

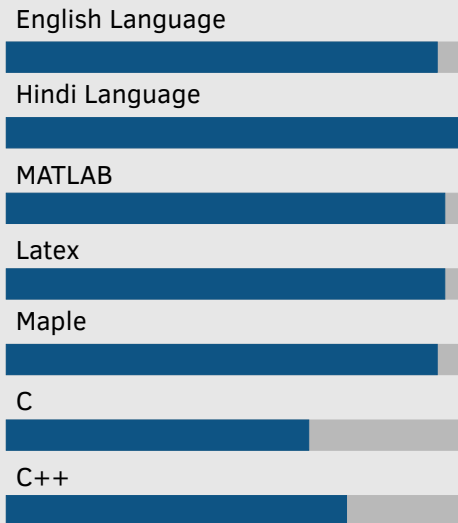


Rajani Singh

Game Theory and Blockchain Researcher

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Skills



(*)[The skill scale is from 0 (Fundamental Awareness) to 6 (Expert).]

Research Interests

Game Theory:
Game theory for the green transition and Climate change, Dynamic games, Application of dynamic games in economy and ecology, Cooperative and Non-cooperative games, UN Sustainable development goals.

Blockchain technology:
Blockchain for UN sustainable business goals, Security and privacy issue in Blockchain, Zero-knowledge proofs, Application of Blockchain Technology.

Current Working

From 01.02.2022 Assistant Professor (Tenure Track)
Department of Digitalization
Copenhagen Business School, Denmark

Experience

- From 01.12.2019 – 31.01.2022 Postdoctoral Researcher
Department of Digitalization
Copenhagen Business School, Denmark
- 10.06.2019 – 09.09.2019 Full time Visiting Researcher
Department of Electrical and Computer Science
University of Waterloo, Ontario, Canada
- 01.07.2018 – 30.03.2019 Research Associate
Department of Mathematics and Computer Science
Brandon University, Manitoba, Canada
- 15.02.2018 – 15.07.2018 Visiting Research Scholar
Institute of Computer Science, Polish Academy of Sciences
Warsaw, Poland
- 01.10.2015 – 29.01.2017 Taking Tutorial classes of Linear Algebra
Faculty of Economic Sciences,
University of Warsaw, Poland
- 01.07.2015 – 01.09.2015 Assistant Professor (Guest Faculty)
Centre for Computer Sciences, Ewing Christian College,
University of Allahabad, India
- 01.01.2014 – 20.09.2014 Subject Matter Expert in Mathematics
Evelyn Learning System Pvt. Ltd.
New Delhi, India
- 01.09.2013 – 01.12.2013 Project Fellow
Development of decision tree based classifier for avalanche forecast
Indian Institute of Technology Delhi, India

Education

- 2014 – 2019 Doctor of Natural sciences (Ph.D.) in Mathematics
Faculty of Mathematics, Informatics and Mechanics,
University of Warsaw, Poland
- 2011 – 2013 Master of Science (M.Sc.) in Mathematics,
Department of Mathematics,
Indian Institute of Technology Delhi, New Delhi, India
- 2008 – 2011 Bachelor of Science (B.Sc.) in Mathematics and Computer Application
Ewing Christian College,
University of Allahabad, India

Editorship

- Guest editor International Game Theory Review Journal for the research topic "Strategic Models in Computing Applications".
- Topic editor Frontiers in Blockchain Journal for the research topic "Blockchain for United Nations Sustainable Development Goals (SDGs)".
- Guest Editor Sensors Journal for Special Issue on "Data Privacy, Security, and Trust in Blockchain and IoT based networks".

Reviewed for Journals

- IEEE Computer Magazine
- Computer Communications
- IEEE Network Magazine
- Sensors
- Applied Sciences
- Algorithms
- Mathematics
- Sustainability
- Electronics
- Computers
- Symmetry
- Energies
- Future Internet
- Journal of Risk and Financial Management
- In the Reviewer Board of the Axioms journal.

Other Activities

- External Examiner Linear Algebra Course (PGR106), Autumn 2020
Kristiania University College, Oslo, Norway
- Session Chair 16th European Meeting on Game Theory (SING16), Granada, Spain
- Session Chair 17th International Symposium on Dynamic Games and Applications (ISDG), Urbino, Italy

Academic Achievements

Best Paper Award 2021	For the paper "A Decentralized Privacy-preserving Healthcare Blockchain for IoT" in Sensors
Young Scientist Award 24.09.2020	Andrzej Malawski Prize for outstanding contribution to the development of mathematical economics link to webpage: https://nagroda_im_malawskiego.uek.krakow.pl/
Invited Speaker 05 – 08.08.2019	6 th International Conference on Continuous Optimization ICCOPT 2019, Technical University of Berlin, Germany
Invited Talk 20 – 22.02.2019	Chair of Operations Research, Department of Mathematics and School of Management, Technical University of Munich, Germany
Invited Talk 17 – 19.02.2019	Department of Computer Science, Aarhus University, Kingdom of Denmark
Travel Support 23 – 24.01.2019	To attend DCGT 2019: 6 th Day on Computational Game Theory, Potsdam, Germany
Young Researcher Grant 23 – 24.01.2019	To attend Workshop on Advances in Stochastic Games, Budapest, Hungary
ITC Conference Grant 15 – 17.12.2018	To attend WINE 2018: The 14 th Conference on Web and Internet Economics, Oxford, U.K.
Invited Speaker 03 – 06.07.2018	14 th Viennese Conference on Optimal Control and Dynamic Games, Vienna, Austria
Grant Holder 2017 – 2019	Principal Investigator of the Project <i>Games dynamic modeling 'tragedy of the common resource'</i> funded from Funds of National Science Centre, Poland, granted by decision number FEB 2016/21/N/HS4/00258
Fellowship 2015 – 2017	Two times Awardee of the Fellowship for Outstanding Ph.D students by Warsaw Center of Mathematics and Computer Science (WCMCS)
Organizer 13 – 15.07.2017	In the Organizing Committee of 11 th International ISDG Workshop, Warsaw, Poland
Worked on Grant 2014 – 2016	Worked on Project funded from Funds of National Science Centre granted by decision number DEC-2013/11/B/HS4/00857
Scholarship 17 – 18.09.2018	COST scholarship for Training School on Recent Applications of Game Theory, Krakow, Poland
Scholarship 04 – 09.09.2016	Scholarship for summer school on Game Theory and Dynamic gamesI, Lake Como School of Advanced Studies, Campione d'Italia
Scholarship 07 – 11.09.2015	Scholarship for summer school on Game Theory and Algorithms, Lake Como School of Advanced Studies, Campione d'Italia
Merit holder	B.Sc. 1 st year, Ewing Christian College, University of Allahabad, India

Selected Journal Publications

Game Theory work

- 2021 *Necessity of the terminal condition in the infinite horizon dynamic optimization problems with unbounded payoff*, Agnieszka Wiszniewska-Matyszkiewicz and Rajani Singh *Automatica*, DOI: <https://doi.org/10.1016/j.automatica.2020.109332>
- 2020 *When Inaccuracies in Value Functions Do Not Propagate on Optima and Equilibria*, Agnieszka Wiszniewska-Matyszkiewicz and Rajani Singh *Mathematics*, MDPI, DOI: <https://doi.org/10.3390/math8071109>
- 2020 *A game theoretic analysis of resource mining in blockchain*, Rajani Singh, Ashutosh Dhar Dwivedi, Gautam Srivastava, Agnieszka Wiszniewska-Matyszkiewicz and Xiaochun Cheng, *Cluster Computing* volume 23, pages 2035–2046
- 2019 *A class of linear quadratic dynamic optimization problems with state-dependent constraints*, Rajani Singh and Agnieszka Wiszniewska-Matyszkiewicz, *Mathematical Methods of Operations Research*, pages 325-355, DOI: <https://doi.org/10.1007/s00186-019-00688-4>
- 2018 *Discontinuous Nash Equilibria in a Two Stage Linear-Quadratic Dynamic Game with Linear Constraints*, Rajani Singh and Agnieszka Wiszniewska-Matyszkiewicz, *IEEE Transactions on Automatic Control*, pages 1-13, DOI: 10.1109/TAC.2018.2882160
- 2018 *Linear quadratic game of exploitation of common renewable resources with inherent constraints*, Rajani Singh and Agnieszka Wiszniewska-Matyszkiewicz, *Topological Methods in Nonlinear Analysis*, Volume 51(1), pages 23-54

Blockchain work

- 2022 *Privacy-preserving Ledger for Blockchain and Internet of Things-enabled Cyber-physical Systems*, Rajani Singh, Ashutosh Dhar Dwivedi, Raghava Rao Mukkamala and Waleed S. Alnumay, *Computers and Electrical Engineering*, DOI: <https://doi.org/10.1016/j.compeleceng.2022.108290>
- 2022 *Advanced Security Model for Multimedia Data Sharing in Internet of Things*, Shalini Dhar, Ashish Khare and Rajani Singh, *Transactions on Emerging Telecommunications Technologies*, DOI: <https://doi.org/10.1002/ett.4621>
- 2020 *Internet of Things Based Blockchain for Temperature Monitoring and Counterfeit Pharmaceutical Prevention*, Rajani Singh, Ashutosh Dhar Dwivedi and Gautam Srivastava, *Sensors*, MDPI, DOI: <https://doi.org/10.3390/s20143951>
- 2019 *A Decentralized Privacy-preserving Healthcare Blockchain for IoT*, Ashutosh Dhar Dwivedi, Gautam Srivastava, Shalini Dhar, Rajani Singh, *Sensors*, MDPI, Volume 19(2), 326, DOI:10.3390/s19020326
- 2019 *Cryptanalysis of Round-Reduced Fantomas, Robin and iSCREAM*, Ashutosh Dhar Dwivedi, Shalini Dhar, Gautam Srivastava, Rajani Singh, *Cryptography*, Volume 3(1), pages 4
- 2018 *Differential-linear and related key cryptanalysis of round-reduced Scream*, Ashutosh Dhar Dwivedi, Paweł Morawiecki, Rajani Singh and Shalini Dhar, *Information Processing Letters*, Elsevier, Volume 136, pages 5-8

Communicated and/or Working Papers

- 2022 *Sharks, Squalene and COVID vaccines - When a scarce renewable resource becomes strategic in short run*
- 2022 *Stackelberg Competition in Dynamic Advertising with Application in Cryptocurrency Market*
- 2021 *Self-enforcing environmental agreements, taxes and delayed information in a continuous time Fish Wars model*

Selected Conference/ Workshop Publications

- 2020 *Tracing the Source of Fake News using a Scalable Blockchain Distributed Network*, Ashutosh Dhar Dwivedi, Rajani Singh, Sakshi Dhall, Gautam Srivastava, Saibal K. Pal, IEEE International Conference on Mobile Ad-hoc and Sensor Systems, MASS 2020, India
- 2020 *Role of Blockchain in Forestalling Pandemics*, Keshav Kaushik, Susheela Dahiya, Rajani Singh, Ashutosh Dhar Dwivedi, IEEE International Conference on Mobile Ad-hoc and Sensor Systems, MASS 2020, India
- 2018 *PHANTOM protocol as the new Crypto-democracy*, Gautam Srivastava, Ashutosh Dhar Dwivedi and Rajani Singh, International Conference on Computer Information Systems and Industrial Management Applications (CISIM), Olomouc, Czech Republic
- 2018 *Crypto-democracy: a decentralized voting scheme using blockchains*, Gautam Srivastava, Ashutosh Dhar Dwivedi and Rajani Singh, International Conference on Security and Cryptography (SECRYPT), Porto, Portugal

Paper Presentations at the Conferences

- 30.06 – 02.07.2021 16th European Meeting on Game Theory (SING16), Granada, Spain
- 22 – 24.05.2019 2019 World Conference on Natural Resource Modelling, Montréal, Canada
- 14 – 15.02.2019 6th Day on Computational Game Theory, Potsdam, Germany
- 26 – 28.09.2018 17th International Conference on Operational Research (KOI), Zadar, Croatia
- 09 – 12.07.2018 18th International Symposium on Dynamic Games and Applications (ISDG), Grenoble, France
- 03 – 06.07.2018 14th Viennese Conference on Optimal Control and Dynamic Games, Vienna, Austria
- 06 – 08.06.2018 Central European Conference on Cryptology (CECC), Smolenice, Slovakia
- 13 – 15.03.2018 COST Action Workshop on GAMES, DYNAMICS AND OPTIMIZATION (GDO), Vienna, Austria
- 12 – 13.10.2017 9th Workshop on Dynamic Games in Management Science, HEC Montréal, Canada
- 13 – 15.07.2017 11th International Society of Dynamic Games Workshop, Warsaw, Poland
- 05 – 07.07.2017 13th European Meeting on Game Theory (SING), Paris, France
- 09.06.2017 Mini-conference on Game Theory in Economics and Social Sciences, MIMUW, Warsaw, Poland
- 12 – 15.07.2016 17th International Symposium on Dynamic Games and Applications (ISDG), Urbino, Italy
- 08 – 09.04.2016 2nd Warsaw Workshop on Game Theory, MIMUW, Warsaw, Poland
- 2015 – 2018 Seminar of Game Theory and Decision, IPI PAN, Warsaw, Poland
- 2015 – 2018 Seminar of Bio-mathematics and Game Theory, MIMUW, Warsaw, Poland

Poster Presentations at the Conferences

- 15 – 17.12.2018 WINE 2018: The 14th Conference on Web and Internet Economics, Oxford, U.K.
- 07 – 08.12.2018 VII Hurwicz Workshop on Mechanism Design Theory, Warsaw, Poland
- 17 – 21.09.2018 GAMENET Training School and Conference, Krakow, Poland

Conferences, Seminars and Workshops attended

12 – 16.08.2019	Selected Areas in Cryptography (SAC) conference, University of Waterloo, Ontario, Canada
23 – 24.01.2019	Advances in Stochastic Games, Budapest, Hungary
14 – 16.11.2018	International Conference on NETwork Games, COnTrol and OPtimisation, New York, USA
10 – 12.01.2018	Real World Crypto (RWC), Zurich, Switzerland
04 – 09.09.2016	Summer School on Game Theory and Dynamic Games, Lake Como, Campione d'italia
07 – 11.09.2015	Summer School on Game Theory and Algorithms, Lake Como, Campione d'italia
02 – 03.12.2016	VI Hurwicz Workshop on Mechanism Design Theory, Warsaw, Poland
20 – 21.10.2016	Symposium on Optimal Control and Related Topics, Warsaw, Poland
2015 – 2018	Seminar of Bio-mathematics and Game Theory, MIM UW, Warsaw, Poland
2015 – 2018	Seminar of Game Theory and Decision, IPI PAN, Warsaw, Poland
22.10.2011	Embedded System And Robotics by Appin Technology, IITD, India
25.11 – 04.12.2010	Advanced Training Programme in Linear Algebra and Analysis, IIT BHU, Varanasi, India
07 – 11.07.2008	Rajbhasha Vaigyanic Workshop, Harish Chandra Research Institute, Allahabad, India
03 – 23.06.2008	Summer School organized by National Academy Of Sciences (NASI), Allahabad, India
09 – 13.07.2007	Rajbhasha Vaigyanic Workshop, Harish Chandra Research Institute, Allahabad, India

Teaching

Spring 2023	Natural Language Processing and Text Analytics (7.5 ECTS) Teaching 5 out of 12 lectures Copenhagen Business School, Denmark
Spring 2022	Natural Language Processing and Text Analytics (7.5 ECTS) Taught 7 out of 12 lectures Copenhagen Business School, Denmark
Autumn 2021	Game Theory for Business and Data-driven Decision Making (7.5 ECTS) Taught all lectures Copenhagen Business School, Denmark
Spring 2021	Natural Language Processing and Text Analytics (7.5 ECTS) Taught 4 out of 12 lectures Copenhagen Business School, Denmark
Autumn 2020	Game Theory for Business and Data-driven Decision Making (7.5 ECTS) Taught all lectures Copenhagen Business School, Denmark
Spring 2020	Text Analytics (7.5 ECTS) Taught 4 out of 12 lectures Copenhagen Business School, Denmark