

JELENA DIAKONIKOLAS

Foundations of Data Analysis Institute, UC Berkeley
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maiden name: Marašević

RESEARCH INTERESTS

Optimization, algorithms, networking, wireless systems.

ACADEMIC APPOINTMENTS

- Postdoctoral Fellow* **2018–2020**, UC Berkeley, Berkeley, CA,
UC Berkeley Foundations of Data Analysis Institute
Host: Prof. Michael I. Jordan
- Research Fellow* **2018–2019**, UC Berkeley, Berkeley, CA,
Simons Institute for the Theory of Computing: Program on Foundations of Data Science
- Postdoctoral Associate* **2016–2018**, Boston University, Boston, MA,
College of Arts and Sciences, Department of Computer Science
Host: Prof. Lorenzo Orecchia
- Visiting Scholar* **Fall 2017**, Simons Institute for the Theory of Computing, Berkeley, CA
Program on Bridging Continuous and Discrete Optimization
- 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

- Fellowship Awards* **2018**, Simons-Berkeley Research Fellowship and Microsoft Research Fellowship,
[Foundations of Data Science](#) program
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.)

- 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
- 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
- Competitions* **2010**, *Elektrijada*, Čanj, Montenegro, 1st place in Telecommunications
2009, *Elektrijada*, Budva, Montenegro, 2nd 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, M. Fazel, L. Orecchia, "Width-Independence Beyond Linear Objectives: Distributed Fair Packing and Covering Algorithms," 2018. In submission. Available at: <http://arxiv.org/abs/1808.02517>
- 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.
- Conference Proceedings & Refereed Workshops* J. Diakonikolas, C. Guzmán, "Lower Bounds for Parallel and Randomized Convex Optimization," in Proc. COLT'19. *To appear*.
- M. Xu, J. Diakonikolas, E. Modiano, S. Subramaniam, "A Hierarchical and Reconfigurable WDM-based Data Center Network Architecture," in Proc. IEEE ICC'19, 2019. *To appear*.
- M. B. Cohen, J. Diakonikolas, L. Orecchia, "On Acceleration with Noise-Corrupted Gradients," in Proc ICML'18, 2018.
- J. Diakonikolas, L. Orecchia, "Alternating Randomized Block Coordinate Descent," in Proc. ICML'18, 2018.
- J. Diakonikolas and L. Orecchia, "Accelerated Extra-Gradient Descent: A Novel Accelerated First-Order Method," in Proc. ITCS'18, 2018.
- T. Chen, J. Diakonikolas, J. Ghaderi, G. Zussman, "Hybrid Scheduling in Heterogeneous Half- and Full-Duplex Wireless Networks" in Proc. IEEE INFOCOM'18, 2018.
- T. Chen, J. Diakonikolas, J. Ghaderi, G. Zussman, "Fairness and Delay in Heterogeneous Half- and Full-Duplex Wireless Networks," *to appear* in Proc. Asilomar'18, 2018, **invited paper**.
- J. Marašević, C. Stein, G. Zussman, "A Fast Distributed Stateless Algorithm for α -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*

J. Diakonikolas and L. Orecchia, "The Approximate Duality Gap Technique: A Unified Theory of First-Order Methods," SIAM Journal on Optimization, vol. 29, no. 1, pp. 660-689, 2019.

N. Reiskarimian, T. Dinc, J. Zhou, M. B. Dastjerdi, T. Chen, J. Diakonikolas, G. Zussman, H. Krishnaswamy, "A one-way ramp to a two-way highway: Integrated magnetic-free non-reciprocal antenna interfaces for full duplex wireless," IEEE Microwave Magazine, vol. 20, no. 2, pp. 56-75, 2019, **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, vol. 26, no. 1, pp. 47-60, Feb. 2018.

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, 2016, **Honorable Mention Award**.
*Selected among the total of 13 awarded demos out of about 140 presented demos.

TALKS

UC Chile

April 2019, "Invariance in First-Order Optimization," *Instituto de Ingeniería Matemática y Computacional*, Universidad Católica de Chile, Santiago, Chile, **invited talk**

OSL

March 2019, "Invariance in First-Order Optimization," *Optimization and Statistical Learning Workshop*, Les Houches, France, **invited talk**

ITA

February 2019, "Lower Bounds for Parallel and Randomized Convex Optimization,"

Information Theory and Applications Workshop, San Diego, CA, **invited talk**

UC Davis **February 2019**, "Invariance in First-Order Convex Optimization," *Math of Data and Decisions Seminar*, UC Davis, Davis, CA, **invited talk**

Simons **December 2018**, "Lower Bounds for Parallel and Randomized Convex Optimization," *Data Science Mini-Workshop*, Simons Institute for the Theory of Computing, Berkeley CA

Simons **December 2018**, "Width-Independence Beyond Linear Objectives: Distributed Algorithms for Fair Packing and Covering Problems," *Bridging Continuous and Discrete Optimization Reunion*, Simons Institute for the Theory of Computing, Berkeley CA

WoLA **June 2018**, "Block Coordinate Descent and Exact Minimization," *Workshop on Local Algorithms*, MIT, Cambridge, MA, **invited talk**

USC **May 2018**, "Conservation Laws and First-Order Optimization: Novel Insights and Algorithms," *University of Southern California*, Los Angeles, CA, **ISE colloquium talk**

U. Wisconsin-Madison **April 2018**, "Conservation Laws and First-Order Optimization: Novel Insights and Algorithms," *University of Wisconsin-Madison*, Madison, WI, **CS colloquium talk**

Dartmouth **March 2018**, "Conservation Laws and First-Order Optimization: Novel Insights and Algorithms," *Thayer School of Engineering at Dartmouth*, Hanover, NH, **special seminar**

Schloss Dagstuhl **March 2018**, "Fairness, Congestion Control, and Scheduling," *Schloss Dagstuhl Seminar on Scheduling*, Wadern, Germany, **invited talk**

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 α -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 α -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 α -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," *UCSB*, Santa Barbara, CA, **CS colloquium talk**

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

Conference Presentations **2013–2018**, Conference and workshop presentations: ICML'18, ITCS'18, 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. **Spring 2018–Summer 2018**, Cheuk Yin Lin, nonconvex optimization, M.S. student at Boston University

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 (CVN¹)

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

Thesis Committees **2018**, MIT. Reader on Thomas Stahlbuhk’s PhD thesis committee.

Program Committees **2018**, ICNP’18. Technical program committee member.

2018, NETGCOOP’18. Technical program committee member.

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

¹ Columbia Video Network

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

2018, Co-organized a reading group on First and Second Order Stochastic Optimization Methods at the Simons Institute for the Theory of Computing.

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 N² Women meeting at ACM MobiHoc'16.

2014, Organized an N² 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.

Journal Reviews

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

Conference Reviews

2012–Present, *NeurIPS, 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, Wadern, 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, 3rd 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.)