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Parallel Problem
Solving from
Nature, PPSN
2018

Evolutionary
Computation
Experts Video
Collection
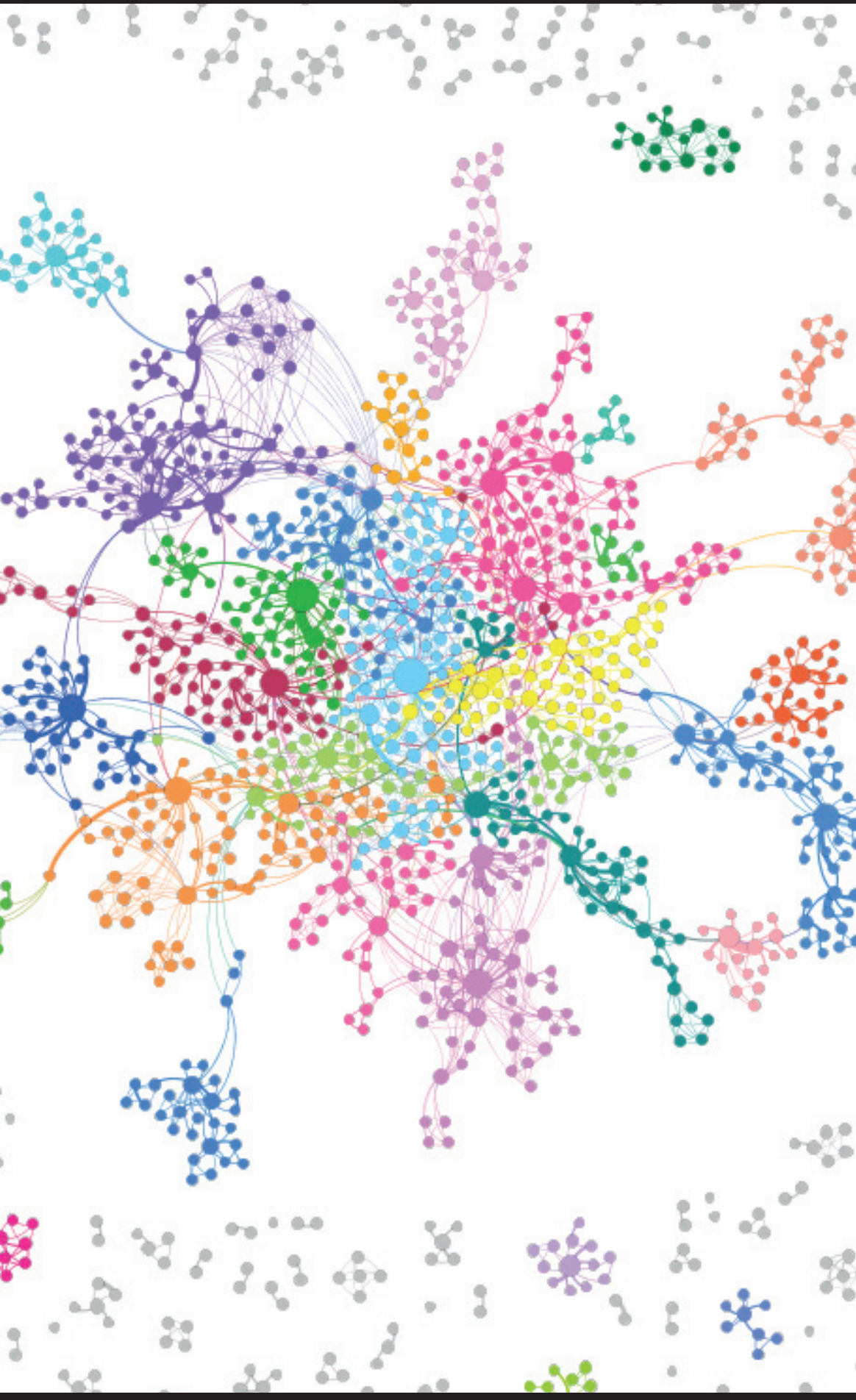
Welcome to the third 2018 newsletter. Our cover illustrates the collaboration network for PPSN (Parallel Problem Solving from Nature), our biannual conference on bio-inspired algorithms. Each node is a PPSN author and there is a link between two authors if they have at least one PPSN joint paper. The network contains data from all PPSN proceedings so far, since the first event in 1990. More details about PPSN this year can be found in the article contributed by the general chair Carlos M. Fonseca and one of the program chairs Darrell Whitley. This issue also reports on a video collection where a number of industry and academics experts on evolutionary computation share their views about the future of AI and the role evolutionary computation can play. The collection is hosted by Risto Miikkulainen, Paul Jarratt, and Andrew Turner from Sentient Technologies. Finally, we overview the major evolutionary computation events taking place in 2019, be ready with your submissions and do not miss the deadlines. As ever, please get in touch if you would like to contribute an article for a future issue or have ideas for the newsletter.

Gabriela Ochoa, Editor

The front cover is a visualization of the co-authorship network of PPSN (Parallel Problem Solving from Nature). Each node is a PPSN author and there is link between two authors if they have at least one joint PPSN paper. We took the data from DBLP (computer science bibliography website) including all PPSN proceedings, since the very first one in 1990, until the most recent this year. When extracting the data, some cleanup was necessary, as people use different forms of writing their names in papers. In the visualization, the edge widths are proportional to their weight, i.e. to the strength of the collaboration (number of co-authored articles, normalized by the number of co-authors); the node sizes are proportional to their centrality (PageRank). Node colors represent communities, according to a community detection algorithm (modularity minimization). Communities in networks are set of nodes that are more closely connected among themselves than across different groups. We do not use any other information, only the connectivity pattern to color the communities. Only the 40 largest communities are colored, with the smallest clusters visualized in gray.

This is joint work between **Gabriela Ochoa**, **Nadarajen Veerapen** and **Fabio Dalio**, from the University of Stirling, Scotland. An interactive version of the network can be found here: http://www.cs.stir.ac.uk/~goc/ppsn-network/

Overview of PPSN 2018

By **Carlos M. Fonseca** and **Darrell Whitley**

The PPSN 2018 Conference (Parallel Problem Solving From Nature) was held from September 8 to 12 in the historic city of Coimbra, Portugal. Coimbra is a UNESCO World Heritage site with many architectural structures dating back to the Roman era. PPSN was held at the University of Coimbra, which was established in 1290. The University and much of Coimbra are located on a hill along the Montego River.
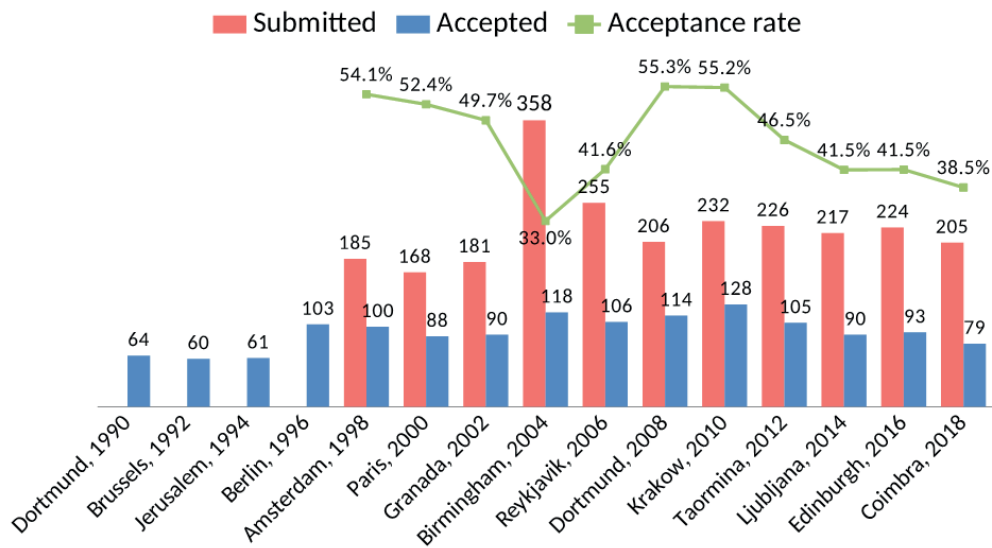
The main conference was held September 10, 11 and 12. For those members of SIGEVO who have not previously attended PPSN, authors present their papers as posters. PPSN typically has three poster sessions per day.   This creates a very interactive experience for both authors and attendees. The poster sessions are kept relative small (e.g., 10 to 15 papers), which means everyone attending the conference could, in principle, talk to every single author and learn about every single paper.

The other significant fact about PPSN is its scope. There is a significant focus on evolutionary computation at PPSN, but it also has a tradition of being more broadly focused on biologically inspired computation, which can also include artificial neural networks and artificial immune systems.

On September 8 and 9, tutorials and workshops were held at PPSN. There were 23 tutorials covering all major aspects of evolutionary computation. There were also six workshops, three of which focused on some aspect of machine learning.

For PPSN 2018, there were 205 submissions. Of these, 79 papers were accepted for publication. Thus, the acceptance rate was 38%. This is illustrated in the following figure, which also shows historic submission numbers and acceptance rates for the PPSN conference (submission numbers are not available before 1998).

Submissions and Acceptances

Legend: ■ Submitted ■ Accepted ■ Acceptance rate

Location	Submitted	Accepted	Acceptance rate
Dortmund, 1990		64	
Brussels, 1992		60	
Jerusalem, 1994		61	
Berlin, 1996		103	
Amsterdam, 1998	185	100	54.1%
Paris, 2000	168	88	52.4%
Granada, 2002	181	90	49.7%
Birmingham, 2004	358	118	33.0%
Reykjavik, 2006	255	106	41.6%
Dortmund, 2008	206	114	55.3%
Krakow, 2010	232	128	55.2%
Taormina, 2012	226	105	46.5%
Ljubljana, 2014	217	90	41.5%
Edinburgh, 2016	224	93	41.5%
Coimbra, 2018	205	79	38.5%

PPSN 2018 hosted three inspiring keynote speakers: **Dr. Kurt Melhorn**, **Dr. Ahmed Elgammal** and **Dr. Francis Heylighen**.

Kurt Mehlhorn is a Director of the MPI for Informatics and Professor of Computer Science at Saarland University. He heads the algorithms and complexity group at the MPI for Informatics. His talked focused on the theoretical investigation of the Physarum dynamics.


Dr. Ahmed Elgammal is a professor at the Department of Computer Science and an Executive Council Faculty at the Center for Cognitive Science at Rutgers University. In his keynote he highlighted some of the advances in the area of Artificial Intelligence and Art. He also discussed how investigating perceptual and cognitive tasks related to human creativity in visual art is essential for advancing the fields of AI and multimedia systems.
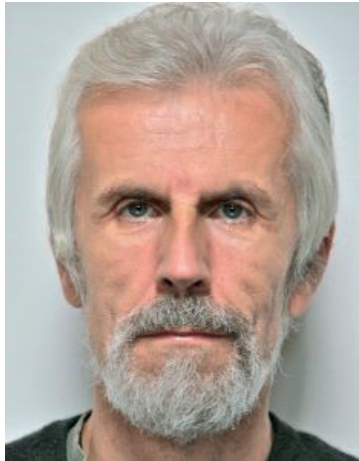
Dr. Francis Heylighen received his PhD in theoretical physics in 1987 from the Free University of Brussels (VUB). He is director of both the Evolution, Complexity and Cognition research group and the Global Brain Institute. His talk reviewed some of the foundational concepts and mechanisms that underlie parallel problem solving in nature. He argued that self-organizing systems and "natural problem solving" are in essence equivalent.

PPSN has always been held in Europe, biennially on even numbered years. The first PPSN was held at Dortmund University in 1990; the 10th PPSN was also held in Dortmund in 2008. This European focus of PPSN is partly reflected in the list of countries represented by the 2018 PPSN authors, who were mainly from the UK, Germany and France. This is shown in the following figure. From North America, Mexico had the highest representation of authors at PPSN. The next countries outside of Europe represented at PPSN were Japan and China.

Participants by Country
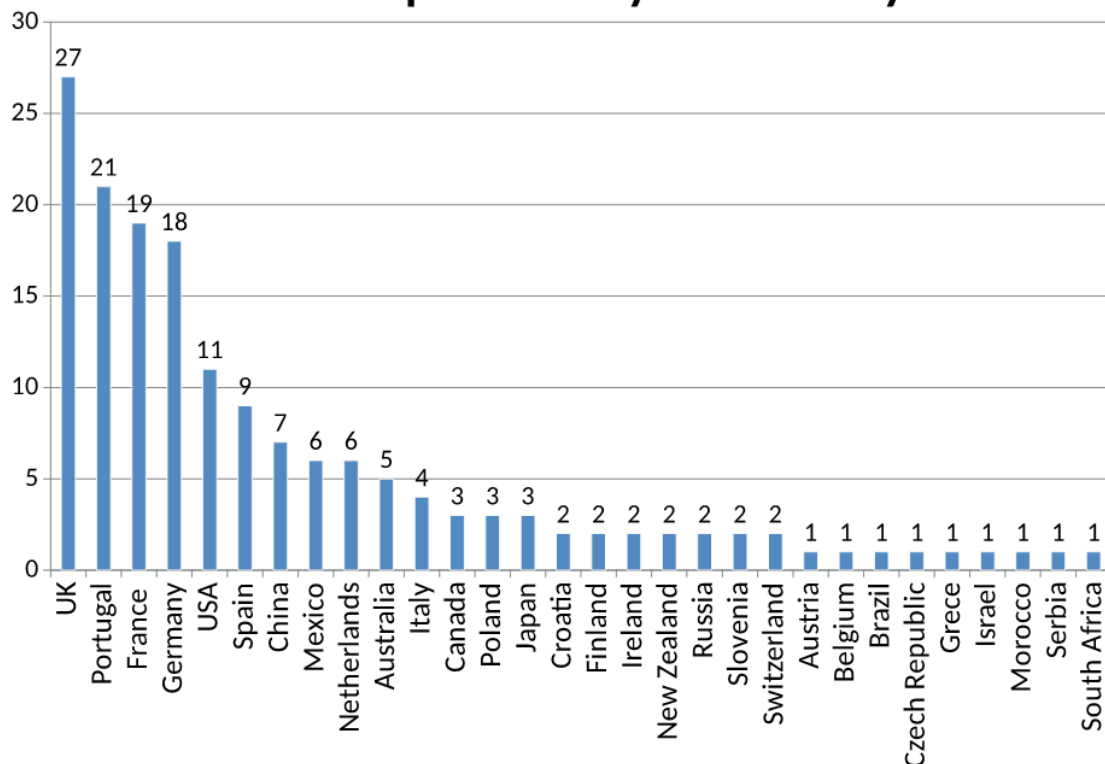
Evolutionary Computation Experts Video Collection

Risto Miikkulainen, **Paul Jarratt**, and **Andrew Turner**
Sentient Technologies

Given recent advances in evolutionary computation technology, available computational power, and opportunities for AI in the real world, we believe evolution is on the verge of a breakthrough, i.e. becoming the next Deep Learning. In order to chart the possibilities as well as challenges, we sat down at Sentient and at GECCO 2018 with a number of EC experts in both academia and industry to share their ideas about where AI is heading, and the role evolutionary computation can play in its future. The result is a collection of video interviews; they are organized around a number of specific questions so that you can explore those of interest to you. You can check out the collection at https://www.sentient.ai/labs/experts. We plan to add more experts to this page in the future, so let us know if you'd like to contribute your point of view to this collection!

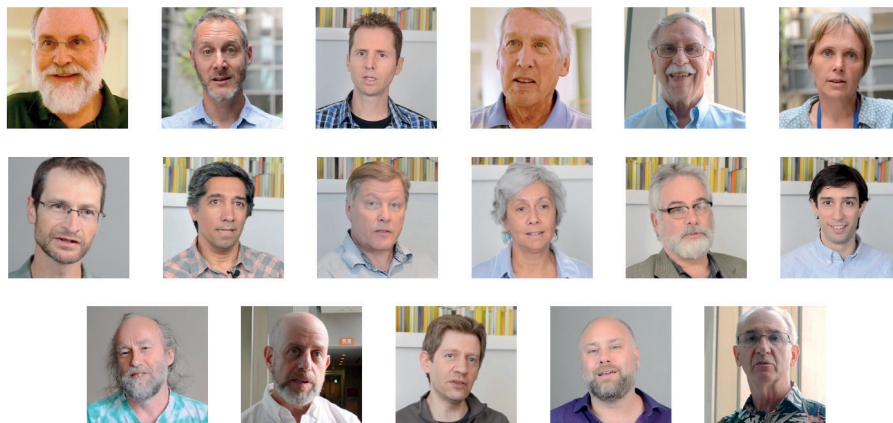Fig 1. Screenshot of Sentient Technologies website

Evostar 2019

The Leading European Event on Bio-Inspired Computation. Leipzig, Germany.
24-26 April 2019.

http://www.evostar.org/2019/

Important Dates
- Submission Deadline: November 1st 2018
- Notification: January 7th 2019
- Conference: 24-26 April 2019

Organizers

EuroGP programme chairs:
- **Lukas Sekanina**, Brno University of Technology, Czech Republic
- **Ting Hu**, Memorial University, Canada

EvoApps coordinator
- **Paul Kaufmann**, Mainz University, Germany

EvoCOP Programme Chairs
- **Arnaud Liefooghe**, University of Lille, France
- **Luís Paquete**, University of Coimbra, Portugal

EvoMUSART Conference chairs
- **Anikó Ekart**, Aston University, UK
- **Antonios Liapis**, Institute of Digital Games, University of Malta

CEC 2019

The IEEE Congress on Evolutionary Computation. Wellington, New Zealand.
10-13 June 2019

http://cec2019.org/

The annual IEEE Congress on Evolutionary Computation (IEEE CEC) covers all topics in evolutionary computation from theory to real-world applications. CEC is organized by the IEEE Computational Intelligence Society in cooperation with the Evolutionary Programming Society.

Important Dates
- Paper submission: 7 January, 2019
- Decision notification: 7 March, 2019
- Camera ready paper due: 31 March, 2019
- Registration: 31 March, 2019
- Conference: 10 June, 2019
- Note: all deadlines are 11:59pm US pacific time

Organizers
- **Mengjie Zhang**, University of Wellington, New Zeland (General Co-Chair)
- **Kay Chen Tan** City University of Hong Kong, Hong Kong (General Co-Chair)
- **Carlos A. Coello Coello,**CINVESTAV-IPN, Mexico (Program Co-Chair)

GECCO 2019

The Genetic and Evolutionary Computation Conference. Prague, Czech Republic. 13-17 July 2019.

https://gecco-2019.sigevo.org/

The Genetic and Evolutionary Computation Conference (GECCO) presents the latest high-quality results in genetic and evolutionary computation since 1999. Topics include: genetic algorithms, genetic programming, ant colony optimization and swarm intelligence, complex systems (artificial life/robotics/evolvable hardware/generative and developmental systems/artificial immune systems), digital entertainment technologies and arts, evolutionary combinatorial optimization and metaheuristics, evolutionary machine learning, evolutionary multiobjective optimization, evolutionary numerical optimization, real world applications, search-based software engineering, theory and more.

Important Dates
- Abstract Deadline: January 30, 2019
- Submission of Full Papers: February 6, 2019
- Submission of Poster-only papers: February 6, 2019
- Notification: March 20, 2019
- Conference: July 13-17, 2019

Organizers
- **Thomas Stützle**, Université Libre de Bruxelles, Belgium (General Chair)
- **Anne Auger, Inria Saclay** - Île-de-France (General Chair)
- **Manuel López-Ibáñez**, University of Manchester, UK (Editor-in-Chief)
- **Petr Pošík**, Czech Technical University, Czech Republic (Local Chair)

FOGA XV

The 15th ACM/SIGEVO Workshop on Foundations of Genetic Algorithms. Potsdam, Germany. 26-29 August 2019.

http://www.hpi.de/foga2019

The FOGA workshop series aims at advancing our understanding of the working principles behind evolutionary algorithms and related randomized search heuristics, such as local search algorithms, differential evolution, ant colony optimization, particle swarm optimization, artificial immune systems, simulated annealing, and other Monte Carlo methods for search and optimization. Connections to related areas, such as Bayesian optimization and direct search, are of interest as well. FOGA is the premier event to discuss advances on the theoretical foundations of these algorithms, tools needed to analyze them, and different aspects of comparing algorithms' performance.

Important Dates (all dates AoE)
- Deadline for paper submission: April 17, 2019 (non-extensible)
- Author rebuttal phase: May 21-23, 2019 Notification of authors: June 5, 2019
- Conference: 26-29 August 2019

Organizers
- **Tobias Friedrich**, Hasso Plattner Institute, Potsdam, Germany (General Chair)
- **Carola Doerr**, CNRS and Sorbonne University, Paris, France (Program co-Chair)
- **Dirk Arnold**, Dalhousie University, Halifax, Nova Scotia, Canada (Program co-Chair)

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]

Contributing to SIGEVOlution

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

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