

## Evolutionary Multi-objective and Many-Objective Optimization and Performance Evaluation

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**VENUE** G7315, 7th Floor, Green Zone  
Yeung Kin Man Academic Building  
City University of Hong Kong  
83 Tat Chee Avenue  
Kowloon Tong

### ABSTRACT

This talk starts with brief introduction to evolutionary computation and evolutionary multi-objective optimization. Then we will discuss difficulties in several aspects related to evolutionary many-objective optimization such as the search for Pareto optimal solutions, the approximation of the Pareto front, the visualization of obtained non-dominated solutions, and the selection of a single final solution. We will also discuss some future research directions in evolutionary many-objective optimization. After that, we discuss fair performance comparison of evolutionary multi-objective optimization algorithms. It is clearly demonstrated that hypervolume-based performance comparison results strongly depend on the choice of a reference point. Only when the shape of the Pareto front is triangular, the effect of the reference point specification is limited. Finally, we discuss how to specify a reference point for fair performance comparison. This discussion is related to the reference point specification in hypervolume-based algorithms.

### BIOGRAPHY

Prof Hisao Ishibuchi received the BS and MS degrees from Kyoto University in 1985 and 1987, respectively. In 1992, he received the Ph. D. degree from Osaka Prefecture University where he has been a professor since 1999. From April 2017, he is with the Department of Computer Science and Engineering, SUSTech, China. He received a Best Paper Award from GECCO 2004, HIS-NCEI 2006, FUZZ-IEEE 2009, WAC 2010, SCIS & ISIS 2010, FUZZ-IEEE 2011, ACIIDS 2015 and GECCO 2017. He also received a 2007 JSPS Prize. He was the IEEE CIS Vice-President for Technical Activities (2010-2013), the General Chair of ICMLA 2011, the Program Chair of IEEE CEC 2010 and IES 2014, and a Program/Technical Co-Chair of FUZZ-IEEE 2006, 2011-2013, 2015 and IEEE CEC 2013-2014, 2018-2020. Currently, he is the President of the Japan EC Society (2016-2018), the Editor-in-Chief of IEEE CI Magazine (2014-2019) and Journal of Japan EC Society (2014-2018), an IEEE CIS AdCom member (2014-2019), an IEEE CIS Distinguished Lecturer (2015-2017). He is also an Associate Editor of IEEE TEVC (2007-2017), IEEE Access (2013-2017) and IEEE TCyb (2013-2017). He is an IEEE Fellow. According to Google Scholar, the total number of citations of his publications is about 20,000 and his h-index is about 60.

**All are welcome!**



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