The Junk Mail to Spam Converter

Michael Weller, Mark D. Gross, Jim Nicholls and Ellen Yi-Luen Do

Design Machine Group / Department of Architecture / University of Washington

Box 355720

Seattle, WA 98195 USA

+1 206 543 1604

{philetus, mdgross, jnicholl, ellendo}@u.washington.edu

http://dmg.caup.washington.edu

ABSTRACT

The junk mail to spam converter is a prototype designed and built to demonstrate the idea of a physical-to-virtual filter.

Keywords

junk mail, spam, converter, filter, physical-to-virtual

INTRODUCTION

As computers spread out from the desktop into the environment [1] they threaten to compound the problem of clutter in our physical spaces. To offset this trend we propose the use of physical-to-virtual filters to shift superfluous physical objects into the virtual realm and free up physical space. The junk mail to spam converter does not solve the problem of junk mail, it transforms it into spam so that it no longer intrudes on our limited physical space.

IMPLEMENTATION

Form

As it is intended to be your constant companion at home or in the office, the JMtoSC is conceived as a sculptural object. Like the three-headed dog at the gates of hell, this sheet metal Kerberos shreds your mail's physical instantiation and casts its digital memory off into the abyss of your email inbox.

Functionality

When a letter is fed into the slot in the front of the sheet metal structure, it slides down a chute through the JMtoSC's innards where it triggers a breakbeam made of a laser pointer and a light sensor. A handy board [2] bolted into the guts below listens for the beam to be broken and signals an applescript to snap a photo of the doomed missive and send it to your email account before the handy board flips the relay controlling to the shredder in the bowels of the beast and grinds the letter into compost.

Figure 1 letter being fed into the JmtoSC

Architecture

The skeleton is composed of hand-bent sheet metal pieces riveted together. The front panel has an opening to insert letters and comes down into two front legs. The mail chute connects this front panel to the rear section where the paper shredder is mounted over two shorter hind legs. The hind legs continue up past the paper shredder to provide a place to mount the laser pointer and web cam. Four rubber feet on the ends of the legs protect your furniture from scratches

and prevent the vibration of the paper shredder from causing the JMtoSC to skitter around.

A handy board mounted beneath the letter chute watches for mail in the chute and coordinates its documentation and destruction. A light sensor located under a hole in the letter chute directly in front of the shredder is wired into one of the handy board's analog sensor ports. A battery-powered laser pointer directed at this light sensor from above functions as a break beam. The handy board control loop listens for a drop in the light level due to a letter obstructing the laser beam. When a drop in the light level is detected, the document and destroy sequence is initiated.
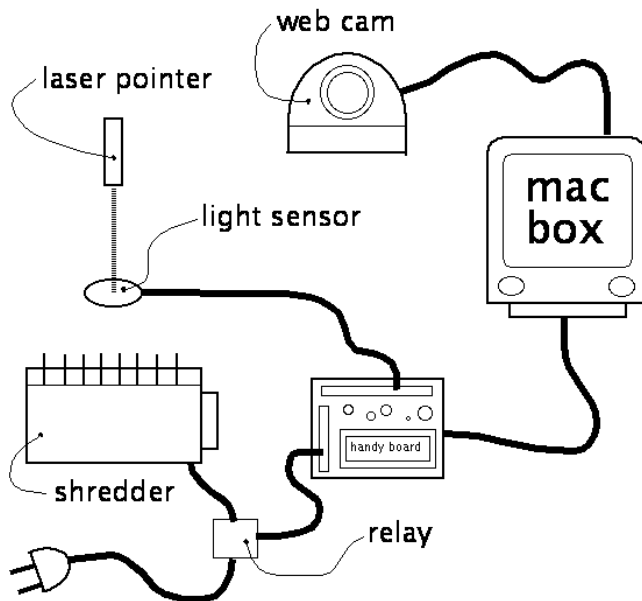

Figure 2 junk mail to spam converter architecture

The handy board sends a signal over its serial cable to a desktop computer running Mac OS 9 to initiate an applescript program that documents the letter. The applescript activates the web cam and captures an image of the envelope. It then composes an html email containing the image and sends it to your email address.

After pausing to allow the applescript to run the handy board activates a relay spliced into the paper shredder's power cord. The paper shredder is allowed to run for a set period of time more than sufficient to grind a business size envelope into confetti before the relay is turned off again and the handy board returns to its control loop while the JMtoSC awaits its next meal.

FUTURE WORK

The JMtoSC illustrates the concept of a physical-to-virtual filter but does not provide any particular practical advantage over throwing your junk mail in the recycling bin because you must first filter out by hand any mail you would not like to have shredded. A future goal of the project is to explore methods for filtering physical mail before you receive it at home.

The Junk Mail Early Warning System

When mail is initially processed and run through the zip code sorting machine, a digital photo is taken of each letter. A photo of each envelope addressed to you is sent to your email account as an html email. If you check your inbox before the letter has been delivered to your local branch post office there is a button next to the picture that says 'shred'. If you click the shred button the letter is shredded as soon as it arrives at your local branch.

Opt-in Virtual Mail

If you sign up for this program with the post office, when letters addressed to you arrive at the processing center they are opened by a machine rather than being routed to your local branch. The envelope and contents are scanned front and back, and then everything is immediately shredded. The image files are sent to your email account. By combining this system with optical character recognition software, your mail could be run through a spam filter with the rest of your email to automatically filter out junk mail.

Figure 3 web cam image from email

CONCLUSION

As embedded computing promises to bring information processing out into the environment with us, physical-to-virtual filters will mine the environment for physical artifacts whose primary purpose is information transfer and storage. Converting these bulky physical records into virtual form will free up physical space and make information readily available to be processed by embedded devices.

ACKNOWLEDGMENTS

REFERENCES

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