Video Surveillance System for Atmel Microcontroller

Felipe Velosa

Janusz Zalewski, Ph.D
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1. Introduction

The purpose of this project is to maintain a previously developed project in which a camera was connected to the web to stream video over the web. The project connected a Logitech camera to an embedded machine (eBox 2300 [1] ) running Microsoft Windows CE. The software developed had a client and a server. The server captured video from the webcam and streamed it by opening port 18888 on the eBox. From a different computer a client is ran which connects to the eBox by using its IP address and the open port 18888.

Several tests were run trying to connect the server and client but the attempts were unsuccessful. Eventually another Logitech camera was connected to a desktop computer running Windows XP. This machine uses a web video streaming service to stream the captured video from the webcam. In the diagram below the lab services represent two separate servers. One server is directly connected to the board, the other server is connected to the camera and is used to stream video. This document describes the details of this project.
2. Screenshot of the circuit board

3. Screenshot of the USTREAM web service streaming
2. Description of Project

A Logitech webcam is connected via USB to a desktop computer running Windows XP [2]. This camera was mounted to get a top view of a microcontroller board currently being programmed. The objective is to provide a web view of the board’s behavior.

The webcam requires drivers to be installed, which are provided in a CD-ROM that came with the webcam. After installing the drivers a public video streaming service is used to stream captured video via HTTP. The service is called ustream.tv.

To start the video stream service the user must follow the following steps.

1. Open the ustream.tv website:  http://ustream.tv
2. Select: “Login”
3. Use the following credentials to login:
   a. Username: zalewski13
   b. Password: ikswelaz
4. Click: “Login”
5. Click: “Start Broadcast”

Once the streaming service is running, any user may view the streamed data by going to the following link:

1. http://www.ustream.tv/channel/fgcu-cs-lab
3. Conclusion

The original eBox was unable to stream video via the default port 18888. Several tests were run unsuccessfully. After opening the port on campus and testing it via telnet to the eBox, the decision was taken to enable the functionality of this project by using a different approach.

A Logitech webcam was connected to a different computer, and a public video streaming software was used to stream capture video via HTTP. The service used was ustream.tv. The solution allows observing results of programming the microcontroller board via the web.
References

itech.fgcu.edu/faculty/zalewski/projects/files/DABOIneBox_2300Final.p


Appendix

A Definitions, Acronyms, & Abbreviations

eBox: An embedded computer running windows CE

USB: Universal Serial Bus, an industry standard that defines the cables, connectors and communications protocols used in a bus for connection, communication and power supply between computers and electronic devices

ustream.tv: A public free service to stream video captured from a webcam.

Microsoft Windows CE: An operating system developed by Microsoft for embedded systems.