

# JELENA (MARAŠEVIĆ) 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**, [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.)

<i>Best Paper Award</i>	2013, <a href="#">GENI GREE2013 Best Educational Paper Award</a>
<i>Scholarship Awards</i>	2013, Dr Miloš Babić Scholarship Award (Awarded annually to one student from the City of Kraljevo, Serbia.) 2012, Yahoo! Yodel Your Thoughts Scholarship Award
<i>Leadership Awards</i>	2010, Microsoft Student Partners, Most Valuable Partner (MVP MSP) (Awarded annually to one MSP out of all active MSPs from Serbia.)
<i>Competitions</i>	2010, <i>Elektrijada</i> , Čanj, Montenegro, 1 <sup>st</sup> place in Telecommunications 2009, <i>Elektrijada</i> , Budva, Montenegro, 2 <sup>nd</sup> place in Fundamentals of Electrical Engineering ( <i>Elektrijada</i> is the largest annual electrical engineering students' meeting in Europe. It gathers over 2000 students from about 30 schools, and includes competitions in science and sport disciplines.)

## PUBLICATIONS

<i>Working Papers/In Submission</i>	J. Diakonikolas and L. Orecchia, "The Approximate Gap Technique: A Unified Approach to Optimal First-Order Methods," 2017, working paper. 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. T. Chen, J. Diakonikolas, J. Ghaderi, G. Zussman, "Fairness and Scheduling in Heterogeneous Full-duplex – Half-duplex Networks" 2017, in submission.
<i>Conference Proceedings</i>	J. Diakonikolas and L. Orecchia, "Accelerated Extra-Gradient Descent: A Novel Accelerated First-Order Method," <i>accepted to ITCS'18</i> , 2018. 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, <b>invited paper</b> J. Marašević, C. Stein, G. Zussman, "A Fast Distributed Stateless Algorithm for $\alpha$ -Fair Packing Problems," In Proc. ICALP'16, 2016 J. Marašević, G. Zussman, "On the Capacity Regions of Single-Channel and Multi-Channel Full-Duplex Links," In Proc. ACM MobiHoc'16, 2016 ( <i>accept. rate: 18.7%</i> ) 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 ( <i>accept. rate: 13.4%</i> ) 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 ( <i>accept. rate: 18.9%</i> )
<i>Journal and Magazine Publications</i>	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," <i>submitted to IEEE Microwave Magazine</i> , 2017, <b>invited paper</b> J. Marašević and G. Zussman, "On the Rate Regions of Single-Channel and Multi-Channel Full-Duplex Links," <i>IEEE/ACM Transactions on Networking</i> , 2017, <i>to appear</i> J. Zhou, N. Reiskarimian, J. Diakonikolas, T. Dinc, T. Chen, G. Zussman, H. Krishnaswamy, "Integrated Full-Duplex Radios," <i>IEEE Communications Magazine</i> , vol. 55, no. 4, pp. 142-151, 2017, <b>invited paper</b>

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

#### Workshops

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**

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

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**

#### 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," to appear 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

*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.

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

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<sup>1</sup> Columbia Video Network

- 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* **2016**, Organized an N<sup>2</sup> Women meeting at ACM MobiHoc’16 and received a travel award.
- 2014**, Organized an N<sup>2</sup> Women meeting at ACM MobiHoc’14 and received a travel award.
- 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 programming competitions Bubble Cup an Imagine Cup; led organization of 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 and presented at the student rump session.)
- May 2013**, Summer School on Green Communications and Networking, Boston, MA (Selected as one out of seven students from U.S. universities for a full travel financial support.)
- 12/2009–2/2010** Serbian Object Laboratories, Belgrade, Serbia
- Internship* 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*