GoldFish: Real-world GUI Framework for Android

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ABSTRACT
We introduce a JavaScript framework for developing “Real-World GUI” using an Android phone equipped with an NFC reader. Using the NFC reader and motion sensors at the same time, users can control various parameters by moving the phone on NFC tags, just like using a mouse for controlling menus and scroll bars on a computer display. All the control programs are written in JavaScript and put on the Web so that users do not have to install different Android programs for different tags.

INTRODUCTION
Although we can easily control data and parameters using various GUI widgets on a PC and a tablet, we cannot use standard GUI techniques without a graphic display and a pointing device. We propose using Android phones and NFC tags for performing GUI operations in the real world without using standard pointing devices, based on the same idea as the FieldMouse system[1].

We put NFC tags where we want to control data by GUI actions. If a user wants to control the sound volume of a TV from the dining table, he puts an NFC tag on the table, and when he puts his Android phone close to the tag, a special application on Android is automatically launched and recognizes the user’s subsequent actions to control the TV; e.g. the application can detect the rotation of the phone and wirelessly tell the TV to modify the sound volume based on the angle.

We have created the GoldFish framework to enable such GUI operations just by writing a simple JavaScript code on the Web. When an Android phone recognizes an NFC tag, the GoldFish application on Android is launched and tries to display an Web page http://ubif.org/(NFC-ID) on the browser. If a user’s Web page is tagged to the ID beforehand, the user’s page is displayed instead. The user can then use arbitrary JavaScript programs to read the sensor data of Android and perform GUI actions based on the data.

REFERENCES