When Computer Security Crashes into Multimedia

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Abstract

A casual glance on the web, or in your local newspaper, will quickly convince a reader that the two of the hottest fields in computer science right now are computer security and multimedia. Unfortunately, these fields often seem at odds with each other. This talk will take two case studies and show how the fields cause problems for each other. First, I discuss how multimedia can cause problems for computer security. I show how we are able to take recordings of a user typing at a keyboard and using only a generic $10 microphone and an assumption that the user is typing English, we can from the recording alone determine the text being typed with 96% accuracy. In fact, after training this system on English text, we can accurately recover passwords typed by the user. (This is joint work with L. Zhuang and F. Zhou [1].) Second, I discuss how security can cause problems for multimedia. Taking the example of filtering for copyright protected content, I discuss a variety of proposed schemes for restricting distribution of audio files. I conclude with an overview of other research areas where the fields computer security and multimedia jointly have significant contributions to make.

Reference

[1] L. Zhuang, F. Zhou, and J. D. Tygar. "Keyboard Acoustic Emanations Revisited." To appear in **Proceedings of the 12th ACM Conference on Computer and Communications Security**, November 2005.

Doug Tygar is Professor of Computer Science at UC Berkeley and also Professor of Information Management at UC Berkeley. He works in the areas of computer security, privacy, and electronic commerce. His current research includes privacy, security issues in sensor webs, digital rights management, and usable computer security. Doug Tygar has written three books; his book *Secure Broadcast Communication in Wired and Wireless Networks* (with Adrian Perrig) is a standard reference and has been translated to Japanese. He designed cryptographic postage standards for the US Postal Service and has helped build a number of security and electronic commerce systems including: Strongbox, Dyad, Netbill, and Micro-Tesla. He served as chair of the Defense Department's ISAT Study Group on Security with Privacy, and was a founding board member of ACM's Special Interest Group on Electronic Commerce. More information on Doug Tygar and his research is available at www.tygar.net.

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