IMPROVING WIRELESS SENSOR NETWORKS PERFORMANCE BY USING CLUSTERED VIRTUAL RINGS

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Abstract:

ABSTRACT. Wireless sensor networks (WSN) are the subject of the era due to its importance and wide applications. The last decade of research focused on how to improve its performance in terms of enlarging lifetime and better handling network dynamics. Many WSN applications such as monitoring and reporting are time critical so, the performance of WSN can not include lifetime only, but also other performance measures such as delay must be taken into consideration as well. This paper focuses on the WSN network layer which includes routing techniques as a main key in high performance applications. A routing technique based on virtual rings and genetic algorithm is proposed to shorten the round delay time. This technique uses virtual ring features in addition to clustering methods to divide the sensors in the network into groups contain nearby sensors. The main advantage of this proposed technique is that it maximizes the interval of the first node failure besides obtaining a reasonable delay in forwarding data to sink through the usage of the virtual rings.

Keywords:

Wireless Sensor Networks; Virtual Ring; Genetic Algorithm; Clustering Algorithms

Published In:

International Journal of Ad hoc, Sensor & Ubiquitous Computing (IJASUC) , Vol.3, No.3,
Cut off Your Arm: A Medium-Cost System for Integrating a 3D Object with a Real Actor


Abstract:

In the film industry, many tricks have been employed using the integration of a 3D object with a real actor. Usually, attaching a 3D object with a real actor is a costly process because of the usage of an expensive motion capture system. This paper presents a system using a medium-cost motion capture system and a chroma-keying technique for generating a video footage of an actor with an integrated 3D object (e.g. amputated arm). The result of the proposed system shows the attaching process of different 3D objects with a real actor who is combined with a new background scene in the same viewpoint.

Keywords:

Video Compositing, Image Enhancement, Motion Capture System, Chroma-keying

Published In:

International Journal of Image, Graphics and Signal Processing (IJIGSP) , Vol. 6, No. 11 , PP.10-16
OCR System for Poor Quality Images Using Chain-Code Representation

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Abstract:

The field of Optical Character Recognition (OCR) has gained more attention in recent years due to its importance and applications. Examples include video indexing, reference archiving, car-plate recognition, and data entry. In this work, a robust system for OCR is presented. The proposed system recognizes text in poor quality images. Characters are extracted from the given poor quality image to be recognized using chain-code representation. The proposed system uses Google online spelling to suggest replacements for words which are misspelled during the recognition process. For evaluating the proposed system, the born-digital dataset ICDAR is used. The proposed system achieves 74.02% correctly recognized word rate. The results demonstrate that the proposed system recognizes text in poor quality images efficiently.

Keywords:

NULL

Published In:

Advances in Intelligent Systems and Computing, Vol 407, 151-161
Abstract: Developing telepresence robots is one of the most important trends in the robotics research area, where the user acts as he/she is located in a remote location. In 2010, telepresence robots became a noticeable trend after the robot "QB" that introduced by Silicon Valley start-up Anybots (Robotics trends for 2012. IEEE Robot. Autom. Mag. 19(1):119–123, 2012). Although, the availability of "QB" as a commercial telepresence robot, its cost made it unavailable for most users. In this work, a low-cost telepresence robot is presented using iRobot-Create, Microsoft Kinect sensor, and video glasses. The proposed system makes the user feels like he/she is located in a different location and acting as in the normal life (walking, stop, rotating his/her head). The user takes feedback via a streaming video from the remote location to a pair of video glasses worn by him. The remote unit consists of three components: a single iRobot-Create, a laptop, and two web-cams. In the user side, the user's movements are recognized using Microsoft Kinect sensor. We use the RGB camera in Microsoft Kinect sensor for streaming the video of the user to the remote side. So, People in the remote side see the user, as he/she is located with them. The results of the proposed system show that the user is integrated in another environment using low-cost hardware components.

Keywords: NULL

Published In: Advances in Intelligent Systems and Computing, Vol 407, 91-101