

Quantitative Methods for Design of Benchmark Suites

Jozo Dujmović
Department of Computer Science
San Francisco State University

ABSTRACT

The goal of this seminar is to present quantitative methodology that is necessary for the design and evaluation of benchmark suites. The methodology is based on several non-Euclidean metrics of difference (distance) between benchmark programs. Both white-box and black-box metrics will be presented and exemplified. Such metrics are suitable for developing the concept of program space, i.e. a space where each point is a (benchmark) program. We will present the properties of such space, introduce a sequence of performance indicators, and demonstrate methods that are appropriate for quantitative analysis and justifiable design of cost-effective benchmark suites, and processing of benchmarking results.

The intended audience of this seminar includes all performance engineers and researchers who are involved in benchmarking, either as designers or as users of benchmark suites. The seminar will be presented at an intermediate level that combines some well known practical benchmark suites (SPEC) and abstract concepts based on moderately complex software metrics models. The presentation should be accessible to all participants who are interested in benchmarking.

SPEAKER



Jozo Dujmović was born in Dubrovnik, Croatia, and received the Dipl. Ing. degree in electronic and telecommunication engineering in 1964, and the M.Sc. and Sc.D. degrees in computer engineering, in 1973 and 1976 respectively, all from the University of Belgrade, Serbia.

Since 1994 he has been Professor of Computer Science at San Francisco State University, where he served as Chair of Computer Science Department from 1998 to 2002.

His teaching and research activities are in the areas of soft computing, software metrics and computer performance evaluation. He is the author of more than 140 refereed publications, including 13 books and book chapters. Before his current position at San Francisco State University, he was Professor of Computer Science at the University of Belgrade, University of Florida (Gainesville), University of Texas (Dallas), and Worcester Polytechnic Institute. In addition, he was teaching in the graduate Computer Science programs at the National Universities of San Luis and Jujuy (both in Argentina). At the University of Belgrade, where he was teaching from 1968 to 1992, he also served as Chairman of Computer Science Department, and as founding Director of the Belgrade University Computing Center.

His industrial experience includes work in the Institute “M. Pupin” in Belgrade, and consulting in the areas of decision methods, performance evaluation, and software design. In 1997 in San Francisco he founded SEAS, a company specializing in system evaluation and selection, performance evaluation, and soft computing decision models. He currently serves as Principal of SEAS.

Prof. Dujmović is the recipient of three best paper awards, and a Senior Member of IEEE. He is an editor of Informatica, and served as General Chair of the Eight IEEE International Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems (MASCOTS 2000), and as General Chair of the Fourth ACM International Workshop on Software and Performance (WOSP 2004).