Stereo-Plus-Depth Imaging System

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Problems

• **Because depth data contains an important visual cue for understanding real world scenes, high-quality depth data is required in various applications.**

•**Visual discomfort in stereoscopic three-dimensional (S3D) images is often induced by several factors such as excessive disparities, depth inconsistency, depth cue conflicts,.**
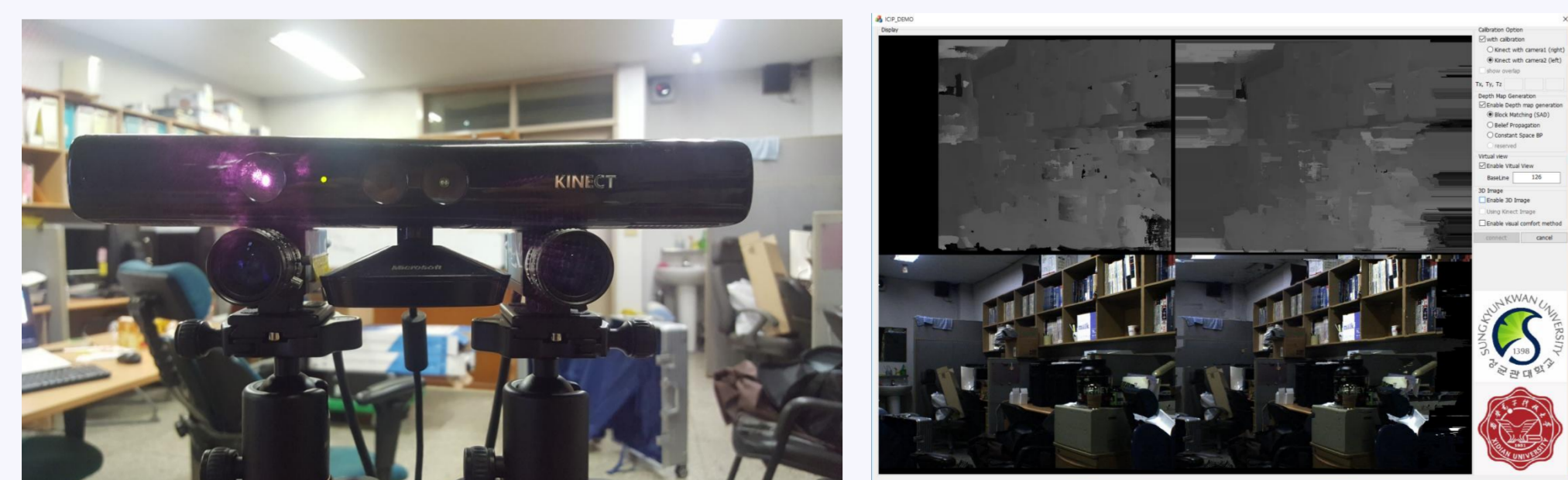
It is necessary to improve the depth quality and the visual comfort in stereoscopic three-dimensional images.

Solution

The stereo-plus-depth imaging system has been developed as software solution. It can achieve high quality depth image and visual comfort S3D image in real time.
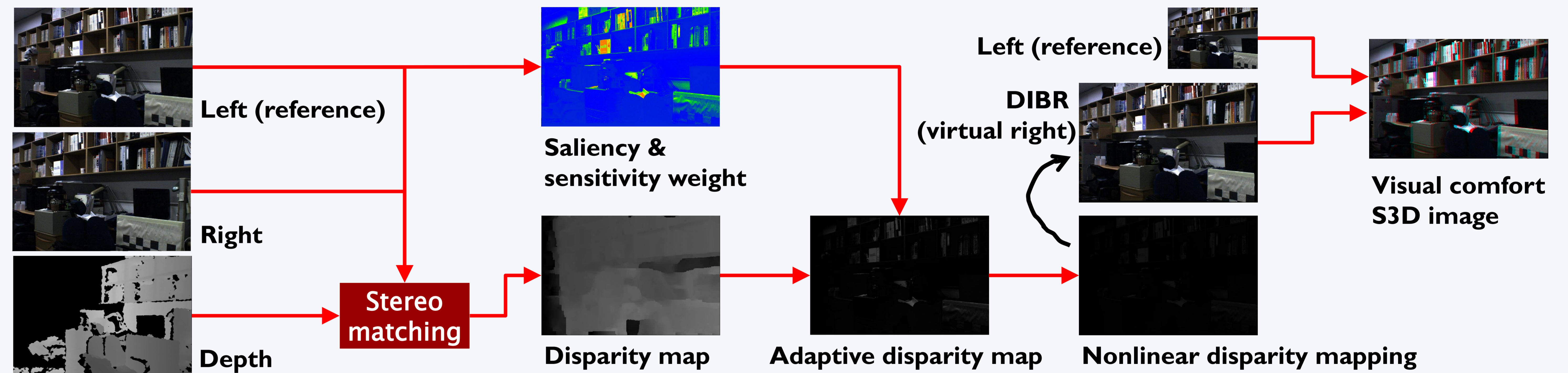
The main contents of the system are as follows:

• Boundary-preserving stereo matching

•Visual comfort enhancement in stereoscopic 3D images

• Nonlinear disparity mapping to minimize disparity distortion

• Keep the overall viewing image quality

•Virtual view generation based on DIBR

Example of the system configuration

Proposed Method

Left (reference)

Right

Depth

Stereo matching

Saliency & sensitivity weight

Disparity map

Adaptive disparity map

Nonlinear disparity mapping

Left (reference)

DIBR (virtual right)

Visual comfort S3D image

Applications

Left Images   **Right Images**   **Kinect Images**   **S3D Images (w/o visual comfort)**   **S3D Images (with visual comfort)**

VR/AR

360 degree camera