IEEE Canada

IEEE Distinguished Lecture

Differential Evolution with Ensemble and Topologies for Numerical Optimization

Speaker: Ponnuthurai Suganthan, FIEEE
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Date: Tuesday, November 19, 2016

Time: 11:00 a.m.

Place: University of Waterloo, EIT 3142 ** Refreshments will be provided*

Abstract: Differential Evolution (DE) is one of the most powerful stochastic real-parameter optimization algorithms of current interest. DE operates through similar computational steps as employed by a standard Evolutionary Algorithm (EA). However, unlike traditional EAs, the DE-variants perturb the current-generation population members with the scaled differences of distinct population members. Therefore, no separate probability distribution has to be used for generating the offspring. Since its inception in 1995, DE has drawn the attention of many researchers all over the world resulting in a lot of variants of the basic algorithm with improved performance. This talk will begin with a brief overview of numerical optimization, the basic concepts related to DE, its algorithmic components and control parameters. It will subsequently discuss some of the significant algorithmic variants of DE for bound constrained single-objective optimization. The talk will discuss the effects of incorporating ensemble learning in DE and neighbourhood topologies based DE and adaptive DEs to improve the performance of DE.

Biography: Ponnuthurai Suganthan received the B.A degree and M.A degree in Electrical and Information Engineering from the University of Cambridge, UK in 1990 and 1994, respectively and the PhD degree from Nanyang Technological University in Singapore, where he has been on its faculty of engineering since 1999. He is a founding co-editor-in-chief of Swarm and Evolutionary Computation (2010 -) and an associate editor of Applied Soft Computing (Elsevier, 2018-), Neurocomputing (Elsevier, 2018-), IEEE Trans on Evolutionary Computation (2005 -), Information Sciences (Elsevier, 2009 -), Pattern Recognition (Elsevier, 2001 -) and Int. J. of Swarm Intelligence Research (2009 -) Journals. He was an Editorial Board Member of the Evolutionary Computation Journal, MIT Press (2013-2018) and an associate editor of the IEEE Trans on Cybernetics (2012 - 2018). He won the "IEEE Trans. on Evolutionary Computation outstanding paper award" in 2012. His research interests include swarm and evolutionary algorithms, pattern recognition, forecasting, randomized neural networks, deep learning and applications of swarm, evolutionary & machine learning algorithms. He served as the General Chair of the IEEE SSCI 2013. He is an IEEE Computational Intelligence Society distinguished lecturer (DLP) and is a Fellow of the IEEE.

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