Center of Excellence in Intelligent Engineering Systems

SEMINAR

CENTER OF EXCELLENCE IN INTELLIGENT ENGINEERING SYSTEMS

Speaker: Prof. Maamar Bettayeb

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Distinguished Adjunct Professor, King Abdulaziz University

Professor Maamar Bettayeb received the B.S., M.S., and Ph.D. degrees in Electrical Engineering from University of Southern California, in 1976, 1978 and 1981, respectively. He worked as a Research Scientist at the Bellaire Research Centre at Shell Oil Development Company, Houston, Texas, during 1981/1982. From 1982 to 1988, He directed the Instrumentation and Control Laboratory of High Commission for Research in Algeria. In 1988, He joined the Electrical Engineering Department at King Fahd University of Petroleum and Minerals, Dhahran, until 2000. He has been Professor at University of Sharjah, UAE since August 2000. He is also currently Distinguished Adjunct Professor at King Abdulaziz University. He has published over 300 journal and conference papers in the fields of control and signal processing, with applications to power systems, communications, process control, nuclear, chemical and mechanical systems, ultrasonic defect identification and image processing. He has also supervised over 50 M. Sc. and Ph. D. students. He has been involved in national and international accreditations and developed several strategic plans for research and graduate studies. His research interest is in H∞ optimal control, model reduction, signal and image processing, networked control systems, fractional dynamic modelling and control, soft computing, wavelets, renewable energies and engineering education.

Date: **Tuesday, April 01, 2014**
Time: **11:00 AM**
Venue: **Building 42A, Third floor, Room 333**

Title

Singular Value Decomposition
Part 1: Overview and Properties

Abstract

Singular Value Decomposition (SVD) has broad applications in Science and Engineering, including Mathematics, Physics, Chemistry, Geophysics, Astrophysics, Econometrics, Communications, Control, Cryptography, Biomedical, etc…

Successful SVD solutions have been reported to problems in Model Reduction, Detection, Classification, Data Compression, Spectral Estimation, Image and Signal Processing, etc… SVD can be used to estimate harmonic signals embedded in noise, detect and identify periodicities, extract signal from noisy measurement, identify time series models, determine the effective rank of matrices, solve related least squares problems, identify the order of dynamic systems, etc

The strength of the SVD is in its robustness to experimental noisy data and its ability to resolve ill-conditioned problems which frequently occur in real life applications.

An overview of this powerful numerical tool and its properties is exposed in Part 1. Some successful applications in Control, Signal and Image Processing are presented in Part 2.

ALL ARE CORDIALLY INVITED