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Exemplar Based Pose Correction Method For Microsoft Kinect Based System

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Abstract

With the invention of the low-cost Microsoft Kinect sensor, high-resolution depth and visual (RGB) sensing has become available for widespread use. The launch of Xbox Kinect has built a very successful computer vision product and made a big impact on the gaming industry. we propose an exemplar-based method to learn to correct the initially estimated poses also working with an inhomogeneous systematic bias by leveraging the exemplar information within a specific human action domain to increase the accuracy of pose correction Our proposed approach basically deals with the facial landmark correction and color controls also illustrate that our algorithm can improve the accuracy of other detection/estimation systems.

Index Terms—*Kinect, background removal, pose correction, pose tag, skeleton*

I. INTRODUCTION

With the development of high-speed depth cameras the computer vision field has experienced a new opportunity of applying a practical imaging modality for building a variety of systems in gaming, human computer interaction, surveillance, and visualization. A depth camera provides depth information as different means to color images captured by the traditional optical cameras. Kinet refers to both the advanced RGB/depth sensing hardware and the software-based technology that interprets the RGB/depth signals. The hardware contains a normal RGB camera, a depth sensor and a four-microphone array, which are able to provide depth signals, RGB images, and audio signals simultaneously. With respect to the soft- ware, several tools are available, allowing users to develop products for various applications.synchronize image signals, capture human 3-D motion, identify human faces**.** Depth information gives extra robustness to color as it is invariant to lighting and texture changes although it might not carry very detailed information of the scene.

- Depth Image
- Gesture
- Posture

- Depth Image

In 3D computer graphics a Depth map is an image or image channel that contains information relating to the distance of the surfaces of scene objects from a viewpoint

- Gesture

A Gesture is a form of non-verbal communication in which visible bodily actions communicate particular messages, whereas posture is a stance and/or alignment as compared to a balanced position for the human body.

- Posture

Is the way you sit or stand for example if you slouch that is the posture you have

II. LITERATURE SURVEY

Even though the depth data provide invariant and informative cues, existing systems are not all satisfactory due to severe conclusions which includes three important steps:

1) Background removal;

2) Initial pose estimation; and

3) Pose correction.

In this paper, the main contribution is learning the inhomogeneous bias function to perform pose correction for one domain specific action and we emphasize the following four points

1) Exemplar-based approach serves a promising direction for pose correction in depth images.

2)Learning an inhomogeneous regression experimental study which shows encouraging results.

3) Learning an regression function conditioned on a incorporated global parameter gives more nature data partition, and thus further improves the performance of pose correction.

4) Our regression-based approach is general, it is applicable to correcting not only the pose estimated from Kinect sensor, but also estimation errors involved from other sensors.

III. BACKGROUND REMOVAL

We need to keep the pixels which form the user and remove anything else that does not belong to the user .The depth camera of the Kinect sensor comes in handy for determining a user's body. The depth camera gives us the depth value and the RGB camera provides us with the color value.

IV. PROPOSED APPROACH

As per the methods and study of kinect device we will come up with depth image control and pose correction these are research areas of previous paper. we will work hard to achieve this as well as we will also work on facial expressions by using color combination controls.

TOOLS FOR DEVELOPMENT AND VERIFICATION OF RESULTKINECT DEVICE.

- Visual Studio 10.
- Processor I3 and above.
- 160 GB HDD.
- 2 GB Ram

V. HARDWARE ARCHITECTURE

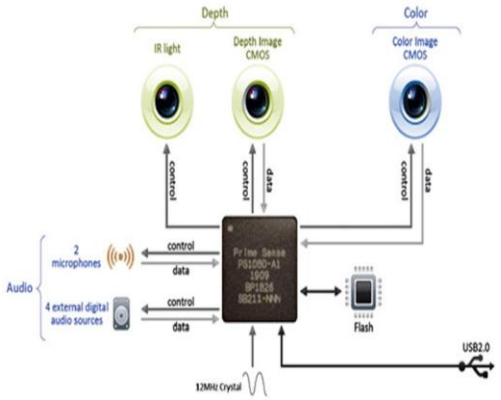

Figure 1.Kinet Device

VI. PROPOSED MODEL

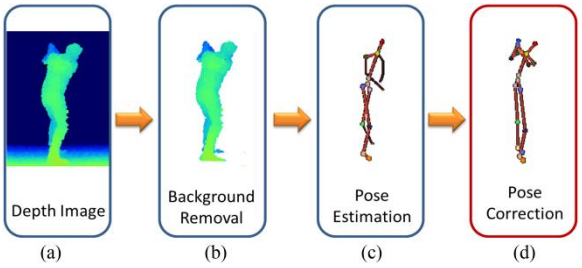

Figure 2.Pose Estimation Process

VII. METHODOLOGY

Pose Correction: To implement our actual work we have to filter obtaining depth images with coordinate mapper .In according to this some of the areas and technology we need to develop this some are as follows:

1. Pixel Filtration

2. Co-ordinate mapping

3. Normalized Skeleton Joints Coordinates.

4. Joint-Based Skeleton Correction.

5. Temporal Constraint.

6. Pose Tag Prediction.

7. Skeleton Correction Conditioned on Pose Tag

VIII. DATABASE STRUCTURE

The BackgroundRemovalTool class has the following arrays of data:
WriteableBitmap _bitmap: The final image with the cropped background
ushort[]_depthData: The depth values of a depth frame
byte[] _bodyData: The information about the bodies standing in front of the sensor
byte[]_colorData: The RGB values of a color frame
byte[]_displayPixels: The RGB values of the mapped frame
ColorSpacePoint[]_colorPoints: The color points we need to map.

IX. CONCLUSION

The pose correction is our aim to come up with these work and the work of previous paper .In addition we will also trying to finding out correct pose by gesturing and emotion control. Include designing more powerful skeletal features, employing motion analysis techniques for pose correction and recognizing actions based on the corrected poses

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