MISSOURI S&T
University of Science & Technology

Seminar Series
Computer Science

Constraint Satisfaction Problems: CSP Formalisms and Techniques

Dr. Khaled Ghedira
Nov 1st Thursday, 12:30 to 1:30pm
209 Comp. Sci. Bldg.

Abstract - This talk is a summary of the book being edited by Wiley. The concept of 'constraint' is very old. It was used in many domains to represent various problems: from school examples such as the n-queens problem to industrial applications such as scheduling problems.

The objective of this talk is to introduce how to express such problems as a set of constraints involving a set of variables, each one of them having its own domain of values. For this, we propose to present a simple and generic formalism, the Constraint Satisfaction Problem (CSP). As this formalism is not sufficient to represent all kinds of these problems, different extensions will be detailed such as maximal CSP, Distributed CSP, Dynamic CSP, Constraint Satisfaction and Optimization Problem (CSOP).

The objective of our talk is also to introduce how to solve such problems by using two families of methods: backtrack based algorithms such as Forward checking and metaheuristics such as tabu search and evolutionary algorithms .

This talk will be illustrated by some relevant examples and applications.

Brief Bio - Khaled Ghédira has received the bachelor degree in mathematics (FS-Tunisia); the Engineer degree in hydraulic (ENSEEIHT-France); the specialized Engineer degree in computer science and applied mathematics (ENSIMAG-France), both the Master and the Ph.D. degrees in Artificial Intelligence (ENSAE-France) and finally the Habilitation degree in computer science (ENSI-Tunisia).

He was Research Fellow at IIIA (Switzerland 1992-96), expert consultant at BT (England 1995), the head of ENSI (2002-08) and from April 2011, and the general managing director of the Tunis Science City.

He is also Professor at ISG (University of Tunis), the founding president of the Tunisian Association of Artificial Intelligence (ATIA-Tunisia) and the founding director of the research laboratory SOIE (Tunisia). He is member of several international scientific networks/program committees and is often invited as keynote speaker/ visiting professor at national and international.

He was also member of the think national committee for higher education (training of trainers, LMD) and member/president of several committees: evaluation of higher education institutions, research projects reviewing, teachers recruiting...

His research areas include MAS, CSP, transport and production logistics, meta-heuristics and security in M/E-government. He has led several national and international research projects.

He has supervised twenty PhD thesis and more than 50 master thesis. He has co/authored about 300 journal/conference/book research papers. He has written two text books on metaheuristics and production logistics and co-authored three others.