented demos.

## TALKS

*MSR* **February 2018**, "A Unifying Theory of First-Order Methods and Applications", *Microsoft Research*, Redmond, WA, **invited talk**

*USC* **April 2017**, "From Networked Systems to Theory and Back: Full-Duplex Wireless and Beyond", *University of Southern California*, Los Angeles, CA, **CS colloquium talk**

*Caltech* **April 2016**, "A Fast Distributed Algorithm for  $\alpha$ -Fair Packing Problems", *Caltech*, Pasadena, CA, **RSRG seminar**

*Bell-Labs* **November 2015**, "Full-Duplex Wireless: Resource Allocation and Rate Gains for Realistic Hardware Models", *Bell-Labs*, Murray Hill, NJ, **invited talk**

*Google Research* **June 2015**, "A Fast Distributed Algorithm for  $\alpha$ -Fair Packing Problems", *Google Research*, New York, NY, **invited talk**

*USC* **May 2015**, "Full-Duplex Wireless: Resource Allocation and Rate Gains for Realistic Hardware Models", *University of Southern California*, Los Angeles, CA, **CS colloquium talk**

*MSR* **May 2015**, "A Fast Distributed Algorithm for  $\alpha$ -Fair Packing Problems", *Microsoft Research Redmond Theory Group*, Redmond, WA, **invited talk**

*UCSB* **May 2015**, "Full-Duplex Wireless: Resource Allocation and Rate Gains for Realistic Hardware Models", *University of California Santa Barbara*, Santa Barbara, CA, **CS colloquium talk**

*GENI* **March 2014**, "GENI in the Classroom: Teaching Cellular Networking with WiMAX Hands-on Labs", *19<sup>th</sup> GENI Engineering Conference (GEC19)*, Atlanta, GA, **invited talk**

*Conference Presentations*

**2013–2016**, Conference and workshop presentations: *ACM HotWireless'16*, *ICALP'16*, *ACM MobiHoc'16*, *ACM SIGMETRICS'15*, *ACM MobiHoc'14*, *GENI GREE2013*

## GRANT PREPARATION

- NSF EARS* **9/15/2015–9/14/2018**, National Science Foundation, “EARS: Cross Layering in Full Duplex - from Integrated Circuits to Networking”  
Amount awarded: \$608K  
Contribution: Assisted PIs Gil Zussman, Harish Krishnaswamy, and Yuan Zhong in writing and preparing the grant proposal.
- QInF* **9/2015–9/2016**, Qualcomm Inc., “Realizing the Full-duplex Potential of OFDM-based Networks: From Circuits to MAC Layer”  
Amount awarded: \$100k  
Contribution: My collaborator Jin Zhou and I envisioned and wrote this proposal.

## MENTORING AND ADVISING

- High school* **Summer 2014**, Caroline Schiavo, energy-harvesting project, high school student at Kent Place School, NJ (now an undergrad at George Washington University)
- Undergraduate* **Fall 2015–Spring 2016**, Nicole Grimwood, full-duplex project, undergrad student at Columbia University (now a Ph.D. student at Stanford)  
**Summer 2015**, Preetish Tilak, full-duplex project, undergrad student at Purdue University
- M.S.* **Fall 2015–Spring 2016**, James Thompson, full-duplex project, M.S. student at Columbia University  
**Summer 2015–Fall 2015**, Israel Fogel, full-duplex project, M.S. student at Columbia University

## TEACHING EXPERIENCE

- 2011–2015** Columbia University, New York, NY
- Teaching Assistant* **Fall 2015**, ELEN E6950 Wireless & Mobile Networking I  
**Spring 2014**, ELEN E6951 Wireless & Mobile Networking II  
**Spring 2012**, ELEN E6951 Wireless & Mobile Networking II  
**Fall 2011**, ELEN E3801 Signals and Systems  
**Fall 2011**, ELEN E3804 Signals and Systems Laboratory
- Course Manager* **Summer 2014**, ELEN E6951 Wireless & Mobile Networking II (CVN<sup>1</sup>)  
**Summer 2013**, ELEN E6951 Wireless & Mobile Networking II (CVN)  
**Spring 2013**, ELEN E6951 Wireless & Mobile Networking II (CVN)  
**Summer 2012**, ELEN E6951 Wireless & Mobile Networking II (CVN)
- 2009–2011** University of Belgrade, Belgrade, Serbia
- Teaching Assistant* **Spring 2011**, Foundations of Electrical Engineering Lab  
**Fall 2010**, Microwave Engineering Lab  
**Spring 2010**, Foundations of Electrical Engineering Lab  
**Spring 2009**, Foundations of Electrical Engineering Lab

## SERVICE AND OUTREACH

- Outreach* **2015**, *SWE EEE*. Participated as an experimenter and as a speaker in the outreach event “Engineering, Exploration, Experience” organized for high school girls by Society of Women Engineers at Columbia University.  
**2013–2015**, *Girls Science Day*. Participated as an experimenter in an outreach event organized for middle school girls.  
**2014**, *GSTEM*. Mentored a high school student for her research summer internship through NYU Girls’ Science, Technology, Engineering, and Mathematics program supported by the Alfred P. Sloan Foundation.

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<sup>1</sup> Columbia Video Network

**2013**, *High school outreach*. Organized an outreach event at the Manhattan Center for Science and Mathematics in East Harlem.

**2012/2013**, *Everybody Wins!–Power Lunch program*. Volunteered in the reading program for elementary school children at Mosaic Preparatory Academy in East Harlem.

**2012**, *Dress for Success*. Co-organized a women-empowerment clothing drive at Columbia U.

*Leadership*

**2017**, Co-organized a reading group and a symposium on Spectral Graph Theory & Optimization at the Simons Institute for the Theory of Computing.

**2016**, Organized an N<sup>2</sup> Women meeting at ACM MobiHoc'16.

**2014**, Organized an N<sup>2</sup> Women meeting at ACM MobiHoc'14.

**2013**, Organized multiple career development events as the corporate chair of Graduate Society of Women Engineers in collaboration with the Center for Career Education at Columbia University.

**2008–2011**, As a Microsoft Student Partner (MSP) and MSP Lead for 2010/2011: organized over 15 Microsoft academic events and participated in organization of a Student Tech Club and local finals of coding competitions Bubble Cup an Imagine Cup; organized a course on functional programming at School of Electrical Engineering, University of Belgrade.

*Journal Reviews*

**2012–Present**, *IEEE Transactions on Wireless Communications, IEEE Transactions on Mobile Computing, IEEE/ACM Transactions on Networking, Elsevier Ad Hoc Networks, IEEE Communication Letters, IEEE Transactions on Vehicular Technology, ACM Transactions on Embedded Computing Systems, Algorithmica*

*Conference Reviews*

**2012–Present**, *ACM SIGMETRICS, ACM MobiHoc, ACM MobiCom, IEEE INFOCOM, ACM PODC, EATCS ICALP, ACM-SIAM SODA, APPROX*

*Volunteering*

**2012–2014**, *ACM STOC'14, IEEE INFOCOM'12, ACM SIGMETRICS'12*

PROFESSIONAL ACTIVITIES

*Workshops and Seminars*

**March 2018**, Schloss Dagstuhl Seminar on Scheduling, Saarbrücken, Germany (Invited participant.)

**May 2017**, Launching Academics on the Tenure-Track: an Intentional Community in Engineering (LATTICE) Symposium, Seattle, WA (Selected as a participant.)

**October 2016**, SIGMOBILE Visioning Workshop, New York, NY (Invited participant.)

**November 2015**, MIT EECS Rising Stars Workshop, Cambridge, MA (Selected as a participant.)

**August 2015**, 3<sup>rd</sup> Heidelberg Laureate Forum, Heidelberg, Germany (Selected as one of the 200 young researcher participants, out of over 1400 applicants.)

**May 2014**, Women in Theory Workshop, co-located with ACM STOC '14, New York, NY (Selected as a participant.)

**May 2013**, Summer School on Green Communications and Networking, Boston, MA (Selected as a participant.)

*Internship*

**12/2009–2/2010**, Serbian Object Laboratories, Belgrade, Serbia  
Developed sample web applications for SOLoist web tutorial<sup>2</sup>. Learned about concepts of model-driven development for web-based object-oriented information systems (OOIS) and applied them to the development of sample web applications.

<sup>2</sup> [SOLoist](#) is a Java-based framework for model-driven development based on UML and is a product of *Serbian Object Laboratories*