

Design of a DWARF Service for the dynamic control of Firewire Cameras

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1 Introduction

The goal of the DWARF Project [2] is putting more Information into a picture than a human being is able to see. This happens with the help of Cameras, Lasers and other Sensors.

The development of an interface for firewire cameras is the objective of this System-Development-Projekt (SEP - System-Entwicklungs-Projekt). With the help of this interface it should be possible to control the firewire camera over the middleware and to change dynamically the resolution or other features which are offered by the hardware.

2 Current Situation

At the moment there is a control for firewire cameras who can only offer a predefined picture of the camera. It is not able to change the resolution or other offered functions of the camera during runtime. Furthermore it is not possible to add or remove cameras from the firewire port and to include them into the system dynamically.

3 Visionary Scenario

The goal of this SEP is to develop a system which can control dynamically one or more firewire cameras. Within this it is important to use all the features of the cameras and to offer these the DWARF System. It should be possible to change the resolution, the gamma value or the brightness but it should be even possible for example to zoom.

At first there should be developed an interface for the firewire cameras with the help of the Coriander Project [1]. The Coriander-Interface is realized in C, but for this task the interface should be ported

to C++ because of the better possibility of enlargement and it should be easier to integrate this into the DWARF System. The resulted picture is saved to a shared memory region at the harddrive.

If the Interface for the firewire cameras is completed, it is integrated to the DWARF System with the help of the middleware. At this state the developed DWARF Service should enable pictures to be received by an Dwarf Application from one or more cameras who are plugged in and out dynamically during runtime. Furthermore all DWARF Services who are using this camera control should be able to change the resolution and other settings of the cameras.

The DWARF-"need" of this Service is the shared memory region where the picture is to be saved. The DWARF-"ability" of this Service is the camera picture with the possible parameters resolution, brightness, gamma and so on.

4 Camera Interface

The camera interface is designed in C++ for better integration to the DWARF System. Furthermore it is easier to expand the functionality of the interface. For this the interface of the Coriander Project is revised and reimplemented object oriented in C++.

5 DWARF Service

The DWARF Service is using a new functionality of the middleware which enables the possibility to offer different "abilities" dynamically. This way it is possible to offer the "ability" for a picture with the resolution of 640x480 or a picture with the resolution of 800x600.

6 Reference

- [1] Homepage of the Coriander Project
<http://www.tele.ucl.ac.be/PEOPLE/DOUXCHAMPS/ieee1394/coriander/>
- [2] Homepage of the Dwarf Project
<http://www.bruegge.in.tum.de/Dwarf/>
- [3] Homepage of the libdc1394 project
<http://sourceforge.net/projects/libdc1394/>
- [4] Homepage of the libraw1394 Project
<http://sourceforge.net/projects/libraw1394>
<http://www.linux1394.org/>