

Special Session on Benchmarking of Evolutionary Algorithms for Discrete Optimization (BEADO)

2019 IEEE Congress on Evolutionary Computation (CEC'19)

June 10-13, 2019 in Wellington, New Zealand

<http://iao.hfuu.edu.cn/beado19>

The Special Session on Benchmarking of Evolutionary Algorithms for Discrete Optimization (BEADO), a part of the 2019 IEEE Congress on Evolutionary Computation, is cordially inviting the submission of original and unpublished research papers.

Evolutionary Computation (EC) is a huge and expanding field, attracting more and more interests from both academia and industry. It includes a wide and ever-growing variety of optimization algorithms, which, in turn, are applied to an even wider and faster growing range of different problem domains, including discrete optimization. For the discrete domain and application scenarios, we want to pick the best algorithms. Actually, we want to do more, **we want to improve upon the best algorithm**. This **requires a deep understanding** of the problem at hand, the performance of the algorithms we have for that problem, the features that make instances of the problem hard for these algorithms, and the parameter settings for which the algorithms perform the best. Such knowledge can only be obtained empirically, by collecting data from experiments, by analyzing this data statistically, and by mining new information from it. Benchmarking is the engine driving research in the fields of EAs for decades, while its potential has not been fully explored.

The goal of this special session is to solicit original works on the research in benchmarking: Works which contribute to the domain of benchmarking of discrete algorithms from the field of Evolutionary Computation, by adding new theoretical or practical knowledge. Papers which only *apply* benchmarking are not in the scope of the special session.

This special session wants to bring together experts on benchmarking, evolutionary computation algorithms, and discrete optimization. It provides a common forum for them to exchange findings, to explore new paradigms for performance comparison, and to discuss issues such as

- modelling of algorithm behaviors and performance
- visualizations of algorithm behaviors and performance
- statistics for performance comparison (robust statistics, PCA, ANOVA, statistical tests, ROC, ...)
- evaluation of real-world goals such as algorithm robustness, and reliability
- theoretical results for algorithm performance comparison
- comparison of theoretical and empirical results
- new benchmark problems
- the comparison of algorithms in "non-traditional" scenarios such as
 - o multi- or many-objective domains
 - o parallel implementations, e.g., using GGPUs, MPI, CUDA, clusters, or running in clouds
 - o large-scale problems or problems where objective function evaluations are costly
 - o dynamic problems or where the objective functions involve randomized simulations or noise
- comparative surveys with new ideas on
 - o dos and don'ts, i.e., best and worst practices, for algorithm performance comparison
 - o tools for experiment execution, result collection, and algorithm comparison
 - o benchmark sets for certain problem domains and their mutual advantages and weaknesses

Paper Submission Deadline: 7 January 2019 11:59pm US pacific time
Notification of Acceptance: 7 March 2019
Camera-Ready Copy Due: 31 March 2019 11:59pm US pacific time
Author Registration: 31 March 2019 11:59pm US pacific time
Conference Presentation: 10-13 June 2019 (15min presentation + 4min Q&A)

For more information, contact Markus Wagner at markus.wagner@adelaide.edu.au with CC to tweise@hfuu.edu.cn and ales.zamuda@um.si



Instructions for Authors

More information regarding the submission process can be found at the conference website <http://cec2019.org/papers.html#templates>. Papers can be submitted via <https://ieeecs.org/conferences/cec2019/upload.php>.

- When submitting your paper, make sure to select “CEC-74. Special Session on Benchmarking of Evolutionary Algorithms for Discrete Optimization” as main research topic!

Main research topic*:

- To help ensure correct formatting, please use the style files for U.S. Letter as template for your submission. These include LaTeX and Word.
- Please note that the Latex template does not allow for keywords. If you are using the Latex template, do not include keywords in your paper.
- Only papers prepared in PDF format will be accepted.
- Paper Length: Up to 8 pages, including figures, tables and references. At maximum, two additional pages are permitted with over-length page charge of US\$100/page, to be paid during author registration.
- Paper Formatting: double column, single spaced, #10 point Times Roman font.
- Margins: Left, Right, and Bottom: 0.75" (19mm). The top margin must be 0.75" (19 mm), except for the title page where it must be 1" (25 mm).
- No page numbers please. We will insert the page numbers for you.
- Violations of any of the above paper specifications may result in rejection of your paper.

At least one author from each accepted paper must register at the conference, pay the conference fee, and be present at the conference to give an oral presentation. Each oral presentation will have a total of 20 minutes (1 minute preparation time + 15 minutes presentation + 4 minutes Q&A). Each session room will provide an overhead projector and screen for the presenters to use. However, authors must bring their own laptop or to borrow one from another author presenting in the same session. Authors should check that their slides work properly with the audio visual system in the room before the start of the session.

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Chairs and Chair Biographies



Dr. Markus Wagner is a Senior Lecturer at the School of Computer Science, University of Adelaide, Australia. He has done his PhD studies at the Max Planck Institute for Informatics in Saarbrücken, Germany and at the University of Adelaide, Australia. His research topics range from mathematical runtime analysis of heuristic optimization algorithms and theory-guided algorithm design to applications of heuristic methods to renewable energy production, professional team cycling and software engineering. So far, he has been a program committee member 30 times, and he has written over 70 articles with over 70 different co-authors. He has chaired several education-related committees within the IEEE CIS, is Co-Chair of ACALCI 2017 and General Chair of ACALCI 2018.



Prof. Dr. Thomas Weise obtained the MSc in Computer Science in 2005 from the Chemnitz University of Technology and his PhD from the University of Kassel in 2009. He then joined the University of Science and Technology of China (USTC) as PostDoc and subsequently became Associate Professor at the USTC-Birmingham Joint Research Institute in Intelligent Computation and Its Applications (UBRI) at USTC. In 2016, he joined Hefei University as Full Professor to found the Institute of Applied Optimization at the Faculty of Computer Science and Technology. Prof. Weise has more than seven years of experience as a full time researcher in China, having contributed significantly both to fundamental as well as applied research. He has more than 80 scientific publications in international peer reviewed journals and conferences. His book “Global Optimization Algorithms – Theory and Application” has been cited more than 730 times. He has acted as reviewer, editor, or program committee member at 70 different venues.



Aleš Zamuda is an Assistant Professor and Researcher at University of Maribor (UM), Slovenia. He received Ph.D. (2012), M.Sc. (2008), and B.Sc. (2006) degrees in computer science from UM. He is management committee (MC) member for Slovenia at European Cooperation in Science (COST), actions CA15140 (ImAppNIO - Improving Applicability of Nature-Inspired Optimisation by Joining Theory and Practice) and IC1406 (cHiPSet - High-Performance Modelling and Simulation for Big Data Applications). He is IEEE Senior Member, IEEE Slovenia Section Vice Chairman and Young Professionals Chairman, IEEE CIS member, ACM SIGEVO member, ImAppNIO Benchmarks working group vice-chair, and editorial board member (associate editor) for Swarm and Evolutionary Computation (2017 IF=3.818). His areas of computer science applications include ecosystems, evolutionary algorithms, multicriterion optimization, artificial life, and computer animation; currently yielding h-index 18, 41 publications, and 883 citations on Scopus. He won IEEE R8 SPC 2007 award, IEEE CEC 2009 ECiDUE, 2016 Danubius Young Scientist Award, and 1% top reviewer at 2017 and 2018 Publons Peer Review Awards, including reviews for over 40 journals and 85 conferences.



Hosting Event

The 2019 IEEE Congress on Evolutionary Computation (CEC 2019)
Wellington, New Zealand, June 10-13, 2019
<http://cec2019.org/>

The annual IEEE Congress on Evolutionary Computation is one of the leading events in the area of evolutionary computation. It covers all topics in evolutionary computation including, but not limited to the following areas:

- Artificial life
- Agent-based systems
- Artificial immune systems
- Bioinformatics and bioengineering
- Coevolution and collective behavior
- Combinatorial and numerical optimization
- Constraint and uncertainty handling
- Cognitive systems and applications
- Computational finance and economics
- Estimation of distribution algorithms
- Evolvable adaptive hardware and systems
- Evolutionary data mining
- Evolutionary design
- Evolutionary learning systems
- Evolutionary game theory
- Evolutionary multi-objective optimization
- Evolutionary scheduling
- Industrial applications of EC
- Particle Swarm Optimization
- Representation and operators

IEEE CEC 2019 is a world-class conference that brings together researchers and practitioners in the field of evolutionary computation and computational intelligence from around the globe. Technical exchanges within the research community will encompass keynote lectures, regular and special sessions, tutorials, and competitions, as well as poster presentations. In addition, participants will be treated to a series of social functions, receptions, and networking events to establish new connections and foster everlasting friendship among fellow counterparts.

