

# D-FE03

## Autonomous Family Machine

15:20-17:20

Chair : Oh Do-Chang (Konyang Univ, )

Room : 4129

Co-Chair : Choi Jin Young (Seoul National Univ. )

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15:20 – 15:40

D-FE03-1

### Detecting Data which Represent Emotion Features from the Speech Signal

Chang-Hyun Park, Kwee-Bo Sim, Dong-Wook Lee(Chung-Ang Univ.) and Young-Hoon Joo(Kunsan National Univ.)

Usually, when we take a conversation with another, we can know his emotion as well as his idea. Recently, some applications using speech recognition comes out , however , those can recognize only context of various informations which he(she) gave. In the future, machine familiar to human will be a requirement for more convenient life. Therefore, we need to get emotion features. In this paper, we'll collect a multiplicity of reference data which represent emotion features from the speech signal. As our final target is to recognize emotion from a stream of speech, as such, we must be able to understand features that represent emotion. There are much emotions human can show. the delicate difference of emotions makes this recognition problem difficult.

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16:00 – 16:20

D-FE03-3

### A New Face Detection Method by Hierarchical Color Histogram Analysis

Ji Woong Kwon, Myoung Soo Park, Mun Hyuk Kim, Jin Young Choi (ASRI, Seoul National Univ.)

Because face has non-rigid structure and is influenced by illumination, we need robust face detection algorithm with the variations of external environments (orientation of lighting and face, complex background, etc.). In this paper we develop a new face detection algorithm to achieve robustness. First we transform RGB color into other color space, in which we can reduce lighting effect much. Second, hierarchical image segmentation technique is used for dividing a image into homogeneous regions. This process uses not only color information, but also spatial information. One of them is used in segmentation by histogram analysis, the other is used in segmentation by grouping. And we can select face region among the homogeneous regions by using facial features.

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16:40 – 17:00

D-FE03-5

### A Study on Intelligence Navigation for Autonomous Mobile Robot Using Fuzzy Logic Control

Dei-Jeung Huh, Woo-Young Lee, Uk-Youl Huh (Inha Univ.)

The autonomous robot has the ability of obstacle avoidance and target tracking with some manufactured information. In this paper, it is shown that autonomous mobile robot can avoid fixed obstacles using the map made before and the fuzzy controller is adopted with the global path planing and the local path planing when the robot navigates. With that map sensor, information will be used when an autonomous robot navigates. This paper proves that robot can navigate through optimized route and keep the stable condition.

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15:40 – 16:00

D-FE03-2

### Emotion Recognition by CCD Color Image

Young-Hoon Joo, Sang-Yoon Lee, Jae-Heung Oh (Kunsan National Univ.) and Kwee-Bo Sim(Chung-Ang Univ.)

This paper proposes the technique for recognizing the human's emotion by using the CCD color image. To do this, we first acquire the color image from the CCD camera. And then propose the method for recognizing the expressing to be represented the structural correlation of man's feature points(eyebrows, eye, nose, mouse), In the proposed method. Human's emotion is divided into four emotion(surprise, anger, happiness, sadness). Finally, we have proven the effectiveness of the proposed method through the experimentation.

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16:20 – 16:40

D-FE03-4

### Noise Removal for Improvement of Occupancy-grid Map

Kim Young-Geun and Choi Chang-Min, Kim Hakil (Inha Univ.)

The purpose of this research is to build a quality-improved occupancy grid map for path-planning of an autonomous mobile robot(AMR) based on the measurements from a single ultrasonic sensor, which are acquired when the autonomous mobile robot explores unknown indoor environment. The AMR navigates in the unknown space by following the wall and gathers the range data using the ultrasonic sensor, from which the occupancy grid map is constructed by associating the range data with occupancy certainties. In order to increase the quality of the map we modify the Bayesian probability updating rule, reject non-systematic measurement errors and correct the predictable error of the AMR itself. These procedures are implemented and tested using an AMR, and primary results are presented in this paper.

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17:00 – 17:20

D-FE03-6

### The Implementation of Low Power Operating System Based on Energy Mesuremen

Jeong Jae Heon and Chae Soo Ik (Seoul National University)

In recent years, as the battery-powered portable systems such as cellular phone, personal digial assistant (PDA) are widely used, power consumption comes to be a top-priority design concerns. Because those embedded systems become more and more complex than ever and they are operated under severe power and energy constrains, long battery lifetime with a limited energy is very critical. Even though there are various levels of energy optimization techniques, system level techniques are mainly focused on, for their stronger impact on power consumption of the overall system than traditional techniques : circuit level, switch level, architecture level, etc. In this technique, operating system (OS) plays the most important role in the system because it controls ...

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