Editorial introduction

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Published online: 25 January 2016
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As *Genetic Programming and Evolvable Machines* enters its 17th year of publication, both the journal and the field that it covers are thriving.

The number of journals focusing on evolutionary computation has roughly tripled since this journal began publishing, in 2000, with most of the growth occurring in the past few years. As the first journal in the field to focus on the evolution of “active components,” *Genetic Programming and Evolvable Machines* has continued to attract the best and most exciting work on the production of software and hardware with methods inspired by the biological processes of random variation and natural selection. Over this same period the significance of genetic programming has also grown, or at least become more evident, within the larger field of evolutionary computation. For example, when my colleagues and I recently examined the winners of the first 10 years (2004–2013) of the “Humies” awards (for “Human-Competitive Results Produced by Genetic and Evolutionary Computation”), we found that more than half of the prizes were awarded to results of genetic programming [1].

In Volume 16 of the journal we published 16 original research articles that spanned theory and practice, presenting both technological innovations and analyses of established technologies. We also published two letters that introduced new open source software for genetic programming, three book reviews, and one software review. Over the course of the last year we also adopted a new policy regarding book and resource reviews; henceforth we will post them on the journal’s website in a way that provides everyone with free access.

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We begin Volume 17 with a special issue on *Semantic Methods in Genetic Programming*. This theme reflects an intriguing new development in the field, in which programs are varied and recombined not in “blindly” random ways, but rather in ways that are sensitive to the behaviors (semantics) of the program fragments that are manipulated. As Michael O’Neill notes in his introduction to the special issue, the jury is still out on whether and how semantic methods will ultimately advance the state of the art in genetic programming. It is clear, however, that work in this area raises interesting questions, many of which may have significant implications.

In this issue we are also publishing two book reviews, Juergen Leitner’s review of Malachy Eaton’s book on *Evolutionary Humanoid Robotics*, and Man Leung Wong’s review of *Latest Advances in Inductive Logic Programming*, which was edited by Stephen H. Muggleton and Hiroaki Watanabe.

Later in Volume 17 you can expect to see a special issue on *Genetic Improvement*, which is, in the words of guest editor Justyna Petke’s call for papers, “the application of evolutionary and search-based optimisation methods to the improvement of existing software.” The response to this call for papers was robust, which is not surprising considering the increasing interest in search-based software engineering both in the evolutionary computation community and in mainstream software engineering. Work of this general sort, which connects the themes of *Genetic Programming and Evolvable Machines* to those of a distinct area, whether within computer science or in another area of science or engineering, is currently of particular interest to the editorial board; researchers conducting work of this kind should consider submitting it to the journal, and readers can look forward to seeing more interdisciplinary work in the journal in the coming months and years.

As always, I hope that you enjoy this new volume of *Genetic Programming and Evolvable Machines*, and I invite you to contact me with questions and ideas.

Acknowledgments This material is based upon work supported by the National Science Foundation under Grant Nos. 1129139 and 1331283. Any opinions, findings, and conclusions or recommendations expressed in this publication are those of the authors and do not necessarily reflect the views of the National Science Foundation.

Reference

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