Electronic Frontier Foundation
Protecting Rights and Promoting Freedom on the Electronic Frontier

September 19, 2006

BY FACSIMILE — (703) 292-9041

National Science Foundation
FOIA Officer (Room 1265)
4201 Wilson Blvd.
Arlington, VA 22230

Re: Freedom of Information Act Request

Dear Sir or Madam:

This letter constitutes a request under the Freedom of Information Act ("FOIA"), 5 U.S.C. § 552, and is submitted to the National Science Foundation ("NSF") on behalf of the Electronic Frontier Foundation ("EFF"). We make this request as part of EFF's FOIA Litigation for Accountable Government ("FLAG") Project, which works to obtain government documents and make them widely available to the public.

We are seeking copies of all records related to the NSF's funding of Award No. 0219893, "ITR: Printer Characterization and Signature-Embedding for Security and Forensic Applications"; and Award No. 0524540, "CT-ISG: Printer and Sensor Forensics." This request includes, but is not limited to, the following records:

1. the original applications or proposals for these projects, along with any updates thereto;

2. documentation of all awards, grants, or other monetary support for these projects; and

3. any reports on the progress of these projects.

To assist you in locating records responsive to this request, please find attached the abstracts for these awards, which we have located on the NSF web site.

Request for News Media Fee Status

EFF asks that it not be charged search or review fees for this request because EFF qualifies as a representative of the news media pursuant to the FOIA and 45 C.F.R. § 612.10(c).

EFF is a non-profit public interest organization that works "to protect and enhance our core civil liberties in the digital age."[1] One of EFF's primary objectives is "to educate the press,

[1] Guidestar Basic Report, Electronic Frontier Foundation, http://www.guidestar.org/pqShowGsReport.do?npoId=561625 (last visited Sept. 14, 2006).

1875 Connecticut Ave., NW · Suite 650 · Washington, DC 20009
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policymakers and the general public about online civil liberties."[2] To accomplish this goal, EFF routinely and systematically disseminates information in several ways.

First, EFF maintains a frequently visited web site, http://www.eff.org, which received 41,207,052 hits in August 2006 — an average of 55,385 per hour. The web site reports the latest developments and contains in-depth information about a variety of civil liberties and intellectual property issues.

EFF has regularly published an online newsletter, the EFFector, since 1990. The EFFector currently has more than 77,000 subscribers. A complete archive of past EFFectors is available at http://www.eff.org/effector/.

Furthermore, EFF publishes a blog that highlights the latest news from around the Internet. DeepLinks (http://www.eff.org/deeplinks/) reports and analyzes newsworthy developments in technology. It also provides miniLinks, which direct readers to other news articles and commentary on these issues. DeepLinks had 553,786 hits in August 2006.[3]

In addition to reporting hi-tech developments, EFF staff members have presented research and in-depth analysis on technology issues in no fewer than eighteen white papers published since 2002. These papers, available at http://www.eff.org/wp/, provide information and commentary on such diverse issues as electronic voting, free speech, privacy and intellectual property.

EFF has also published several books to educate the public about technology and civil liberties issues. *Everybody's Guide to the Internet* (MIT Press 1994), first published electronically as *The Big Dummy's Guide to the Internet* in 1993, was translated into several languages, and is still sold by Powell's Books (http://www.powells.com). EFF also produced *Protecting Yourself Online: The Definitive Resource on Safety, Freedom & Privacy in Cyberspace* (HarperEdge 1998), a "comprehensive guide to self-protection in the electronic frontier," which can be purchased via Amazon.com (http://www.amazon.com). Finally, *Cracking DES: Secrets of Encryption Research, Wiretap Politics & Chip Design* (O'Reilly 1998) revealed technical details on encryption security to the public. The book is available online at http://cryptome.org/cracking-des.htm and for sale at Amazon.com.

Most recently, EFF has begun broadcasting podcasts of interviews with EFF staff and outside experts. *Line Noise* is a five-minute audio broadcast on EFF's current work, pending legislation, and technology-related issues. A listing of *Line Noise* podcasts is available at feed://www.eff.org/rss/linenoisemp3.xml and feed://www.eff.org/rss/linenoiseogg.xml. These podcasts were downloaded more than 1,500 times from EFF's web site last month.

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[2] *Id.*

[3] These figures include hits from RSS feeds through which subscribers can easily track updates to DeepLinks and miniLinks.

Request for a Public Interest Fee Waiver

EFF is entitled to a waiver of duplication fees because disclosure of the requested information is in the public interest within the meaning of 5 U.S.C. § 552(a)(4)(a)(iii) and 45 C.F.R. § 612.10(k)(1). To determine whether disclosure of requested information is in the public interest, the NSF determines whether "it is likely to contribute significantly to public understanding of the operations or activities of the government and is not primarily in the commercial interest of the requester." 45 C.F.R. § 612.10(k)(1). This request unquestionably satisfies these criteria.

First, the NSF's funding of the development of printer signature-embedding technology concerns "the operations or activities of the government." 45 C.F.R. § 612.10(k)(2)(i). The NSF is a government agency, and its funding of research unquestionably concerns the operations or activities of the government.

Second, disclosure of the requested information will "contribute to an understanding of government operations or activities." 45 C.F.R. § 612.10(k)(2)(ii) (internal quotation marks omitted). EFF has requested information that will shed light on the NSF's funding decisions and priorities, as well as the nature of the research it chooses to support.

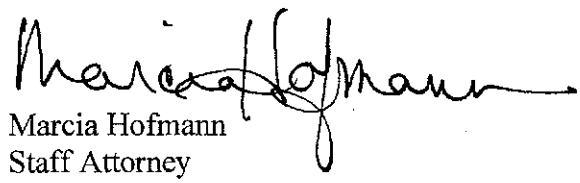
Third, the requested material will "contribute to public understanding" of the extent of the NSF's funding of printer signature-embedding technology. 45 C.F.R. § 612.10(k)(2)(iii) (internal quotation marks omitted). This information will contribute not only to EFF's understanding of the NSF's funding for this project, but to the understanding of a reasonably broad audience of persons interested in the subject. EFF will make the information it obtains under the FOIA available to the public and the media through its web site and newsletter, which highlight developments concerning privacy and civil liberties issues, and/or other channels discussed more fully above.

Fourth, the disclosure will "contribute significantly" to the public's knowledge and understanding of the NSF's support for the development of printer signature-embedding technology. 45 C.F.R. § 612.10(k)(2)(iv) (internal quotation marks omitted). Little is publicly known about this issue, so disclosure of this information will help inform the public about the NSF's funding decisions, as well as contribute to the public debate on the NSF's funding priorities.

Furthermore, a fee waiver is appropriate here because EFF has no commercial interest in the disclosure of the requested records. 45 C.F.R. § 612.10(k)(3). EFF is a 501(c)(3) nonprofit organization, and will derive no commercial benefit from the information at issue here.

Thank you for your consideration of this request. If you have any questions or concerns, please do not hesitate to contact me at (202) 797-9009 x. 12. As the FOIA provides, I will anticipate a determination on this request from your office within 20 working days.

Sincerely,



Marcia Hofmann
Staff Attorney

Award Abstract #0219893

ITR: Printer Characterization and Signature-Embedding for Security and Forensic Applications

NSF Org:	CNS
Initial Amendment Date:	August 27, 2002
Latest Amendment Date:	March 3, 2006
Award Number:	0219893
Award Instrument:	Continuing grant
Program Manager:	Karl N. Levitt CNS Division of Computer and Network Systems CSE Directorate for Computer & Information Science & Engineering
Start Date:	September 1, 2002
Expires:	August 31, 2006 (Estimated)
Awarded Amount to Date:	$410000
Investigator(s):	Jan Allebach allebach@ecn.purdue.edu(Principal Investigator) Edward Delp (Co-Principal Investigator) George Chiu (Co-Principal Investigator)
Sponsor:	Purdue University 302 Wood Street West Lafayette, IN 47907 765/494-4600
NSF Program(s):	ITR SMALL GRANTS
Field Application(s):	
Program Reference Code(s):	HPCC,9216
Program Element Code(s):	1686

ABSTRACT

Proposal Number CCR-0219893 Title: ITR: Printer Characterization and Signature-Embedding for Security and Forensic Applications Co-Principal Investigators: Jan P. Allebach, Edward J. Delp, and George T. Chiu We propose to develop two strategies for printer identification. The first strategy is passive. It involves characterizing the printer and finding intrinsic features in the printed output that are characteristic of that particular printer, model, or manufacturer's products. We call this the intrinsic signature. Developing the intrinsic signature requires an understanding and modeling of the printer mechanism, and the development of image analysis tools that are used for printer characterization during the signature development phase, and then later, for the actual detection of the signature in printed pages with arbitrary content. The intrinsic signature is detected by scanning the printed pages with a high resolution drum scanner, and applying low-level image analysis routines to extract features. These features are processed with a soft classifier to yield likelihoods at each level of a decision tree that the document was printed with a device belonging to each particular class. At the highest level of the decision tree, likelihoods are provided for which of the two possible dominant printing technologies: electrophotography (commonly referred to as a laser printer) and inkjet was used. At the next level,likelihoods are generated for the candidate printer manufacturers, and so on. As we proceed down through the tree, we generate liklihoods regarding information that is more and more specific to the particular printer in question. The second strategy is active. Here we embed an extrinsic signature in every printed page. This signature is generated by modulating the process parameters in the printer mechanism to encode identifying information, such as the printer serial number and date of printing, in every printed page. To detect the extrinsic signature, we again scan the printed pages, and process them using image analysis techniques; but in this case, our goal is to decode the signature to extract the information embedded in it. Development of the methodology for extrinsic signature embedding will build directly on our work with intrinsic signatures. We will use our knowledge of the printer mechanism models and the results of the printer characterization to determine the printer process parameters that can be modulated to encode the desired identifying information. The modulation of these parameters will require modification to the actual printer mechanism. A distinguishing feature of the proposed effort will be the development of an undergraduate project course that will be associated with the research. In this course, students will learn about printing technologies and the application of electrical and mechanical engineering theory from their core courses to analysis and modeling of printing systems. They will also learn about image processing and decision theory; and they will see how all these tools can be applied to the solution of practical real-world problems.

Please report errors in award information by writing to: award-abstracts-info@nsf.gov.

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Award Abstract #0524540

CT-ISG:Printer and Sensor Forensics

NSF Org:	CNS
Initial Amendment Date:	August 10, 2005
Latest Amendment Date:	August 10, 2005
Award Number:	0524540
Award Instrument:	Standard Grant
Program Manager:	David J. Goodman CNS Division of Computer and Network Systems CSE Directorate for Computer & Information Science & Engineering
Start Date:	August 15, 2005
Expires:	July 31, 2008 (Estimated)
Awarded Amount to Date:	$400000
Investigator(s):	Jan Allebach allebach@ecn.purdue.edu(Principal Investigator) Edward Delp (Co-Principal Investigator) George Chiu (Co-Principal Investigator)
Sponsor:	Purdue University 302 Wood Street West Lafayette, IN 47907 765/494-4600
NSF Program(s):	ITR-CYBERTRUST
Field Application(s):	0000912 Computer Science
Program Reference Code(s):	HPCC,9218,7254
Program Element Code(s):	7456

ABSTRACT

Proposal ID: 0524540 Title: CT-ISG: Printer and Sensor Forensics PIs: Jan P. Allebach, George T. Chiu, and Edward J. Delp This research addresses the need for a means to

assure the authenticity of digital media consisting of image content. The work investigates both intrinsic signatures that are an inherent characteristic of the imaging device and extrinsic signatures that can be introduced by the manufacturer with the possibility including additional user-controlled information. The intrinsic signature represents artifacts that are due to optical, electrical, or mechanical limitations of the imaging device. The extrinsic signature is generated by modulating parameters that control the intrinsic signature of the device. The same algorithms that detect the intrinsic signature will form the basis for detecting and decoding the extrinsic signature. This research will result in a new understanding of the relation between imaging devices and artifacts produced by those devices. It will lead to new knowledge regarding image analysis for feature extraction and the design of classifiers based on those features. In calculating error control codes and channel capacities for extrinsic signatures, it will extend the application of classical communications theory to a new domain. This work will be of direct benefit to society by providing law enforcement and government agents new tools for combating counterfeiting, forgery, and other criminal and terrorist activities.

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