Towards the Distributed Brain for Collectively Behaving Robots
P. Sapaty, and M. Sugisaka
(Oita Univ.)

The paper describes a new approach to the organization of an artificial brain for mobile multi-robot systems, where individual robots are not considered as independent entities, but rather forming together a universal parallel and distributed machine capable of processing both information and physical matter in distributed worlds. This spatial machine, operating without any central control, is driven on top by distributed mission scenarios in WAVE-WP language. The scenarios can be written on a variety of levels, and any mixture of them, supporting the needed system flexibility and freedom...

Multi-sensor Visual inspection for Seamless Steel Pipe’s Straightness
Rongsheng Lu(City University of Hong Kong)

In this paper, an on-line multi-sensor visual inspection technique for seamless steel pipe’s straightness is developed. The basic principle of the visual measuring method is detailed. The modeling of visual sensor, measurement system and data processing are presented. In order to test the accuracy of the multi-sensor visual inspection, an experiment inspecting the straightness of a 1500mm long seamless steel pipe is made. The experiment results show that the visual inspection technique can achieve on-line measurement and offers high precision and stability.

Inverse optimization problem solver on use of multi-layer neural networks
Qianyi WANG, Tomoo AOYAMA(Miyazaki Univ.), Umpeil NAGASHIMA(NIAIST, Japan), Eui-Sung KANG(Sunchon Univ.)

We propose a neural network solver for an inverse problem. The problem is that input data with complete teaching include defects and predict the defect value. The solver is constructed of a three layer neural network whose learning method is combined from BP and reconstruction learning. The input data for the defects are unknown; therefore, the circulation of an arithmetic progression replaces them; rightly, the learning procedure is not converged for the circulation data but for the normal data. The learning is quitted after such a learning status is kept. Then, we search a minimum of the differences between teaching data and output of the circulation. Then, we search a minimum of the.....