I-FE04

Intelligent Systems 3

15:20-17:20   **Chair : Lai Edmund (Nanyang Technological Univ.)**
Room : C203   **Co-Chair : Park Chan Gook (Kwangwoon Univ.)**

15:20 – 15:40   I-FE04-1

Visualization of American Options Using the Roll-Geske-Whaley Model

Chew Shu Ling Belinda, Chen Wanhui Sherlyn, Tan Toh Fei,
Edmond C. Prakash, Edmund M-K. Lai
(Nanyang Technological Univ.)

American options no doubt is invariably more popular than European options, due to the fact that it gives the owner the option to exercise a contract before and up to the expiration date, unlike an European option, which only allows the owner to exercise a contract on the date of expiration. Owing to its popularity, many methods like the binomial numerical method and the pseudo American method have been devised for computing of the value of the American options. The aim of this research is to develop an effective 3-dimensional visualization for American option portfolio based on the Geske- Roll-Whaley model. It is obvious that it is extremely tedious and unadvisable for researchers to interprte chunks of data by looking at graphs or pie charts, which are simple but not effective for analyzing important data. Hence, the generation of the Geske- Roll-Whaley ...

15:40 – 16:00   I-FE04-2

Solution of Fuzzy Relation Equations Using Duality of Operators

Yoshitaka Matsuda, Rumiko Azuma, Junya Uema, Hayao Miyagi,
Dongshik Kang (University of the Ryukyus)

The two typical composite operations of fuzzy relation are the max-min and the min-max composite operations. It is known that the two operations can be completely dual. This paper pays attention to the nature that these two typical operations are completely dual and investigates the correlation between the max-min composite relation equation and the min-max composite relation equation. An important scheme of correlation is in the characteristic of solution sets derived from these two fuzzy relation equations. The paper explains that one of the composite fuzzy relation equations is solvable using the solution method of the other fuzzy relation equation. The above-mentioned duality plays an important role in this solution procedure. Since it is not necessary to build the solution method separately like before,calculation efficiency can be raised. Moreover, the solution for the relation ...

16:00 – 16:20   I-FE04-3

The Development of a Splatting Algorithm for Financial Visualization on Networked and Wireless Applications

Bhashyakarla Deepthi, Ou Kui, Khoo Shih Jia, Xiong Fei, Edmond
C. Prakash and Edmund M-K. Lai (Nanyang Technological Univ.)

Financial institutions survive on the ability to collect and react to data. Today's financial community is bombarded by massive amounts of information from real time data-feeds, risk management systems, and other intelligent sources. The large quantities of numerical data are virtually impossible to understand quickly. Humans have the ability to understand pictures instantaneously. Thus, by converting data into pictures, and using colour, size, shape, and pattern to define relationships, individuals can rapidly process complex information.

16:20 – 16:40   I-FE04-4

Air-Borne Selection in Micro-Genetic Algorithms for Combinatorial Optimisation

Yunyoung Kim, Masahiro Toyosada, Koji Gotoh(Kyushu Univ.),
Jewoong Park(Chosun Univ.)

The current research field to find near-optimum solution(s) explores in a small population, which is coined as Micro - Genetic Algorithms (μGAs), with some genetic operators . Just as in the Simple-Genetic Algorithms (SGAs), the μGAs work with encoding population and are implemented serially. The major difference between SGAs and μGAs is how to make reproductive plan for more better searching strategy due to the population choice. This paper is conducted to implement μGAs in order to achieve fast searching for more better evolution and associated cost evaluation in global solution space. To achieve this implementation, the Air-Borne Selection (ABS) for a new reproductiv e plan is developed as a new strategic conception for μGAs. In this paper, it is shown that the μGAs implementation reaches a near-optimal region much earlier than the SGAs implementation. The superior...

16:40 – 17:00   I-FE04-5

Automatic Selection of EEG Segments From Long-term Records for Integrative Interpretation of Awake EEG

Masatoshi Nakamura, Takenao Sugi(Saga Univ.),
Akio Ikeda, Hiroshi Shibasaki(Kyoto Univ.)

A method for automatically selecting the electroencephalogram(EEG) segments was developed by grading each segment based on organization of EEG, vigilance level, open versus closed eyes condition and the artifact contamination.

17:00 – 17:20   I-FE04-6

Chaotic Response of a Nonlinear Vehicle Model and Elimination of the Chaos

Qin Zhu, Mitsuaki Ishitobi, Katsuya Ishimaru
(Kumamoto Univ.)

In this paper, a four-degree-of-freedom non-linear model is developed to study the dynamic response of vehicle that is caused by the disturbance from the road. The chaotic vibration of the model is investigated with numerical simulation. The model displays complicated dynamic responses including harmonic motions and chaos. It is found that changing of the damping coefficients of the system can eliminate the chaotic response.