Int. Journ. of Unconventional Computing, Vol. 12, pp. 467–469
Reprints available directly from the publisher
Photocopying permitted by license only

Meet the Editors

JULIAN. F. MILLER

Julian. F. Miller, has a BSc in Physics (Lond), a PhD in Nonlinear Mathematics (City) and a PGCLTHE (Bham) in Teaching. He is currently an Honorary Fellow (formerly Reader) in the Department of Electronics at the University of York.

Originally trained as a theoretical physicist, in 1980 he obtained a BSc degree in Physics at Birkbeck College at the University of London. Shortly after he became interested in the particle-like properties of nonlinear wave phenomena called solitons and obtained a PhD on soliton interaction from the City University in 1988. He became a research programmer in the Electronic Engineering Department at Napier University in 1989. While at Napier University, he became interested in evolutionary algorithms. He worked for the network of excellence in Evolutionary Computation (EvoNet) from 1996 to 1998. His obtained his first academic position in 1998 in the Department of

Computing at Napier University. In 1999 he obtained a lectureship in the Department of Computer Science at the University of Birmingham, and remained there for four years. While there he obtained a postgraduate degree in university teaching. He joined the Department of Electronics at the University of York in 2003.

He has chaired or co-chaired sixteen international workshops, conferences and conference tracks in Genetic Programming (GP), Evolvable Hardware. He is a former associate editor of IEEE Transactions on Evolutionary Computation and an associate editor of the Journal of Genetic Programming and Evolvable Machines and Natural Computing. He is on the editorial board of the journals: Evolutionary Computation, International Journal of Unconventional Computing and Journal of Natural Computing Research. He has publications in genetic programming, evolutionary computation, quantum computing, artificial life, evolvable hardware, computational development, and nonlinear mathematics.

He is a highly cited author with over 6,000 citations and over 220 refereed publications in related areas. He has authored or co-authored 40 journal publications. He has given twelve tutorials on genetic programming and evolvable hardware at leading conferences in evolutionary computation. He received the prestigious EvoStar award in 2011 for outstanding contribution to the field of evolutionary computation. He is the inventor of a highly cited method of genetic programming known as Cartesian Genetic Programming and edited the first book on the subject in 2011.

Cartesian Genetic Programming is one of the leading techniques in the evolution of computer programs and other computational structures. It encodes computational structures in the form of directed graphs. It can be used to encode a wide variety of computational structures from electronic circuits, artificial neural networks, mathematical equations, algorithms, and works of art and music. It has been used by many researchers around the world.

He proposed "evolution-in-materio" which asserts that computational functions could be evolved directly in materials by evolving configurations of applied physical variables without requiring a detailed understanding of the materials. With Simon Harding he demonstrated that such a thing was possible by showing that configurations of liquid crystal can be evolved to solve a number of computational problems. Evolution-in-materio has recently been an underlying idea in a European funded research project called NASCENCE (Nanoscale Engineering of Novel Computation using Evolution). In this project it was shown for the first time that disordered assemblies of gold nanoparticles can be configured using genetic algorithms to produce digital logic gates. It was also shown that configurations of disordered carbon nanotubes and various polymers on electrode arrays can be evolved to solve a variety of well-known computational problems such as TSP, machine learning, bin-packing, function optimization and digital logic functions.

REPRESENTATIVE PUBLICATIONS

[1] Miller, J. F., Harding, S. L., Tufte, G. Evolution-in-materio: evolving computation in materials, Evolutionary Intelligence, Vol. 7 (2014) pp. 49–67
[2] Miller, J. F. (Ed.) Cartesian Genetic Programming, Springer, 2011
[3] Younes A., Rowe J. E., Miller J. F. Enhanced quantum searching via entanglement and partial diffusion. Physica D 237 (2008) 1074–1078
[4] Harding S. L., Miller, J. F., Rietman E. Evolution in Materio: Exploiting the Physics of Materials for Computation. Journal of Unconventional Computing. 4, (2008) pp. 155–194.
[5] Miller J.F., Job D., Vassilev V.K. Principles in the Evolutionary Design of Digital Circuits - Part I. Genetic Programming and Evolvable Machines, 1 (2000) 8–35
[6] Miller J.F., Thomson P. A Highly Efficient Exhaustive Search Algorithm for Optimising Canonical Reed-Muller Expansions of Boolean Functions. *International Journal of Electronics* **76** (1994) 37–56.
[7] Bryan A.C. Miller J.F. Stuart A.E.G. A Linear Superposition Formula for the Sine-Gordon Multisoliton Solutions. Journal of the Physical Society (JPN), 56 (1987) 905–911.