

SIGEVOLution

newsletter of the ACM Special Interest Group on Genetic and Evolutionary Computation

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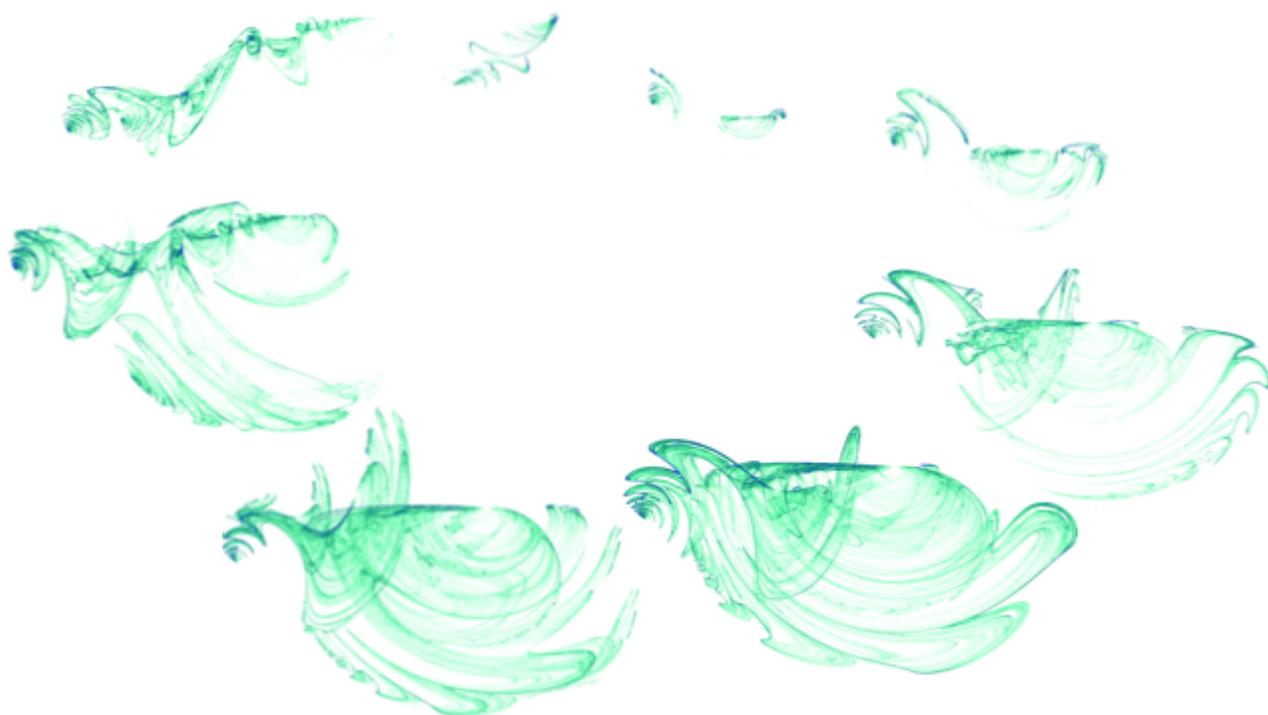
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About the Cover

The artwork on the front cover has been created by Evelyne Lutton with the ArtiE-Fract software, based on an interactive Genetic Programming scheme. ArtiE-Fract evolves a population of fractal pictures encoded as sets of contractive affine and non-affine 2D functions, defined either in Cartesian or polar coordinates. Each individual represents an IFS (Iterated Functions System), whose attractor is a 2D picture, displayed to the user. The ArtiE-Fract interface has been carefully designed and developed to let the artist navigate into a set of unusual fractal pictures (non-linear IFS), and interact in various ways, and at any time, with the evolutionary process.

The cover is a sampling of a circular morphing (a continuous transformation by interpolation of the IFS functions) computed from several evolved images of the series called « the flying peacock » created by Evelyne Lutton for this SigEvo issue.

ArtiE-Fract has been presented in EvoMUSART2003 and later in "Evolution of fractal shapes for artists and designers " IJAIT, International Journal of Artificial Intelligence Tools, 15(4):651-672, 2006. Special Issue on AI in Music and Art.

Further details at: <http://evelyne-lutton.fr/ArtiE-Fract.html>

Editorial

Welcome to the Spring 2020 issue of the SIGEvolution newsletter! Our cover, by Evelyne Lutton, shows evolutionary fractals. We start with an interview with Darrell Whitley who is the very first recipient in our community of the prestigious ACM fellowship "For technical and professional leadership in the field of genetic and evolutionary computation". The 2019 ACM fellows are awarded for "Far-Reaching Accomplishments that Define the Digital Age". We follow with a report on the Scholarships program for visiting PhD students hosted by the SPECIES society. We continue with an overview of Evolutionary Computation conferences taking place electronically this Spring and Summer, due to the COVID-19 pandemic. We do hope that it will be safe for our Fall/Autumn conferences to take place as usual, and thus overview forthcoming call for papers. A questionnaire on real-world optimization problems is also included. As ever, please get in touch if you would like to contribute an article for a future issue or have suggestions for the newsletter.

Gabriela Ochoa, Editor.

An Interview with Darrell Whitley 2019 ACM Fellow

[Professor Darrell Whitley](#) has become one of the [2019 ACM Fellows](#) "Recognized for Far-Reaching Accomplishments that Define the Digital Age".

Members of the SIGEVO executive board sent Darrell a set of questions.

Q: You are first ACM fellow in Evolutionary Computation, but our field has a long history (at least since the early 70s). Why do you think this was the case?

SIGEVO has only been a part of ACM for about 14 or 15 years. So you have to take that into consideration. In some ways, ACM is still just getting to know us. We certainly have pioneers in our community who have done amazing work and deserve recognition.

I have been working with people at ACM for the last 15 years in various capacities. Someone approached me who is already an ACM Fellow and offered to nominate me. From my understanding, ACM gives extra weight to endorsements and nominations from individuals that are already ACM Fellows. ACM also doesn't just count citations. They are looking for seminal contributions.

Q: Which are your most important contributions to the field?

One of the seminal contributions was creating the first Steady State Genetic Algorithm in 1988: the GENITOR algorithm and software package. It was also arguably the first genetic algorithm to exclusively use rank based selection. This was before there was significant interaction between the GA and ES communities. The name "Steady State Genetic Algorithm" came from a lunch meeting with Gil Syswerda and Dave Davis during the first FOGA in 1990. There are now more than 250,000 papers that refer to the Steady State Genetic Algorithm. I also published the first papers in neuroevolution and in genetic reinforcement learning.

ACM is also looking for multiple contributions. I think my recent work, showing that it is possible to use deterministic crossover operators to "tunnel" between local optima on classic NP-Hard problems like the TSP and MAX-SAT, was also important. I continue to believe these new methods will have impact far beyond the Evolutionary Computation community.

Q: Will it be easier now for other members of the EC community to be recognized by ACM?

Yes, I certainly think so. But we should not exclusively focus on ACM Fellows. Our community has not been aggressive about nominating ACM Distinguished Members. I have offered to help SIGEVO with this process.

Q: Do you think the current AI hype is an opportunity or a threat for EC?

It is an opportunity for us to show that we can make significant contributions in machine learning and optimization. But ask yourself why AI is such an important technology right now? AI is important today because it is being used to solve real-world problems. It is not enough to do experiments on benchmarks, or to do theory on toy problems. We have to develop technologies that solve real world problems. I have been fortunate to work on a number of real-world problems, from satellite and warehouse scheduling to problems in geophysics and weather prediction.

Q: How do you view the visibility of the EC community in the larger CS community?

There are a lot of misconceptions about Evolutionary Computation in both the CS community and the AI community. There is the misconception that you only use evolutionary algorithms when everything else fails. There is also a misconception that all Evolutionary Algorithms are just random trial and error. Evolution Computation has also been hurt by the wave of "giraffe optimization" and "flying monkeys" algorithms. I agree with Ken Sörensen: most of this metaphorical nonsense is leading the metaheuristics and EC communities away from scientific rigor. I am not interested in any of these methods. Evolution is different. Evolution produced life. Evolution produced flight, and sensory perception, and the brain. Evolution is amazing.

Q: What advice do you have for the younger generation of researchers in the field?

First, find real-world problems to solve. You might "survive" academically by working on toy problems in some places in the world, but it is unlikely anyone is going to care in the long run. There is some cool work being done on real-world problems, for example in evolutionary robotics or search-based software engineering or evolutionary machine learning.

Second, don't be afraid of the impossible. Just looking back 20 to 30 years, we now have computation methods that people literally thought were impossible in 1990 or 2000. The next generation will continue to make seemingly impossible innovations.

SPECIES Scholarships

[SPECIES](#) - the Society for the Promotion of Evolutionary Computation in Europe and its Surroundings, offers a total of three [scholarships](#) in its areas of interest, for PhD students to work with relevant research groups. These will involve an internship of three months in one of the candidate host institutions, working under the supervision of an advisor. The selected students will receive an allowance of 900 euros per month to cover accommodation and living expenses.

The application process has now ended and the SPECIES society is happy to announce that we have received applications from 15 students and [18 potential host institutions](#). Evaluation has now started and our next issue will report on the fortunate students recipients and host.

Evolutionary Computation Online Conferences

EvoSTAR 2020

This year, EvoStar conferences were held online from the 15th to the 17th of April 2020. EvoStar is the leading european event on bio-Inspired computation, and comprises four co-located conferences: [EuroGP](#), [EvoAPPS](#), [EvoCOP](#), and [EvoMUSART](#).

Registration fees were reduced to cover access to the online conference. An exciting programme of talks was presented ([overview, full](#)), as well as the [keynote talks](#) and the [EvoHackathon](#).

GECCO 2020

GECCO organizing committee has decided that GECCO 2020 will be an electronic-only conference. Dates: July 8th-12th 2020. The Genetic and Evolutionary Computation Conference (GECCO) presents the latest high-quality results in genetic and evolutionary computation since 1999.

[Registration](#) will be open very soon with reduced fees to access the online conference. The program includes [keynotes](#), [tutorials](#), [workshops](#), [competitions](#) and a [job market](#).

Call for Papers

PPSN 2020

The 16th International Conference on Parallel Problem Solving from Nature ([PPSN XVI](#)) will be held in Leiden, The Netherlands, September 5-9, 2020.

Leiden University and the Leiden Institute of Advanced Computer Science (LIACS) are proud to host the 30th anniversary of PPSN.

PPSN was originally designed to bring together researchers and practitioners in the field of Natural Computing, the study of computing approaches which are gleaned from natural models. Today, the conference series has evolved and welcomes works on all types of iterative optimization heuristics. Notably, we also welcome submissions on connections between search heuristics and machine learning or other artificial intelligence approaches.

Important Dates

- Abstract submission - April 15, 2020
- Paper submission - April 22, 2020
- Author notification - May 28, 2020
- Camera ready - June 22, 2020

The 12th International Conference on Swarm Intelligence ([ANTS 2020](#)) will be held in the Barcelona, Spain, October 26-28, 2020.

Swarm intelligence is the discipline that deals with the study of self-organizing processes both in nature and in artificial systems. Researchers in ethology and animal behavior have proposed a number of models to explain interesting aspects of collective behaviors such as movement coordination, shape-formation or decision making. Recently, algorithms and methods inspired by these models have been proposed to solve difficult problems in many domains. ANTS 2020 will give researchers in swarm intelligence the opportunity to meet, to present their latest research, and to discuss current developments and applications.

Important Dates

- Paper submission - May 1, 2020
- Author notification - July 10, 2020
- Camera ready - July 24, 2020

BIOMA 2020

The 9th International Conference on Bioinspired Optimisation Methods and Their Applications ([BIOMA 2020](#)) will be held at the Université Libre de Bruxelles, Belgium, November 17-20 2020.

BIOMA is a key conference specifically focusing on bioinspired optimisation methods and their applications. This international conference provides an opportunity to the global research community in bioinspired optimisation to discuss recent research results and develop new ideas and collaborations in a friendly and relaxed atmosphere. The conference welcomes papers that cover all aspects of bio-inspired optimisation research. Papers addressing real-world applications are especially welcome.

Important Dates

- Paper submission - May 30, 2020
- Author notification - July 15, 2020
- Camera ready - July 31, 2020

Questionnaire on Real-World Optimization Problems

by Tea Tušar, <https://dis.ijs.si/tea/>

In order to align research in Evolutionary Computation more closely to the needs arising from the real world, the questionnaire at: <https://tinyurl.com/opt-survey> collects information on properties of real-world optimization problems. To get a thorough understanding of the wide variety of real-world problems, participation from anyone working on such problems will be very greatly appreciated. Results and analysis of the questionnaire will be made publicly available on the accompanying website: <https://sites.google.com/view/macoda-rwp>. The questionnaire was prepared by the participants of the Lorentz Center workshop on Many Criteria Optimization and Decision Analysis held in September 2019 in Leiden, the Netherlands.

About this Newsletter

SIGEVolution is the newsletter of SIGEVO, the ACM Special Interest Group on Genetic and Evolutionary Computation. To join SIGEVO, please follow this link: [\[WWW\]](#)

We solicit contributions in the following categories:

Art: Are you working with Evolutionary Art? We are always looking for nice evolutionary art for the cover page of the newsletter.

Short surveys and position papers: We invite short surveys and position papers in EC and EC related areas. We are also interested in applications of EC technologies that have solved interesting and important problems.

Software: Are you are a developer of an EC software and you wish to tell us about it? Then, send us a short summary or a short tutorial of your software.

Lost Gems: Did you read an interesting EC paper that, in your opinion, did not receive enough attention or should be rediscovered? Then send us a page about it.

Dissertations: We invite short summaries, around a page, of theses in EC-related areas that have been recently discussed and are available online.

Meetings Reports: Did you participate to an interesting EC-related event? Would you be willing to tell us about it? Then, send us a short summary, around half a page, about the event.

Forthcoming Events: If you have an EC event you wish to announce, this is the place.

News and Announcements: Is there anything you wish to announce, such as an employment vacancy? This is the place.

Letters: If you want to ask or to say something to SIGEVO members, please write us a letter!

Suggestions: If you have a suggestion about how to improve the newsletter, please send us an email. Contributions will be reviewed by members of the newsletter board. We accept contributions in LATEX, MS Word, and plain text.

Enquiries about submissions and contributions can be emailed to editor@sigevolution.org

All the issues of SIGEVolution are also available online at: www.sigevolution.org

Notice to Contributing Authors to SIG Newsletters

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