



CORS • SCRO

Canadian Operational Research Society
Société canadienne de recherche opérationnelle

The
Bulletin

VOLUME 54, NUMBER 1 – FEBRUARY 2020
ISSN 0315-1417

| Table of Contents | Page |
|---|-------------|
| In This Issue | 2 |
| The 2019–2020 Council | 3 |
| President's Message | 4 |
| Announcements | 5 |
| CORS Funding Opportunities | 5 |
| Graduate Student Funding | 5 |
| Traveling Speakers Program | 5 |
| Call for Nominations: 2020–2021 CORS Council | 6 |
| 2020 CORS Annual Conference | 7 |
| 2020 Harold Larnder Prize Winner: Anna Nagurney | 9 |
| Call for Nominations: CORS Awards | 11 |
| CORS Award of Merit | 11 |
| Eldon Gunn Service Award | 12 |
| CORS Practice Prize | 13 |
| CORS Student Paper Competition | 14 |
| Special Interest Groups (SIGs) | 16 |
| SIG News | 17 |
| Forestry | 17 |
| Health Care Operational Research | 18 |
| Queueing Theory | 19 |
| Meetings and Conferences | 20 |
| The Next Issue | 21 |
| CORS Bulletin Translation Policy | 21 |
| CORS Bulletin Advertising Policy | 21 |
| CORS Mailing List | 21 |
| About CORS | 22 |



In this Issue

Dear CORS members,

In this issue, you will find a lot of important deadlines. Firstly, the nominations for four council positions are due by March 13, so don't delay, nominate a CORS member today! And while you are reflecting on which of your peers can do great things for the society, consider also nominating someone for the Award of Merit or the Eldon Gunn Service Award, due by March 9 and 6, respectively.

The CORS annual conference in Toronto is fast approaching, and the organizers have provided a great summary of all it has to offer. Check out the website for more details and to plan your trip in June. The CORS Practice prize abstracts are due by February 28, so you have just a few more weeks to submit your application.

Lastly, we have updates from the Special Interest Groups and their plans for the conference. It promises to be a great event, and we hope to see you there.

Cheers,

Andrea

| | |
|--|---|
| <u>Bulletin Editor</u> | Andrea Friars |
| <u>Elected Officers</u> | |
| President | Stanko Dimitrov |
| Vice-President | Mike Pavlin |
| Past-President | Mehmet Begen |
| Secretary | Marko Bijvank |
| Treasurer | Sonia Vanderby |
| Councillors | Anjali Awasthi (18–20), Andrea Friars (19–20) Jules Comeau, Mehmet Coskun (19–21) |
| <u>Standing Committees</u> | |
| Awards | Mike Pavlin, Jules Comeau, Mehmet Coskun |
| Education | Anjali Awasthi |
| Membership | Jules Comeau |
| Program | Mike Pavlin, Fredrik Ødegaard, Fatma Gzara, Timothy Chan, Mireille Faucon |
| Public Relations | Stanko Dimitrov |
| Publications | Samir Elhedhli, Elkafi Hassini, Andrea Friars |
| SIG Relations | Mike Pavlin, Andrea Friars, Mehmet Coskun |
| Section Relations | Mike Pavlin, Jules Comeau, Sonia Vanderby |
| Past Presidents Advisory Board | Stanko Dimitrov, Mehmet Begen |
| <u>Ad hoc Committees</u> | |
| Practice Prize | Mikael Rönnqvist |
| Award of Merit | Mehmet Begen, Mahmut Parlar, Mikael Rönnqvist |
| Student Paper Competition | Anjali Awasthi, Nadia Lahrichi, Tamon Stephen |
| Financial Planning | Sonia Vanderby, Mehmet Begen, Stanko Dimitrov, Mike Pavlin |
| Industry | Stanko Dimitrov, Anna Guinzbourg, Snezana Minic, Andrea Friars, Mehmet Coskun, Jules Comeau |
| Nominating | Mehmet Begen |
| INFOR Co-Editors | Samir Elhedhli, Elkafi Hassini |
| INFOR Administrator | Bev Rodgers |
| Travelling Speakers Program | Mehmet Begen |
| IFORS Representative | Marko Bijvank |
| Membership Services & Website Administrator | Erla Anderson |

The 2019–2020 Council

CORS Council consists of the officers of the society, four councillors, the immediate past president, a representative designated by each local section and chapter of the society, SIG presidents, and the standing committee chairs. Contact information for council representatives is below. See www.cors.ca for a complete listing.

| | |
|---------------------|---|
| President | Stanko Dimitrov, University of Waterloo, sdimitro@uwaterloo.ca |
| Vice-President | Mike Pavlin, Wilfrid Laurier University, vicepresident@cors.ca |
| Secretary | Marco Bijvank, University of Calgary, marco.bijvank@haskayne.ucalgary.ca |
| Treasurer | Sonia Vanderby, University of Saskatchewan, soniavanderby@gmail.com |
| Past-President | Mehmet Begen, Western University, mbegen@ivey.uwo.ca |
| Councillor | Anjali Awasthi, Concordia University, anjali.awasthi@concordia.ca |
| Councillor | Andrea Friars, Agropur, andreafrriors@gmail.com |
| Councillor | Jules Comeau, Université de Moncton, jules.comeau@umoncton.ca |
| Councillor | Mehmet Coskun, Manulife / John Hancock, mehmeterdemcoskun@gmail.com |
| Analytics SIG | Gregory Paradis, University of British Columbia, greg.paradis@ubc.ca |
| Forestry SIG | Maha Ben Ali, Polytechnique Montréal, maha.ben-ali@polymtl.ca |
| HCOR SIG | Timothy Chan, University of Toronto, tcychan@mie.utoronto.ca |
| Queueing Theory SIG | David Stanford, Western University, stanford@stats.uwo.ca |
| Atlantic | Claver Diallo, Dalhousie University, claver.diallo@dal.ca |
| Québec | Irène Abi-Zeid, Université Laval, irene.abi-zeid@osd.ulaval.ca |
| Montréal | Nadia Lahrichi, École Polytechnique de Montréal, nadia.lahrichi@polymtl.ca |
| Ottawa | Dragos Calitoiu, Carleton University, calitoiu@math.carleton.ca |
| Kingston | Mohan Chaudhry, Royal Military College of Canada, chaudhry-ml@rmc.ca |
| Toronto | Hassan Anis, University of Toronto, hassan.anis@mail.utoronto.ca |
| Southwest Ontario | Joe Naoum-Sawaya, Western University, jnaoum-sawaya@ivey.ca |
| Saskatoon | Hamed Samarghandi, University of Saskatchewan, samarghandi@edwards.usask.ca |
| Calgary | Owen James, Associated Engineering, jameso@ae.ca |
| Edmonton | Armann Ingolfsson, University of Alberta, armann.ingolfsson@ualberta.ca |
| Vancouver | Stuart Donald, University of British Columbia, stuart.donald@sauder.ubc.ca |
| Waterloo Student | Khaled Shah, University of Waterloo, khaled.mostafa.shah@uwaterloo.ca |
| Québec Student | Irène Abi-Zeid, Université Laval, irene.abi-zeid@osd.ulaval.ca |
| Montréal Student | Gabriel Vanasse, Concordia University, or.students.montreal@gmail.com |
| Toronto Student | Kyle Booth, University of Toronto, kyle.booth@mail.utoronto.ca Christopher Sun, University of Toronto, christopher.sun@mail.utoronto.ca |
| Winnipeg | Currently vacant |



President's Message

Greetings Fellow CORS members,

I hope the new year and decade are off to a great start for you all! For those of us on a traditional academic calendar, the academic year will be over before we know it.

After the most recent CORS council meeting, a face-to-face meeting in Toronto, some important issues were resolved, and some opportunities identified. As an overview, I am happy to say that the CORS 2021 conference will take place in Montreal and will be a joint conference with Optimization Days; the CORS 2022 conference will take place in Vancouver and will be a joint conference with INFORMS. Both conferences will provide fantastic new opportunities for CORS members. In addition to these conferences, council is continuing work to improve some operational issues and considered additional opportunities to provide to members. The next CORS council meeting will be in March.



Speaking of conferences, I'd like to remind you to register for the CORS 2020 conference. Please see the conference website: <https://uwaterloo.ca/canadian-operational-research-society-conference/>. On that link you can submit your abstract, register, and find accommodation and travel options. Again, I thank Fatma Gzara, the general chair, and Timothy Chan, the program chair for their hard work. The conference program is shaping up to be very interesting, with Anna Nagurney receiving the Harold Larnder Prize, and Susan Athey and Georgia Perakis will give plenaries. I want to thank the program committee members and program chairs for their help. I look forward to a great conference in Toronto in June, and I look forward to seeing you there!

With a conference upcoming, please encourage interested students to particulate in the listed paper competitions (<https://cors.ca/?q=content/student-paper-competition>). If students need funding to attend, submit a request for funding, even if they are unsure they will actually be able to attend the conference.

INFOR continues steady improvement under the editorship of Samir Elhedhli and Elkafi Hassini. I thank them and the editorial board for their efforts to improve the journal, in such a short time.

CORS cannot run without volunteers. If you are interested in standing for CORS council (there are two council positions that need to be filled), CORS treasurer, or CORS vice president, please let me know. Please note that those interested in running for CORS vice president must have served on CORS council for at least one year in order to be eligible for the office. If you have any ideas of what I or CORS can do, please let me know. I look forward to hearing from you.

Sincerely,

Stanko Dimitrov

Stanko Dimitrov

Announcements

It's time to renew your CORS membership

The website is ready to accept payment of membership fees for **April 1, 2020 to March 31, 2021**. You may be able to use an NSERC grant to pay CORS membership dues. Renew your membership at (http://www.cors.ca/sites/cors_php/en/membership/renewal.php). If you have questions, contact Membership Services at members@cors.ca

Access the journal INFOR

Current members receive an email message from Taylor and Francis with instructions to access the journal INFOR. If you have questions, contact Membership Services at members@cors.ca

CORS Funding Opportunities

Graduate Student Funding

CORS funds graduate students attending the CORS Annual Conference, using funds from SSHRC, when available. This funding is subject to availability and the following eligibility criteria:

- Student is a member of CORS, enrolled in a graduate program in a field related to operational research, studying at a Canadian university, or student is a Canadian citizen or permanent resident studying abroad
- Student must attend the CORS Annual Conference and present their registration receipt to receive any funding

The following criteria will be used to determine the amount awarded to each eligible applicant:

- If the applicant is presenting a paper at the CORS Annual Conference
- Travel cost from student's home city to the CORS Annual Conference

The application deadline is **March 31, 2020**

Anjali Awasthi, CORS Education Chair (anjali.awasthi@concordia.ca)

Traveling Speakers Program (TSP)

The TSP enables local sections to bring Canadian OR practitioners / researchers as speakers to their local events. In order to keep costs in line while maximizing the CORS national profile, CORS sponsorship will be limited to 50% of the total expenses, up to a maximum of \$500 per speaker or \$1000 for a single event (conference, workshop). Other expenses can be covered by the local section. The program of the event must acknowledge the contribution of CORS. Each local section must contact the TSP coordinator to obtain approval for funding preferably at least one month in advance of the event date. Payment will be made by the CORS Treasurer upon receipt of the expense form (<https://www.cors.ca/sites/default/files/documents/expenses.docx>).

Applicants fill out the application form

(<https://www.cors.ca/sites/default/files/documents/tsp.docx>) and submit to:

Mehmmet Begen, TSP Coordinator (mbegen@ivey.uwo.ca)



Call for Nominations

2020–2021 CORS Council

There are four positions to fill for the 2020–2021 CORS Council. To nominate a CORS member to serve in one of these positions send their name and contact information by **March 13, 2020** to **Mehmet A. Begen**, Past President (mbegen@ivey.uwo.ca); please make sure your nominee is aware of the nomination. Note that self-nominations are welcomed.

For more details regarding the various positions visit: www.cors.ca in particular see the Bylaws and Administrative Handbook online at www.cors.ca/?q=content/library

All nominees will be contacted and asked to provide a write-up for the May edition of the Bulletin.

Vice-President (President Elect)

The Vice President (one-year term) assists the President, participates in special projects and ad-hoc committees through the year, and takes over the role of President at the following Annual General Meeting (AGM). Only those who have served at least one year on Council shall be eligible for the office of Vice-President.

Treasurer

The treasurer is responsible for all financial matters of the Society. The treasurer maintains the Society's accounts, handles all disbursements and receipts of funds, provides financial reports to Council and to the members at the AGM, and chairs the Financial Planning Committee. CORS supports the treasurer by making an administrative assistant available to help with some of the administrative activities of the treasurer.

Two Councillors (two-year term)

A total of four councillors sit on council and participate in the management of the society. Often, councillors are called upon to chair or serve on ad hoc or standing committees and to work on special projects.



CORS 62nd Annual Conference Toronto, Ontario June 8–10, 2020

We have the great pleasure to invite you to take part in the 62nd CORS Annual Conference. The organizing and program committees prepared enriching academic and social programs, including a reception at the iconic CN tower. New this year is a hands-on workshop on neural networks, and returning are CHOW and Analytics Day. We look forward to welcoming you in Toronto for a great conference!

Fatma Gzara, Conference general chair
Timothy Chan, Program chair

PLENARIES

- Harold Lardner plenary: Anna Nagurney, University of Massachusetts, *Trade Wars: OR in the Economic Battlefields*
- Susan Athey, Stanford University
- Georgio Perakis, MIT

TUTORIALS

- Andre Cire, University of Toronto: *Decision Diagrams for Optimization: Theory and Application*
- Adam Elmachtoub, Columbia University: *Contextual Optimization: Bridging Machine Learning and Operations Research*
- Phebe Vayanos, University of Southern California: *Robust Optimization for Social Good: Fairness, Efficiency and Transparency in Social Interventions*

LINKS

- Abstract submission - <https://uwaterloo.ca/cors2020/abstract-submission>
- Registration - <https://uwaterloo.ca/cors2020/registration>
- CHOW - <https://uwaterloo.ca/cors2020/canadian-healthcare-optimization-workshop-2020>

INQUIRIES

- Conference related inquiries: cors2020@cors.ca
- Program related inquiries: cors2020program@gmail.com



IMPORTANT DATES

- Abstract submission deadline: February 28, 2020
- Confirmation of abstracts: March 20, 2020
- Early registration deadline: March 31, 2020
- Registration deadline for presenters: April 30, 2020
- Late/Onsite registration as of: June 7, 2020

Neural Networks for OR Professors, Researchers and Practitioners

Joint Education Cluster & AI/ML Cluster Workshop Organized by Daniel Frances (University of Toronto), Daria Terekhov (Concordia University), and Elias Khalil (University of Toronto). Are you an OR professor, researcher or practitioner who wishes to be more up-to-date on machine learning? Do you feel like your students/interns know more about neural networks than you do? Have you been thinking of taking an online machine learning course but have no time? Then this workshop is for you! In two 90-minute sessions, we will teach you the fundamentals of neural networks ... and get you to implement some too!

- In the first session, Maxime Gasse (<http://www.maximegasse.com>) will provide you with the foundations of deep learning (60 minutes), followed by a 30-minute overview of the current research directions in the field by Animesh Garg (<http://www.cs.toronto.edu/~garg/>).
- In the second session, you can try your hand at implementing neural networks in Python, guided by instructor Maxime Gasse (<http://www.maximegasse.com>) and assistants Alex Olson (<https://alexolson.computer>) and Yingcong Tan (https://users.encs.concordia.ca/~t_yingco/).
- The second session is by registration only and is limited to 50 participants—so don't delay, register today! Registrants will receive additional setup instructions closer to the event. Registration for the event is included in the registration form for the main conference. There is no additional fee.

The 4th Annual Canadian Healthcare Optimization Workshop (CHOW)—Sunday June 7, 2020

This year, the workshop will feature three plenary and six technical talks. All papers accepted for a technical session will be automatically entered into the inaugural CHOW best paper competition. The winner will be announced at the CHOW reception. The competition is open to faculty (pre-tenure), graduate and undergraduate students, and post-doctoral fellows. To submit a paper to present in a technical session, please send an e-mail to: chow2020toronto@gmail.com

Plenary Speakers

- Oguzhan Alagoz, University of Wisconsin-Madison
- Diwas KC, Emory University
- Frank Rudzicz, University of Toronto

2nd annual CORS Analytics Day

On Wednesday, June 10th, CORS Analytics Day will take place. The full-day event with plenary speakers and panel discussions aims to bring business and industry professionals together to share and discuss developments and challenges regarding Analytics. For information, contact Fredrik Odegaard at fodegaard@ivey.ca



Harold Larnder Prize

Anna Nagurney



Anna Nagurney is the John F. Smith Memorial Professor at the Isenberg School of Management at the University of Massachusetts Amherst and the Director of the Virtual Center for Supernetworks, which she founded in 2001. She holds ScB, AB, ScM, and PhD degrees from Brown University in Providence, RI. She is the author of 14 books, more than 200 refereed journal articles, and over 50 book chapters. She presently serves on the editorial boards of a dozen journals and two book series and is the editor of another book series.

Professor Nagurney has been a Fulbrighter twice (in Austria and Italy), was a Visiting Professor at the School of Business, Economics and Law at the University of Gothenburg in Sweden, and was a Distinguished Guest Visiting Professor at the Royal Institute of Technology (KTH) in Stockholm. She was a Visiting Fellow at All Souls College at Oxford University during the 2016 Trinity Term and a Summer Fellow at the Radcliffe Institute for Advanced Study at Harvard in 2017 and 2018. Anna has held visiting appointments at MIT and at Brown University and was a Science Fellow at the Radcliffe Institute for Advanced Study at Harvard University in 2005–2006. She has been recognized for her research on networks with the Kempe Prize from the University of Umea, the Faculty Award for Women from the US National Science Foundation, the University Medal from the University of Catania in Italy, and was elected a Fellow of the RSAI (Regional Science Association International), an INFORMS (Institute for Operations Research and the Management Sciences) Fellow, and a Network Science Society Fellow. In 2019, she became the first female recipient of the Constantin Caratheodory Prize from the International Society of Global Optimization. Anna has also been recognized with several awards for her mentorship of students and her female leadership with the WORMS Award, for example, and the Moving Spirit Award. Anna was one of 44 Women in STEM featured in the STEM Gems book as a role model for young women. Her research has garnered support from the AT&T Foundation, the Rockefeller Foundation through its Bellagio Center programs, the Institute for International Education, and the National Science Foundation. She has given plenary/keynote talks and tutorials on 5 continents. She is an active member of several professional societies, including INFORMS, POMS, and RSAI and was the Omega Rho Distinguished Lecturer in 2018 and is a 2020 IFORS Distinguished Lecturer.

Anna's research focuses on network systems from transportation and logistical ones, including supply chains, to financial, economic, social networks and their integration, along with the Internet. She studies and models complex behaviors on networks with a goal towards providing



frameworks and tools for understanding their structure, performance, and resilience and has contributed to the understanding of the Braess paradox in transportation networks and the Internet. She has been researching sustainability and quality issues with applications ranging from pharmaceutical and blood supply chains to perishable food products and fast fashion, to humanitarian logistics and disaster management. She has advanced methodological tools used in game theory, network theory, equilibrium analysis, and dynamical systems. She was a Co-PI on a multi-university NSF grant with UMass Amherst as the lead: Network Innovation Through Choice, which was part of the Future Internet Architecture (FIA) program, and she was recently a Co-PI on an NSF EAGER grant.

Harold Larnder Memorial Lecture

Trade Wars: OR in the Economic Battlefields

OR, from its military origins, has evolved to impact virtually every economic sector from agriculture to manufacturing to services. When it comes to war between nations, the weaponry is apparent - from flying missiles and bombs to stealth cyber weapons. The weapons of trade wars are, in contrast, economic, imposed by countries on products produced by other countries. Powerful trade war weapons used by governments include tariffs, quotas or combination thereof, known as tariff rate quotas. They affect not only the prices that you and I pay for our favorite foods such as avocados, cheeses, and maple syrup but even their quality!

Global supply chains are the networks that enable fresh produce year round, smart phones at our fingertips, the latest fashions on demand, household appliances that we have come to depend on, and raw materials for crucial manufacturing processes. The resulting trade flows from origins to consumption are essential to the prosperity of nations and to the well-being of their citizenry.

Game theory allows us to quantify the effects of decisions of one adversary (or competitor) on others and has a long history of being applied by the military during war games; used by businesses to determine strategy, and now central to the understanding of the effects of trade wars. Proper use of game theory can quantify a priori what the impacts of trade barriers will be on producers (both domestic and foreign), on consumers, and on governments. In addition, using game theory, embedded with algorithms, different scenarios and responses of governments, such as the tightening or loosening up of trade barriers, can be simulated. The need for such a framework is extremely relevant given the prevalence of tariffs and quotas in the news, with the coupled uncertainty.

In this talk, I will discuss how OR is contributing to the methodological arsenal for the analysis of trade wars. In particular, I will describe recent modeling and algorithmic research and advances motivated by various economic trade policies that have been imposed on a spectrum of products by various countries across the globe. I will present both perfectly competitive and oligopolistic supply chain network models and associated applications, focusing on food, as well as food quality, and demonstrate who benefits and who loses under a spectrum of trade policies.



Call for Nominations

CORS Award of Merit

The Award of Merit acknowledges significant contributions of a current or past member of CORS to the profession of operational research. Significant contributions can include:

- being specially recognized as an operational research practitioner;
- the development of a methodology relevant to the use of operational research;
- the supervision and development of operational research competence in others;
- the promotion of operational research in Canada through talks, presentations, articles, books, or by other means;
- service to CORS at either the national or local level.

To nominate an individual for the award, please email **Mehmet Begen** (mbegen@ivey.uwo.ca) by **March 9, 2020** with the nominee's name, affiliation, and a brief statement supporting the nomination. Note that the nominee must be a present or past member of CORS.



Eldon Gunn Service Award

The Eldon Gunn Service Award is presented to Members of the Society who have made outstanding contributions of time and service to the Society, at the national or local level, as conference organisers or as editors of CORS publications. Eldon Gunn was a major contributor to the Society since the early 1980s and to operational research in Canada since the 1970s. He was one of the first recipients of the service award in 1987 after serving in Council and acting as conference chair for the 27th CORS Annual Conference in Halifax in 1985. He went on to serve as president of the Society in 1991 and continued his service with passion up until his passing in 2016.

If you know of anyone who has dedicated their time to CORS and who has a longstanding service record, please consider nominating him or her for the Eldon Gunn Service Award. CORS Council urges all local sections to consider and nominate their best candidates. Nominations should include the candidate's name, activities, positions and corresponding years of service. The Awards Committee will evaluate the submissions and bring forward potential recipients to Council for approval. Nominees will be evaluated based on a point system. As a guideline, winners should have 2000 or more points. Previous winners are not eligible for additional service awards. A list of past recipients can be found at <https://www.cors.ca/?q=content/eldon-gunn-service-award-0>

To nominate an individual for the award, please email **Mike Pavlin** (vicepresident@cors.ca) by **March 6, 2020** with the nominee's name, affiliation, and a brief statement supporting the nomination. Note that the nominee must be a present or past member of CORS.

Point System

| Responsibility | Points | Responsibility | Points |
|---------------------------------|--------|----------------------|--------|
| CORS Council | | Publications | |
| President | 500 | Bulletin Editor | 350 |
| Vice-President | 350 | INFOR Editor | 350 |
| Secretary | 300 | Special Editions | 150 |
| Treasurer | 300 | Others | 200 |
| Councillor | 250 | | |
| Appointed Member | 200 | Local Council | |
| Past-President | 150 | President | 350 |
| | | Vice-President | 250 |
| International Conference | | Secretary | 200 |
| Conference Chair | 350 | Treasurer | 200 |
| Committee Chair | 300 | Others | 150 |
| Committee Member | 200 | Past-President | 100 |
| | | | |
| National Conference | | Miscellaneous | |
| Conference Chair | 300 | IFORS Executive | 250 |
| Committee Chair | 250 | | |
| Committee Member | 200 | | |



CORS Practice Prize

The Practice Prize Competition recognizes the outstanding application of OR by practitioners in Canada and it attracts quality papers to the CORS Annual Conference.

Award: The Prize Committee will determine, at its discretion, First, Second and Honourable Mention awards and the distribution of up to \$1800 in prize money according to the extent to which the finalists have reported on a completed, practical application with results that had a significant, verifiable and (preferably) quantifiable impact on the performance of the client organization. Every member of the winning teams receives a certificate.

Eligibility: The applicant must be a resident of Canada. The submission must include work completed over the last two years, but the entire project may have taken place over a longer period. The project may include published work, but it cannot have been previously submitted to this competition.

Application Instructions:

By **February 28, 2020** submit e-copies of the following to
Mikael Rönnqvist, Chair (mikael.ronnqvist@gmc.ulaval.ca):

1. An abstract, not exceeding 500 words, outlining the successful application of OR;
2. A letter from an executive of the client organization attesting that the application had an impact and giving permission for the project to be presented at the CORS Annual Conference;
3. The names, titles, phone numbers and email addresses of all authors and of at least one executive of the client organization.

By **March 19, 2020** the judging committee will select up to four finalists according to these criteria:

1. The challenge of the application of OR and the significance of the problem.
2. The quality of the analysis and modeling, and implementation of the results.
3. The impact on the client organization.

By **May 22, 2020** the finalists must:

1. Submit a detailed written report, not exceeding 25 pages in the body, presenting a "case history" of the project describing its development from start to finish and focussing on the challenges and results.
2. Submit a one-page project summary, suitable for publication in the CORS Bulletin and on the CORS website.
3. Present the project at the Practice Prize Sessions at the CORS Annual Conference.

On the basis of the written report and the oral presentation, the judges will determine the prizes to be awarded and announced at the banquet. The committee reserves the right not to award any prize.



CORS Student Paper Competition

Each year CORS conducts a student paper competition to recognize the contribution of a paper either directly to the field of operational research through the development of methodology or to another field through the application of operational research. The competition serves to showcase the high quality of OR education in Canada as well as the excellence of the new generation of operational researchers. Prizes are awarded in two categories: Undergraduate and Open. MBA students (and other specialized postgraduate students) are encouraged to participate in the competition in the open category.

Requirements

The applicants must be enrolled as a full-time student in a Canadian institution, in an undergraduate or graduate (such as a Master's, MBA or Ph.D.) program during the school year 2019–2020. Canadians who are studying outside of Canada are also eligible. Papers where all applicants are undergraduates may be submitted to either category: Open or Undergraduate, but not to both. Papers where some authors are graduate students must be submitted to the Open category.

Supervisors and industry partners may appear as coauthors on the paper, but the first authors must be the applicants. The applicants must have made substantial contribution to the project and have written the paper with only minor editorial assistance. If the paper includes such non-student authors, the supervisor should include information about the roles of the various authors when confirming the eligibility of the students.

Application Instructions

Open Category

Chair: Nadia Lahrichi (nadia.lahrichi@polymtl.ca)

Application deadline: **April 1, 2020**

Fill out the online application form (<http://cors.ca/?q=content/student-paper-competition>). The form is automatically submitted to the chair of the competition.

Undergraduate Category

Chair: Tamon Stephen (tamon@sfu.ca)

Deadline to indicate your intent to participate: **March 1, 2020**

Deadline to submit your full paper: **April 1, 2020**

Submit your intent to participate by sending an email with the title and abstract to spc@cors.ca



The entry includes

1. Abstract of 200 words or less. Author's name, address, phone number, and email address. Make sure the abstract clearly highlights the motivation, contribution, and potential impact of the paper.
2. Academic institution and supervisor's name, if applicable.
3. Indication of whether the author is planning to attend the CORS Annual Conference regardless of the outcome. Note that papers selected as finalists must be presented at the CORS Annual Conference in order to further be considered for first prize or honourable mention.
4. Indication of whether the paper is submitted to a journal.
5. A PDF copy of the paper:
 - No longer than 35 pages (with minimum 1-inch margins, maximum 34 lines per page and minimum font size of Times 11) including all figures, tables, appendices, and references.
 - With separate title page containing the name of the authors, their coordinates and affiliations. Please ensure there are no identifiers on the other pages.
6. An email from the supervisor indicating that the participant is the first author of the paper should be sent to the competition chair. Supervisors must agree to be on the refereeing committee for the competition, which requires evaluating three competition papers in April. If this is not possible, the supervisor should identify a suitable alternate committee member.

Selection Criteria

- Contribution of the paper either directly to the field of operational research through the development of methodology or to another field through the application of operational research
- Originality
- Writing style, clarity, organization, and conciseness of the paper

Awards

- Open Category: First Prize \$500, Honorable Mention \$100
- Undergraduate Category: First Prize \$200, Honorable Mention \$50
- All papers selected as finalists receive a certificate.
- In the case of close competition, papers not winning an award may receive honourable mention.
- Undergraduates who attend the CORS Annual Conference as finalists or otherwise are eligible to apply for partial travel funding. Details will be announced; the applications usually take place in February.



CORS Special Interest Groups

CORS Council approved a policy on Special Interest Groups (SIGs). A SIG provides a mechanism to promote CORS, the SIG area and the SIG members, as well as the opportunity for CORS members with common interests to interact and network.

SIGs formed so far include:

CORS Analytics SIG

Gregory Paradis (greg.paradis@ubc.ca)
University of British Columbia
www.cors.ca/SIG/Analytics

CORS Forestry SIG

Maha Ben Ali (maha.ben-ali@polymtl.ca)
Polytechnique Montréal
www.cors.ca/SIG/Forestry

CORS Health Care Operational Research SIG

Timothy Chan (tcychan@mie.utoronto.ca)
University of Toronto
www.cors.ca/SIG/HCOR

CORS Queueing Theory SIG

David Stanford (stanford@stats.uwo.ca)
Western University
www.cors.ca/SIG/Queueing

If you would like to join a SIG, contact the people listed above, or indicate that you would like to join when you renew your CORS membership.

CORS encourages members with common interest in an area within or related to operational research to form additional SIGs. More information about SIGs can be found online at www.cors.ca/?q=content/communities

If you are interested in forming a SIG in a particular area, contact:

Mike Pavlin, SIG Committee chair (mpavlin@wlu.ca)



Special Interest Group News

Forestry SIG

Five professors have accepted to be session chairs: Mikael Rönnqvist (Topic: Analytics in forestry), Gregory Paradis, Tassedou Boukherroub, Mustapha Ouhimmou, and Jules Comeau.

7th David Martell Student Paper Prize in Forestry

The David Martell Student Paper Prize in Forestry (DMSPPF) recognizes outstanding scientific contributions on the theory, methodology and/or practice of OR in forestry by an undergraduate, a graduate student or a postdoctoral. The competition is for the best student paper submitted, published or accepted for publication in a peer-reviewed journal in the two years before the year of the competition. The award was named in honor of Professor Martell for his outstanding contributions to the development and application of OR in forestry in Canada and beyond as well as for his many contributions to the COR Society. (FSIG bylaw articles 8a, 8b, and 8c)

Here are some important dates:

Paper submission deadline: **March 31, 2020**

Announcement of finalists: **April 30, 2020**

Presentation of the finalist papers at the CORS Annual Conference: June 8-10, 2020 (the precise date will be announced later).

You are all encouraged to submit your papers. Please, send your paper by e-mail to:
maha.ben-ali@polymtl.ca

To be eligible to participate in the competition, you must satisfy bylaw articles 8c, 8d, 8e, and 8g:

8c) The competition is for the best student paper submitted, published or accepted for publication in a peer-reviewed journal in the two years before the year of the competition.

8d) At the time the paper was written, applicants should have been an undergraduate, a graduate student or a postdoctoral at a Canadian university or a Canadian studying in a university outside of Canada.

8e) No paper can be submitted more than once.

8g) (...) The finalists must be prepared to present their work in a special session at the annual conference (...)

We strongly encourage the FSIG members to submit their papers for this well-recognized competition.



Health Care Operational Research

CHOW 2020 – Waterloo / Toronto

The Health Care Operational Research Special Interest Group (HCOR SIG) of the Canadian Operational Research Society (CORS) is pleased to host the [4th annual Canadian Healthcare Optimization Workshop \(CHOW\)](#). The workshop connects academics from disciplines such as operations management, operations research, and artificial intelligence/machine learning with healthcare practitioners to discuss innovative solutions, data-driven decision support tools, and best practices to improve the efficiency and effectiveness of healthcare systems. It also promotes the research of young scholars with a common interest in healthcare optimization.

This year the workshop will feature three plenary and six technical talks. All papers accepted for a technical session will be automatically entered into the inaugural CHOW best paper competition. The winner will be announced at the CHOW reception. The competition is open to faculty (pre-tenure), graduate and undergraduate students, and post-doctoral fellows.

The plenary workshops cover the three leading areas of healthcare operations:

- **Operations Research Plenary Speaker:** Professor [Oguzhan Alagoz](#)
- **Operations Management Plenary Speaker:** Professor [Diwas KC](#)
- **Machine Learning Plenary Speaker:** Professor [Frank Rudzicz](#)

To submit a paper to present in a technical session, please use the following email address:

chow2020toronto@gmail.com

Manuscripts, including the abstract and all references, should be less than 38 pages double-spaced (this is defined as having at most, 33 lines per page) with size 11 font and one-inch margins on all sides. The deadline for submission is **February 28, 2020**.

For additional information, please feel free to contact the workshop chairs at the following emails:

Adam Diamant adiamant@schulich.yorku.ca

Andre A. Cire andre.cire@utoronto.ca

Health Care Operations Research SIG Student Presentation Prize

The CORS Health Care Operations Research SIG oral presentation competition for graduate students emphasizes the importance of presentation skills and provides an opportunity for students to receive formal feedback, learn best practices from their peers, and be recognized for excellence in this area.



The goal is to have students demonstrate mastery of coherent and engaging presentations describing a completed research project on a significant healthcare topic within a five-minute time limit. The competition will involve structured abstract submissions judged on the quality of the research and its practical relevance. The structured abstract (no more than 1000 words) should include the following subsections: problem definition, academic/practical relevance, methodology, results, and managerial implications. Judge-chosen finalists will be invited to present a five-minute presentation at the 62nd Annual CORS Conference in Toronto, ON (June 8 to 10). The deadline for abstract submission is **April 1, 2020** with the announcement of finalists expected by April 30, 2020. Presentations should be submitted by email to: valerie.3.belanger@hec.ca

Queueing Theory

Plans are underway for the Queueing cluster at the Toronto meeting June 8th to 10th. Seven sessions chairs have been identified: Mohammad Delasay, David Stanford, Douglas Down, Haoran Wu, Eugene Furman, Yiqiang Zhao, and Sapna Isotupa. Room exists for up to another three sessions in the stream. As the abstract submission deadline is **February 28th**, interested presenters should contact the cluster co-chairs, Amir Rastpour and David Stanford, so that we can keep a pulse on the level of activity.

Eighth Annual Student Prize Competition

The submission deadline for this year's competition is extended to February 29, 2020. Please send your submission to selection committee chair Dr. Douglas Down (downd@mcmaster.ca). The CORS Queueing Special Interest Group (SIG) is pleased to announce the eighth annual student prize competition, to be awarded at the CORS Annual Conference.

Instructions: Students should submit a copy of their paper, plus a letter from their supervisor attesting to their pivotal role and contributions to the results.

Requirements: The competition is for the best student-led paper submitted to a refereed publication, either a journal or the proceedings of a conference. Papers entered in the competition must have already been submitted by December 31, 2019. Papers do not need to be published at the time of submission; however, a letter indicating acceptance or soliciting a revision may be submitted along with the paper, as supplementary evidence of its merit. Papers that have appeared in print prior to 2019 will not be considered. A student may submit only one paper for consideration in any year.

Eligibility: Eligibility is restricted to: (i) full-time students (either at a Canadian institution or a Canadian studying outside of Canada) in good standing who do not yet hold their degree on the application deadline and (ii) students who are not previous recipients of a CORS Queueing SIG student prize.

Application deadline: Extended to **February 29, 2020**

Judging: Work will be judged by a three-member committee: Dr. Douglas Down (Chair), Dr. Vahid Sarhangian, and Dr. Armann Ingolfsson. All applications and questions should be sent to downd@mcmaster.ca



Meetings and Conferences

CORS Business Meetings

| | |
|--------------|--|
| May 29, 2019 | CORS Council Meeting, Saskatoon, Sask. |
| Sep 20, 2019 | CORS Council Meeting, Teleconference |
| Nov 29, 2019 | CORS Council Meeting, Teleconference |
| Jan 24, 2020 | CORS Council Meeting, Toronto, Ont. |
| Mar 20, 2020 | CORS Council Meeting, Teleconference |
| May 8, 2020 | CORS Financial Planning Committee Meeting |
| Jun 7, 2020 | CORS Council Meeting, Toronto, Ont. |
| Jun 8, 2020 | CORS Council Meeting, Toronto, Ont. |
| Jun 9, 2020 | CORS Annual General Meeting, Toronto, Ont. |

CORS Annual Conferences

| | |
|----------------|--|
| Jun 8–10, 2020 | CORS, Toronto, Ont. |
| 2021 | CORS joint with JOPT, Montreal, Que. |
| 2022 | CORS joint with INFORMS International, Vancouver, B.C. |

Other Conferences

| | |
|------------------|---|
| May 4–6, 2020 | Optimization Days, Montreal Que. https://symposia.gerad.ca/jopt2020/en |
| June 21–26, 2020 | IFORS, COEX, Seoul, South Korea http://www.ifors2020.kr |
| Jun 28–30, 2020 | INFORMS/MSOM Conference, Banff, Alta. http://msom2020.com |
| July 26–31, 2020 | ORAHS, Vienna, Austria https://orahs2020.univie.ac.at |

WWW Conference Listings

CORS: www.cors.ca/?q=content/cors-annual-conferences

INFORMS: <https://www.informs.org/Meetings-Conferences>

IFORS: www.ifors.org/web

Netlib Conference Database: <ftp://ftp.cc.ac.cn/netlib/confdb/Conferences.html>

SIAM: www.siam.org/meetings/calendar.php

POMS: <https://pomsmeetings.org>

EURO: www.euro-online.org/web/pages/460/calendar



The Next Issue

The next issue of the Bulletin is scheduled to appear in **May**. Along with the regular features and news from the local sections, it will include more information about the next CORS Annual Conference. Contributions to this issue, especially news on the activities of local sections or CORS members, should be submitted by **April 24, 2020** to:

Andrea Friars
Editor, CORS Bulletin
11 Sawgrass Drive
Oakfield, NS B2T 0G1
Email: AndreaFriars@gmail.com

The preferred method of submission is by an MS Word attachment to an email.

CORS Bulletin Translation Policy

Items that are CORS business will be translated into English and French. All other items will be published in the language they are submitted in.

CORS Bulletin Advertising Policy

Ads cost \$120 per page, proportional for fractional pages. Logos and prepared layouts can be accommodated. This fee also includes distribution of the advertisement on the CORS Mailing List. Direct inquiries to the Editor.

CORS Mailing List

As a benefit of membership, members may use the CORS Mailing List to transmit messages, announcements, and job postings to the entire membership or to a targeted subgroup such as a local section. For example, you can send

- messages regarding the activities and business of the society;
- announcements about conferences, conference sessions, special journal issues, seminars or other activities provided that these are related to operational research in its broadest sense;
- job postings of general interest to CORS members.

The Mailing List is not used for commercial purposes, and all messages are vetted before they are sent out. To submit items to the Mailing List, email CORS Membership Services at members@cors.ca

For non-members, a fee of \$60 is charged for the distribution of job postings and other announcements or messages of interest to the CORS membership.



The **Canadian Operational Research Society** was founded in 1958. Its goal is to advance the theory and practice of OR and to stimulate and promote contacts between people interested in the subject.

Publications: A quarterly scientific journal called *INFOR* and a news *Bulletin*.

Meetings: An annual national conference with an award ceremony, occasionally organized jointly with an international society (IFORS, INFORMS), and numerous local events organized by local sections.

Local Sections & Chapters: CORS has twelve local sections located throughout Canada and four student chapters.

Awards and Prizes: CORS presents the following annual awards and prizes at its conference:

Award of Merit for significant contributions of a present or past member of CORS to the profession of OR.

Harold Larnder Award to an individual who has achieved international distinction in OR.

Omond Solandt Award to an organization, private or governmental, that is deemed to have made an outstanding contribution to OR in Canada.

Practice Prize for the challenging application of the OR approach to the solution of applied problems.

Eldon Gunn Service Award for outstanding contributions of time and service to the society.

Student Paper Competition to recognize the contribution of a paper either directly to the field of OR through the development of methodology or to another field through the application of OR.

Graduate Student Funding: CORS encourages attendance of graduate students at its conference by providing partial funding. Visit CORS website for details.

CORS Diploma: This diploma is awarded to students graduating from a university curriculum comprising several OR courses. Criteria may be found on the CORS website.

Membership Directory: An online directory of CORS members is available as a membership benefit.

To join CORS: Go to the CORS website and join online by credit card using the form found under membership or complete the PDF application form found on the CORS website and mail it with payment to the address below.

Fees: Member \$110; Retired Member \$55; Student Member \$45 (including post-doctoral fellows)

Website: www.cors.ca

INFOR: www.tandfonline.com/loi/tinf20

LinkedIn: www.linkedin.com/company/canadian-operational-research-society

Twitter: @CORS_President