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TP3

Interactive Poster Session

Time : October 14(Thu.), 13:00-14:30

Room : Online, 2F Lobby

Dr. Tae-Gyoon Lim (RIST, Korea)

13:00-14:30

TP3-1

Image Stitching Approach based on an Orientation of Electromagnetically Actuated Capsule Endoscopy

Sang-Kun Chun(Korea Institute of Medical Microrobotics (KIMM), Korea),
Byungwoo Cho, Hongseok Choi(Korea Institute of Medical Microrobotics,
Korea), Byungjeon Kang(Chonnam National University, Korea), Jong-
Oh Park(Korea Institute of Medical Microrobotics, Korea), Chang-Sei
Kim(Chonnam National University, Korea)

The stitching of output images from capsule endoscopy aids the user in locating lesions and landmarks by providing a wide-angle panorama. However, the low resolution of the camera and texture-less gastrointestinal (GI) images makes it difficult to stitch the images with the traditional feature-based algorithms. We propose a method of calculating the homography using the orientation of a camera in the capsule endoscope. An experiment is performed performed in the stomach phantom with a magnetically actuated capsule endoscope (MACE) system.

13:00-14:30

TP3-2

Post Impact Stabilization Control using Collision Force Estimator

YeaYoung Park, Changsun Ahn(Pusan National University, Korea)

Vehicle to vehicle collision while driving, the condition of the vehicle can be stabilized by the Electronic Stability Control (ESC), a safety system installed in many vehicles, in case of a minor collision. However, when the vehicle collision with a strong force, it is difficult to stabilize the vehicle state with ESC alone, and the vehicle easily deviates from the lane or spin, making it easy to cause a secondary collision. Therefore, in this study, we design Post Impact Stabilization Control (PISC) that calculate vehicle collision force using only the vehicle's internal sensor and stabilizes the vehicle posture by predicting the collision force and collision location.

13:00-14:30

TP3-3

Temperature Control of Extrusion Process of Micro Guidewire

Chan Young Park, Doo Yong Lee(KAIST, Korea)

Temperature of molten PEBAX resin is controlled in the extrusion process to fabricate the outer tube of a medical micro guidewire. The temperature control system consists of band heaters, temperature sensors, solid state relays (SSR), and multi-channel temperature controller. The heaters and sensors are installed onto a specially designed mold part and resin-feeding parts. The temperatures of the mold and feeders are separately controlled to guarantee quality of the produced outer tube of the micro guidewires.

13:00-14:30

TP3-4

V2V Communication Data-based Vehicle Trajectory Prediction Method

Wansik Choi, Changsun Ahn(Pusan National University, Korea)

This research presents a data-based vehicle trajectory prediction method which based on V2V communication data. The proposed method is mainly considering the lane change maneuver since the maneuver is most general but barely predictable before actual maneuver is started. The method has three steps. The first and second steps are prediction of the lane change maneuver and the time to lane change, and the last step is prediction of the future trajectory. The results show better results compare with the vehicle kinematics based method.

13:00-14:30

TP3-5

Detachable Capacitance Type Touch Sensor for Smart Glove

Dongwoo Nam, Bummo Ahn(UST / Korea Institute of Industrial Technology, Korea)

Touching in human life is one of the most important interactions with environments. To interact with machine in real world or virtual world, many kinds of smart gloves are including touch sensors. However, these gloves with embedded sensor have difficulty for washing. Thus, we developed capacitance type touch sensor. Due to conductive Velcro of the sensor, the sensor can be easily attached and detached from the device. We confirmed performance of the sensor not only 55% of relative capacitance increase when touching, but also easy equipment on the device. The smart glove can be washed when the sensor is detached. The sensor also can be used widely in wearable fabric devices.

13:00-14:30

TP3-6

Design of Gravity Compensation Mechanism for a Supplementary Foldable-Robotic Arm for Construction Workers

Bhivraj Suthar(Chunnam National University, Korea), Seul Jung(Chunnam National University, Korea)

This paper presents a new design concept of variable spring-linkage gravity compensation mechanism (VSL-GM) for foldable robot arms for collaborative work (FRAC) in the construction task of assisting a worker during a panel installation on the wall. FRAC shows high bending during its extension due to the payload and the unwanted bending imposes a limitation on the FRAC payload capacity. Therefore, we propose a VSL gravity compensation mechanism for the FRAC. The mechanism of VSL-GM using links, torsional springs, pulleys, and cable is designed to transfer the compensated force to the back side.