TA06

Mobile Robot

09:00 – 09:20   **TA06-1**

Global Positioning System for Mobile Robot Navigation in an Indoor Environment

Soo Min Park, Bong Ki Lee, Tae Seok Jin, Jang Myung Lee(Pusan Nat'l Univ., KOREA)

Localization is one of the most important functions for the mobile robot navigating in the unstructured environment. Most of previous localization schemes estimate current position and pose of mobile robot by applying various localization algorithms with the information obtained from sensors which are set on the mobile robot, or by recognizing an artificial landmark attached on the wall, or objects of the environment as natural landmark in the indoor environment. Several drawbacks about them have been brought up. To compensate the drawbacks, a new localization method that estimates the global position of the mobile robot by using a camera set on ceiling in the corridor is proposed. This sch...

09:20 – 09:40   **TA06-2**

Collision-Free Motion Coordination of Multiple Mobile Robots Using Relative Distance

Nak Yong Ko, Dong Jin Seo, Young-Dong Kim(Chosun Univ., KOREA)

1. Introduction
2. Problem Formulation
3. Avoidability Measure And Relative Distance
4. Artificial Potential Field in Terms of Relative Distance
5. Simulation Results
6. Conclusions
7. Reference

09:40 – 10:00   **TA06-3**

Sensor-Based Motion Planning for Mobile Robots

Jong-Suk Choi, Chong-won Lee(KAIST, KOREA)

●Mobile robots
●Sensor-based motion planning
●Potential field
●Local minimum-free motion
●Virtual target point
●Set of linked line segments
●We build a sensor-based motion planning using virtual target point for free of local minimum

10:00 – 10:20   **TA06-4**

Feature Extraction for Robot Map Using Neural Network

Chang-Hyun Kim, Chang-Mok Oh, Ju-Jang Lee(KAIST, KOREA)

●Feature extraction method for robot application
●Using ultrasonic sensor arrays
●Differentiate the target as plane, corner and edge
●Neural network approach

09:40 – 10:00   **TA06-5**

Development of compact wireless communication module for auto-recognition wearable I/O device by using USB interface.

Kwanghyun Park, Jae Wook Jeon(Sungkyunkwan Univ., KOREA)

●Wearable I/O Devices relieve the restriction of working space to the worker.
●And They permit very active work achievement to the worker.
●But, current Wearable I/O Devices still have some controversial points.
●The worker needs serie system operations to wear and take off devices.
●Also, it is not easy to change any device which is currently used when the worker uses some devices.
●So, we propose the Compact Wireless Communication Module to solve these problem.
●For that purpose, we implemented the proposed module, and proved the efficiency and convenience.
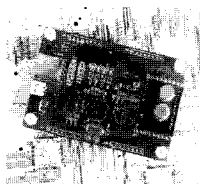
10:00 – 10:20   **TA06-6**

Motion Control of an Omnidirectional Mobile Robot with Steerable Omnidirectional Wheels

Kyung-Seok Byun, Jae-Bok Song(Korea Univ., KOREA)

Omnidirectional mobile robots are capable of arbitrary motion in an arbitrary direction without changing the direction of wheels, because they can perform 3 degree-of-freedom (DOF) motion on a 2-dimensional plane. In this research, a new class of an omnidirectional mobile robot is proposed. Since it has synchronously steerable omnidirectional wheels, it is called an omnidirectional mobile robot with steerable omnidirectional wheels (OMR-SOW). It has 3 DOFs in motion and one DOF in steering. One steering DOF can function as a continuously variable transmission (CVT). CVT of the OMR-SOW increases the range of velocity ratio from the wheel velocities to robot velocity, which may improve perform...