D-FA06 Virtual Reality

09:00-11:00 **Chair : Shin K. C. (Yujin Robotics Co.)**
Room : 4231 **Co-Chair : Park Young-jin (KAIST)**

09:00 – 09:20 **D-FA06-1**

A Motion Editing System for Handling Autonomous Creation of Character Animation

Lee Jihong and Kim Insik
(Chungnam National University)

A motion handling technique that transforms existing animation motion data to a mathematically well-defined form. The transformed data can be utilized in any kind of autonomous motion creation process that handles such cases as changed environment, structure (kinematic / dynamic) modification, or changed constraints. To overcome the computational burden of traditional spacetime optimization, we divide full motion data frame into several parts, and we applied the transformation technique to each part using an optimizing tool(CFSQP). To show the feasibility of the proposed method, a comparison study results with traditional technique is included.

09:20 – 09:40 **D-FA06-2**

A study on multichannel 3D sound rendering

Kim Sunmin and Park Youngjin
(KAIST)

In this paper, 3D sound rendering using multichannel speakers is studied. Virtual 3D sound technology has mainly been researched with binaural system. The conventional binaural sound systems reproduce the desired sound at two arbitrary points using two speakers in 3-D space. However, it is hard to implement the localization of virtual source at back/front and top/below positions because the HRTF of an individual is unique just like the fingerprint. Most of all, the HRTF is highly sensitive to the elevation change. Multichannel sound systems have mainly been used to reproduce the sound field picked up over a certain volume rather than at specific points. Moreover, multichannel speakers arranged in 3-D space produce a much better performance of ...

09:40 – 10:00 **D-FA06-3**

A Method for Creating Natural Animation by Interaction with Operators

Lee jihong and Kim sungsu
(Chungnam National University)

This paper deals with a method for creating animation by interaction with animation operators. Operators are able to edit/transform any given motion data to more natural animations by the motion editing method proposed in this paper. The proposed technique is especially useful when some parts of character structure are changed. The system to be proposed is designed to fully utilize the experience of animation operators as well as to accomodate semi-automation process with spline interpolation. An example for retargeting a given motion data to a new character of dramatically changed kinematic structure.

10:00 – 10:20 **D-FA06-4**

3D Avatar's movement creation and control technique

Jang Moon Sung, Kuc TaeYong and Kim Si Jung
(SungKyunKwan University)

This paper introduces the movement creation and control technique of an avatar, whose replacement of the user is increasing due to the rapid development of the internet and hardware that generalizes the VR. A 3D avatar's movement is usually created through the key-framing technique or motion-capture equipment. This paper introduce the production of the avatar's movement by constructing a articulated avatar whose speed and movement are automatically created by the neural oscillatory network and avatar's joint is controlled by the use of kinematics and motion editor.

10:20 – 10:40 **D-FA06-5**

Experimental Planning for Realistic Force Feedback in a Bicycle Simulator

Yang Gi-Hun and Kwon Dong-Soo
(KAIST)

This paper presents the key idea of handlebar reaction force and pedal resistance force generation in creating life-like feeling in KAIST bicycle simulator. Also, it provides methods to evaluate its reality level with given reaction force profile. In KAIST bicycle simulator, the pedal resistance force and the handlebar reaction force are calculated using the bicycle dynamic model. With the information (handlebar angle, rider's pedaling torque and road profile) transmitted from the handlebar system, the pedal system and the visual part, the bicycle dynamics engine calculates the handlebar reaction force and the pedal velocity. The handlebar system and the pedal resistance system generate reaction force and resistance force transmitted from dynamics engine. However to make more realistic riding feeling...