SA11

Bio-Systems

Time : 09:00 - 11:00
Room : 210 A

Chairs : Dr. Inhyuk Mun(KOREC, Korea)
Prof. Kwang-Baek Kim(Silla Univ., Korea)


09:00 ~ 09:20   SA11-1

Development of Surface Myoelectric Sensor for Myoelectric Hand Prosthesis.

Gi Won Choi, In Hyuk Moon, So Young Sung, Myoung Joon Lee, Jun Uk Chu, Mu Sung Mun(KOREC, Korea)

For elderly people, an advanced training machine that uses actuator and can adjust load according to muscle activity is proposed. The proposed machine allows users to have a safe and effective training through exercise close to ordinal motion appears in daily life such as stretching or stooping motion. A muscle activity sensor real-timely monitors the activation level of user's muscle during the exercise and the training load is adjusted based on the measured data. The training load is exerted and continuously controlled by electric/pneumatic actuator.
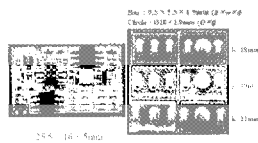
09:20 ~ 09:40   SA11-2

Development of Intelligent Powered Gait Orthosis for Paraplegic

Sungjae Kang, Jae Chung Ryu, KyuSuk Kim, InHyuk Mun, Musung Mun(KOREC, Korea)

● Development of a novel powered gait orthosis(PGO) attached to artificial muscles using pneumatic actuator in hip joint.
● Driving system consists of the orthosis, sensor, control system
● Analysis three dimensional gait motion and foot pressure distribution.
● PGO controlled by fuzzy algorithm for hip flexion and evaluated in two SCI patients


09:40 ~ 10:00   SA11-3

A Novel Air-cell Mattress Based on Approximate Anthropometric Model for Preventing Pressure Ulcer

Inhyuk Moon, Sung-Jae Kang, Gyu-Seok Kim, Mu-Seong Mun(KOREC, Korea)

● This paper propose a novel air-cell mattress for preventing pressure ulcer often developed to the disabled and the elderly persons.
● The air-cell mattress has eighteen cylindrical air cells made of porous material allowing air leakage to contribute in reducing the contacted body pressure.
● The optimal air-cell pressure appropriate for each user is determined by an approximate anthropometric model.
● The experimental results with seven subjects show the proposed air-cell mattress is effective for the ...
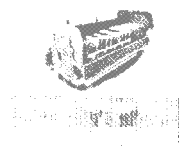
10:00 ~ 10:20   SA11-4

Multimodal Optimization Based on Global and Local Mutation Operators

Yong-Gun Jo, Hong-Gi Lee, Kwee-Bo Sim, Hoon Kang(Chung-Ang Univ., Korea)

Abstract: Multimodal optimization is one of the most interesting topics in evolutionary computational discipline. Simple genetic algorithm, a basic and good-performance genetic algorithm, shows bad performance on multimodal problems, taking long generation time to obtain the optimum, converging on the local extrema in early generation. In this paper, we propose a new genetic algorithm with two new genetic mutational operators, i.e. global and local mutation operators, and no genetic crossover. The proposed algorithm is similar to Simple GA and the two genetic operators are as simple as the conventional mutation. They just mutate the genes from left or right end of a ...

10:20 ~ 10:40   SA11-5

Hybrid Neural Classifier Combined with H-ART2 and F-LVQ for Face Recognition

Do-Hyeon Kim, Eui-Young Cha(Pusan Univ., Korea), Kwang-Beak Kim(Silla Univ., Korea)

Abstract: This paper presents an effective pattern classification model by designing an artificial neural network based pattern classifiers for face recognition. First, a RGB image inputted from a frame grabber is converted into a HSV image which is similar to the human beings' vision system. Then, the coarse facial region is extracted using the hue(H) and saturation(S) components except intensity(V) component which is sensitive to the environmental illumination. Next, the fine facial region extraction process is performed by matching with the edge and gray based templates. To make a light-invariant and qualified facial image, histogram equalization and intensity compensation processing using ...

10:40 ~ 11:00   SA11-6

Modeling of Superficial Pain using ANNs

Nobutomo Matsunaga, Asayo Kuroki(Kumamoto Univ., Japan), Shigeyasu Kawaji(Kumamoto Univ., Japan)
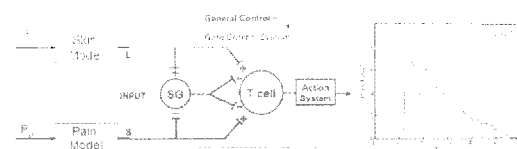
● In the environment where human coexists with robot, the problem of safety is very important. But it is difficult to separate the robot from the human in time-domain or space-domain unlike the case of factory automation, so a new concept is needed.
● One approach is to notice sensory and emotional ...