



US007694128B2

(12) **United States Patent**
Judge et al.

(10) **Patent No.:** **US 7,694,128 B2**
(45) **Date of Patent:** **Apr. 6, 2010**

- (54) **SYSTEMS AND METHODS FOR SECURE COMMUNICATION DELIVERY**
- (75) Inventors: **Paul Judge**, Alpharetta, GA (US); **Guru Rajan**, Duluth, GA (US)
- (73) Assignee: **McAfee, Inc.**, Santa Clara, CA (US)
- (*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 1963 days.

- (21) Appl. No.: **10/384,924**
- (22) Filed: **Mar. 6, 2003**

- (65) **Prior Publication Data**
US 2003/0172167 A1 Sep. 11, 2003

Related U.S. Application Data

- (63) Continuation-in-part of application No. 10/361,091, filed on Feb. 7, 2003, now Pat. No. 7,096,498, which is a continuation-in-part of application No. 10/093,553, filed on Mar. 8, 2002, now Pat. No. 6,941,467, and a continuation-in-part of application No. 10/094,211, filed on Mar. 8, 2002, now Pat. No. 7,458,098, and a continuation-in-part of application No. 10/094,266, filed on Mar. 8, 2002, now Pat. No. 7,124,438.

- (51) **Int. Cl.**
H04L 9/00 (2006.01)
- (52) **U.S. Cl.** **713/152; 713/151; 713/168; 380/282; 726/2; 726/22**
- (58) **Field of Classification Search** **713/150-154, 713/164, 168, 178-188; 726/2, 22-25; 709/224, 709/229, 206-207; 380/30, 282**

See application file for complete search history.

(56) **References Cited**
U.S. PATENT DOCUMENTS

4,289,930	A	9/1981	Connolly et al.
4,384,325	A	5/1983	Slechta et al.
4,386,416	A	5/1983	Giltner et al.
4,532,588	A	7/1985	Foster
4,713,780	A	12/1987	Schultz et al.
4,754,428	A	6/1988	Schultz et al.
4,837,798	A	6/1989	Cohen et al.

(Continued)

FOREIGN PATENT DOCUMENTS

CA	2564533	12/2005
----	---------	---------

(Continued)

OTHER PUBLICATIONS

Article entitled "MIMEsweeper defuses virus network, net mail bombs" by Avery, in *Info World*, May 20, 1996, vol. 12, No. 21, p. N1.

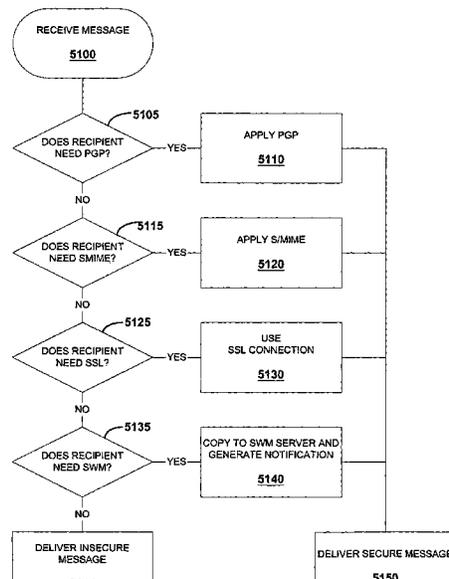
(Continued)

Primary Examiner—Kimyen Vu
Assistant Examiner—Baotran N To
(74) *Attorney, Agent, or Firm*—Fish & Richardson P.C.

(57) **ABSTRACT**

Systems and methods for secure delivery of electronic communications are provided. A communication transmitted over a communications network is received by a system processor. The system processor selects a secure delivery mechanism for delivering the communication. The system processor attempts to deliver the communication to the predetermined recipient via the selected secure delivery mechanism. Some systems can further provide for determining whether a particular received communication requires secure delivery.

39 Claims, 18 Drawing Sheets



U.S. PATENT DOCUMENTS					
			5,708,780	A	1/1998 Levergood et al.
			5,708,826	A	1/1998 Ikeda et al.
			5,710,883	A	1/1998 Hong et al.
			5,727,156	A	3/1998 Herr-Hoyman et al.
			5,740,231	A	4/1998 Cohn et al.
			5,742,759	A	4/1998 Nessett et al.
			5,742,769	A	4/1998 Lee et al.
			5,745,574	A	4/1998 Muftic
			5,751,956	A	5/1998 Kirsch
			5,758,343	A	5/1998 Vigil et al.
			5,764,906	A	6/1998 Edelstein et al.
			5,768,528	A	6/1998 Stumm
			5,771,348	A	6/1998 Kubatzki et al.
			5,778,372	A	7/1998 Cordell et al.
			5,781,857	A	7/1998 Hwang et al.
			5,781,901	A	7/1998 Kuzma
			5,784,566	A *	7/1998 Viavant et al. 709/229
			5,790,789	A	8/1998 Suarez
			5,790,790	A	8/1998 Smith et al.
			5,790,793	A	8/1998 Higley
			5,793,763	A	8/1998 Mayes et al.
			5,793,972	A	8/1998 Shane
			5,796,942	A	8/1998 Esbensen
			5,796,948	A	8/1998 Cohen
			5,801,700	A	9/1998 Ferguson
			5,805,719	A	9/1998 Pare, Jr. et al.
			5,812,398	A	9/1998 Nielsen
			5,812,776	A	9/1998 Gifford
			5,822,526	A	10/1998 Waskiewicz
			5,822,527	A	10/1998 Post
			5,826,013	A	10/1998 Nachenberg
			5,826,014	A	10/1998 Coley et al.
			5,826,022	A	10/1998 Nielsen
			5,826,029	A	10/1998 Gore, Jr. et al.
			5,835,087	A	11/1998 Herz et al.
			5,845,084	A	12/1998 Cordell et al.
			5,850,442	A	12/1998 Muftic
			5,855,020	A	12/1998 Kirsch
			5,860,068	A	1/1999 Cook
			5,862,325	A	1/1999 Reed et al.
			5,864,852	A	1/1999 Luotonen
			5,878,230	A	3/1999 Weber et al.
			5,884,033	A	3/1999 Duvall et al.
			5,892,825	A	4/1999 Mages et al.
			5,893,114	A	4/1999 Hashimoto et al.
			5,896,499	A	4/1999 McKelvey
			5,898,836	A	4/1999 Freivald et al.
			5,903,723	A	5/1999 Beck et al.
			5,911,776	A	6/1999 Guck
			5,923,846	A	7/1999 Gage et al.
			5,930,479	A	7/1999 Hall
			5,933,478	A	8/1999 Ozaki et al.
			5,933,498	A	8/1999 Schneck et al.
			5,937,164	A	8/1999 Mages et al.
			5,940,591	A	8/1999 Boyle et al.
			5,948,062	A	9/1999 Tzelnic et al.
			5,958,005	A	9/1999 Thorne et al.
			5,963,915	A	10/1999 Kirsch
			5,978,799	A	11/1999 Hirsch
			5,987,609	A	11/1999 Hasebe
			5,991,881	A	11/1999 Conklin et al.
			5,999,932	A	12/1999 Paul
			6,003,027	A	12/1999 Prager
			6,006,329	A	12/1999 Chi
			6,012,144	A	1/2000 Pickett
			6,014,651	A	1/2000 Crawford
			6,023,723	A	2/2000 McCormick et al.
			6,029,256	A	2/2000 Kouznetsov
			6,035,423	A	3/2000 Hodges et al.
			6,052,709	A	4/2000 Paul
			6,058,381	A	5/2000 Nelson

US 7,694,128 B2

6,061,722 A	5/2000	Lipa et al.	6,550,012 B1	4/2003	Villa et al.
6,072,942 A	6/2000	Stockwell et al.	6,574,737 B1	6/2003	Kingsford et al.
6,092,114 A	7/2000	Shaffer et al.	6,578,025 B1	6/2003	Pollack et al.
6,092,194 A	7/2000	Touboul	6,609,196 B1	8/2003	Dickinson, III et al.
6,094,277 A	7/2000	Toyoda	6,650,890 B1	11/2003	Irlam et al.
6,094,731 A	7/2000	Waldin et al.	6,654,787 B1	11/2003	Aronson et al.
6,104,500 A	8/2000	Alam et al.	6,675,153 B1	1/2004	Cook et al.
6,108,688 A	8/2000	Nielson	6,681,331 B1	1/2004	Munson et al.
6,108,691 A	8/2000	Lee et al.	6,687,687 B1	2/2004	Smadja
6,108,786 A	8/2000	Knowlson	6,697,950 B1	2/2004	Kouznetsov
6,118,856 A	9/2000	Paarsmarkt et al.	6,701,440 B1	3/2004	Kim et al.
6,119,137 A	9/2000	Smith et al.	6,704,874 B1	3/2004	Porras et al.
6,119,142 A	9/2000	Kosaka	6,711,127 B1	3/2004	Gorman et al.
6,119,230 A	9/2000	Carter	6,711,687 B1	3/2004	Sekiguchi
6,119,236 A	9/2000	Shipley	6,725,377 B1	4/2004	Kouznetsov
6,122,661 A	9/2000	Stedman et al.	6,732,101 B1 *	5/2004	Cook 707/10
6,141,695 A	10/2000	Sekiguchi et al.	6,732,157 B1	5/2004	Gordon et al.
6,141,778 A	10/2000	Kane et al.	6,735,703 B1	5/2004	Kilpatrick et al.
6,145,083 A	11/2000	Shaffer et al.	6,738,462 B1	5/2004	Brunson
6,151,675 A	11/2000	Smith	6,742,124 B1	5/2004	Kilpatrick et al.
6,161,130 A	12/2000	Horvitz et al.	6,742,128 B1	5/2004	Joiner et al.
6,185,689 B1	2/2001	Todd, Sr. et al.	6,754,705 B2	6/2004	Joiner et al.
6,192,407 B1	2/2001	Smith et al.	6,757,830 B1	6/2004	Tarbotton et al.
6,199,102 B1	3/2001	Cobb	6,768,991 B2	7/2004	Hearnden
6,202,157 B1	3/2001	Brownlie et al.	6,769,016 B2	7/2004	Rothwell et al.
6,219,714 B1	4/2001	Inhwan et al.	6,775,657 B1	8/2004	Baker
6,223,213 B1	4/2001	Cleron et al.	6,792,546 B1	9/2004	Shanklin et al.
6,249,575 B1	6/2001	Heilmann et al.	6,892,237 B1	5/2005	Gai et al.
6,249,807 B1	6/2001	Shaw et al.	6,895,385 B1	5/2005	Zacharia et al.
6,260,043 B1	7/2001	Puri et al.	6,907,430 B2	6/2005	Chong et al.
6,269,447 B1	7/2001	Maloney et al.	6,910,135 B1	6/2005	Grainger
6,269,456 B1	7/2001	Hodges et al.	6,928,556 B2	8/2005	Black et al.
6,272,532 B1	8/2001	Feinleib	6,941,348 B2	9/2005	Petry et al.
6,275,942 B1	8/2001	Bernhard et al.	6,941,467 B2	9/2005	Judge et al.
6,279,113 B1	8/2001	Vaidya	6,968,461 B1	11/2005	Lucas et al.
6,279,133 B1	8/2001	Vafai et al.	7,089,428 B2	8/2006	Farley et al.
6,282,565 B1	8/2001	Shaw et al.	2001/0049793 A1	12/2001	Sugimoto
6,285,991 B1	9/2001	Powar	2002/0004902 A1	1/2002	Toh et al.
6,289,214 B1	9/2001	Backstrom	2002/0016910 A1	2/2002	Wright et al.
6,298,445 B1	10/2001	Shostack et al.	2002/0023140 A1	2/2002	Hile et al.
6,301,668 B1	10/2001	Gleichauf et al.	2002/0026591 A1	2/2002	Hartley et al.
6,304,898 B1	10/2001	Shiigi	2002/0032871 A1	3/2002	Malan et al.
6,304,973 B1	10/2001	Williams	2002/0035683 A1	3/2002	Kaashoek et al.
6,311,207 B1	10/2001	Mighdoll et al.	2002/0042876 A1	4/2002	Smith
6,317,829 B1	11/2001	Van Oorschot	2002/0049853 A1	4/2002	Chu et al.
6,320,948 B1	11/2001	Heilmann et al.	2002/0078382 A1	6/2002	Sheikh et al.
6,321,267 B1	11/2001	Donaldson	2002/0087882 A1	7/2002	Schneier et al.
6,324,569 B1	11/2001	Ogilvie et al.	2002/0095492 A1	7/2002	Kaashoek et al.
6,324,647 B1	11/2001	Bowman-Amuah	2002/0112185 A1	8/2002	Hodges
6,324,656 B1	11/2001	Gleichauf et al.	2002/0116627 A1	8/2002	Tarbotton et al.
6,330,589 B1	12/2001	Kennedy	2002/0120853 A1	8/2002	Tyree
6,347,374 B1	2/2002	Drake et al.	2002/0133365 A1	9/2002	Grey et al.
6,353,886 B1	3/2002	Howard et al.	2002/0138416 A1	9/2002	Lovejoy et al.
6,363,489 B1	3/2002	Comay et al.	2002/0138755 A1	9/2002	Ko
6,370,648 B1	4/2002	Diep	2002/0138759 A1	9/2002	Dutta
6,373,950 B1	4/2002	Rowney	2002/0138762 A1	9/2002	Horne
6,385,655 B1	5/2002	Smith et al.	2002/0143963 A1	10/2002	Converse et al.
6,393,465 B2	5/2002	Leeds	2002/0147734 A1	10/2002	Shoup et al.
6,393,568 B1	5/2002	Ranger et al.	2002/0152399 A1	10/2002	Smith
6,405,318 B1	6/2002	Rowland	2002/0165971 A1	11/2002	Baron
6,442,588 B1	8/2002	Clark et al.	2002/0169954 A1	11/2002	Bandini et al.
6,442,686 B1	8/2002	McArdle et al.	2002/0172367 A1	11/2002	Mulder et al.
6,453,345 B2	9/2002	Trcka et al.	2002/0178227 A1 *	11/2002	Matsa et al. 709/206
6,460,141 B1	10/2002	Olden	2002/0178383 A1	11/2002	Hrabik et al.
6,470,086 B1	10/2002	Smith	2002/0188864 A1	12/2002	Jackson
6,487,599 B1	11/2002	Smith et al.	2002/0194469 A1	12/2002	Dominique et al.
6,487,666 B1	11/2002	Shanklin et al.	2002/0199095 A1	12/2002	Bandini et al.
6,502,191 B1	12/2002	Smith et al.	2003/0005326 A1	1/2003	Flemming
6,516,411 B2	2/2003	Smith	2003/0009554 A1	1/2003	Burch et al.
6,519,703 B1	2/2003	Joyce	2003/0009693 A1	1/2003	Brock et al.
6,539,430 B1	3/2003	Humes	2003/0009696 A1	1/2003	Bunker et al.

2003/0023692 A1 1/2003 Moroo
 2003/0023695 A1 1/2003 Kobata et al.
 2003/0023873 A1 1/2003 Ben-Itzhak
 2003/0023874 A1 1/2003 Prokupets et al.
 2003/0023875 A1 1/2003 Hursey et al.
 2003/0028803 A1 2/2003 Bunker et al.
 2003/0033516 A1 2/2003 Howard et al.
 2003/0033542 A1 2/2003 Goseva-Popstojanova et al.
 2003/0041264 A1 2/2003 Black et al.
 2003/0051026 A1 3/2003 Carter et al.
 2003/0051163 A1 3/2003 Bidaud
 2003/0051168 A1 3/2003 King et al.
 2003/0055931 A1* 3/2003 Cravo De Almeida et al. 709/223
 2003/0061506 A1 3/2003 Cooper et al.
 2003/0065943 A1 4/2003 Geis et al.
 2003/0084280 A1 5/2003 Bryan et al.
 2003/0084320 A1 5/2003 Tarquini et al.
 2003/0084323 A1 5/2003 Gales
 2003/0084347 A1 5/2003 Luzzatto
 2003/0088792 A1 5/2003 Card et al.
 2003/0093667 A1 5/2003 Dutta et al.
 2003/0093695 A1 5/2003 Dutta
 2003/0093696 A1 5/2003 Sugimoto
 2003/0095555 A1 5/2003 McNamara et al.
 2003/0097439 A1 5/2003 Strayer et al.
 2003/0097564 A1 5/2003 Tewari et al.
 2003/0105976 A1 6/2003 Copeland, III
 2003/0110392 A1 6/2003 Aucsmith et al.
 2003/0110396 A1 6/2003 Lewis et al.
 2003/0115485 A1 6/2003 Milliken
 2003/0115486 A1 6/2003 Choi et al.
 2003/0123665 A1 7/2003 Dunstan et al.
 2003/0126464 A1 7/2003 McDaniel et al.
 2003/0126472 A1 7/2003 Banzhof
 2003/0135749 A1 7/2003 Gales et al.
 2003/0140137 A1 7/2003 Joiner et al.
 2003/0140250 A1 7/2003 Taninaka et al.
 2003/0145212 A1 7/2003 Crumly
 2003/0145225 A1 7/2003 Bruton, III et al.
 2003/0145226 A1 7/2003 Bruton, III et al.
 2003/0149887 A1 8/2003 Yadav
 2003/0149888 A1 8/2003 Yadav
 2003/0154393 A1 8/2003 Young
 2003/0154399 A1 8/2003 Zuk et al.
 2003/0154402 A1 8/2003 Pandit et al.
 2003/0158905 A1 8/2003 Petry et al.
 2003/0159069 A1 8/2003 Choi et al.
 2003/0159070 A1 8/2003 Mayer et al.
 2003/0167402 A1 9/2003 Stolfo et al.
 2003/0172166 A1 9/2003 Judge et al.
 2003/0172167 A1 9/2003 Judge et al.
 2003/0172289 A1 9/2003 Soppera
 2003/0172291 A1 9/2003 Judge et al.
 2003/0172292 A1 9/2003 Judge
 2003/0172294 A1 9/2003 Judge
 2003/0172301 A1 9/2003 Judge et al.
 2003/0172302 A1 9/2003 Judge et al.
 2003/0187996 A1 10/2003 Cardina et al.
 2003/0233328 A1 12/2003 Scott et al.
 2004/0015554 A1 1/2004 Wilson
 2004/0025044 A1 2/2004 Day
 2004/0054886 A1* 3/2004 Dickinson et al. 713/153
 2004/0058673 A1 3/2004 Irlam et al.
 2004/0059811 A1 3/2004 Sugauchi et al.
 2004/0088570 A1 5/2004 Roberts et al.
 2004/0111531 A1 6/2004 Staniford et al.
 2004/0139160 A1 7/2004 Wallace et al.
 2004/0139334 A1 7/2004 Wiseman
 2004/0167968 A1 8/2004 Wilson et al.
 2004/0177120 A1 9/2004 Kirsch

2005/0021738 A1 1/2005 Goeller et al.
 2005/0065810 A1 3/2005 Bouron
 2005/0102366 A1 5/2005 Kirsch
 2005/0262209 A1 11/2005 Yu
 2005/0262210 A1 11/2005 Yu
 2006/0036727 A1 2/2006 Kurapati et al.
 2006/0095404 A1 5/2006 Adelman et al.
 2006/0123083 A1 6/2006 Goutte et al.
 2006/0212925 A1 9/2006 Shull et al.
 2006/0212930 A1 9/2006 Shull et al.
 2006/0212931 A1 9/2006 Shull et al.
 2006/0230039 A1 10/2006 Shull et al.
 2006/0253458 A1 11/2006 Dixon et al.

FOREIGN PATENT DOCUMENTS

EP 0375138 A2 6/1990
 EP 0413537 A2 2/1991
 EP 0420779 A2 4/1991
 EP 0720333 A2 7/1996
 EP 0838774 A2 4/1998
 EP 0869652 A2 10/1998
 EP 0907120 A2 4/1999
 EP 1326376 7/2003
 EP 1271846 7/2005
 GB 2271002 A 3/1994
 JP 2000-148276 5/2000
 JP 2000-215046 8/2000
 JP 2001-028006 1/2001
 JP 2004-537075 12/2004
 JP 18350870 12/2006
 KR 2006-0012137 2/2006
 KR 1020060041934 5/2006
 WO WO 96/35994 A1 11/1996
 WO WO 99/05814 A2 2/1999
 WO WO 99/33188 A2 7/1999
 WO WO 99/37066 A1 7/1999
 WO WO 00/42748 A1 7/2000
 WO WO 01/17165 A2 3/2001
 WO WO 01/50691 A2 7/2001
 WO WO 01/80480 A1 10/2001
 WO WO 01/76181 A2 11/2001
 WO WO 01/88834 A2 11/2001
 WO WO 02/13469 A2 2/2002
 WO WO 02/13489 A2 2/2002
 WO WO 02/075547 A1 9/2002
 WO WO 02/091706 A1 11/2002
 WO WO 2004/061703 7/2004
 WO WO 2004081734 9/2004
 WO WO 2005116851 12/2005

OTHER PUBLICATIONS

Article entitled "Stomping out mail viruses" by Wilkerson, in *PC Week*, Jul. 15, 1996, p. N8.
 Article entitled "Securing Electronic Mail Systems" by Serenelli et al., in *Communications-Fusing Command Control and Intelligence: MILCOM '92*, 1992, pp. 677-680.
 Article entitled "Integralis' Minesweeper defuses E-mail bombs" by Kramer et al., in *PC Week*, Mar. 18, 1996, pp. N17-N23.
 Article entitled "A Toolkit and Methods for Internet Firewalls" by Ranum et al., in *Proc. of USENIX Summer 1994 Technical Conference*, Jun. 6-10, 1994, pp. 37-44.
 Article entitled "Firewall Systems: The Next Generation" by McGhie, *Integration Issues in Large Commercial Media Delivery Systems: Proc. of SPIE-The International Society for Optical Engineering*, Oct. 23-24, 1995, pp. 270-281.
 Article entitled "Design of the TTI Prototype Trusted Mail Agent" by Rose et al., in *Computer Message Systems-85: Proc. of the IFIP TC*

- Article entitled "Designing an Academic Firewall: Policy, Practice, and Experience with SURF" by Greenwald et. al., in *Proc. of the 1996 Symposium on Network and Distributed Systems Security*, 1996, pp. 1-14.
- Article entitled "X Through the Firewall, and Other Application Relays" by Treese et. al. in *Proc. of the USENIX Summer 1993 Technical Conference*, Jun. 21-25, 1993, pp. 87-89.
- Article entitled "Firewalls For Sale" by Bryan, in *BYTE*, Apr. 1995, pp. 99-104.
- Article entitled "A DNS Filter and Switch for Packet-filtering Gateways" by Cheswick et. al., in *Proc. of the Sixth Annual USENIX Security Symposium: Focusing on Applications of Cryptography*, Jul. 22-25, 1996, pp. 15-19.
- Article entitled "Safe Use of X Window System Protocol Across A Firewall" by Kahn, in *Proc. of the Fifth USENIX UNIX Security Symposium*, Jun. 5-7, 1995, pp. 105-116.
- Article entitled "Automating the OSI to Internet Management Conversion Through the Use of an Object-Oriented Platform" by Pavlou et. al., in *Proc. of the IFIP TC6/WG6.4 International Conference on Advanced Information Processing Techniques for LAN and MAN Management*, Apr. 7-9, 1993, pp. 245-260.
- Article entitled "A Secure Email Gateway (Building an RCAS External Interface)" by Smith, in *Tenth Annual Computer Security Applications Conference*, Dec. 5-9, 1994, pp. 202-211.
- Article entitled "Secure External References in Multimedia Email Messages" by Wiegel, in *3rd ACM Conference on Computer and Communications Security*, Mar. 14-16, 1996, pp. 11-18.
- Memo entitled "SOCKS Protocol Version 5" by Leech et. al., in *Standards Track*, Mar. 1996, pp. 1-9.
- Article entitled "Securing the Web: fire walls, proxy servers, and data driven attacks" by Farrow in *InfoWorld*, Jun. 19, 1995, vol. 17, No. 25, p. 103.
- Article entitled "A Short Tutorial on Wireless LANs and IEEE 802.11" by Lough et al., printed on May 27, 2002, in *The IEEE Computer Society's Student Newsletter*, Summer 1997, vol. 5, No. 2.
- Article entitled "An Example-Based Mapping Method for Text Categorization and Retrieval" by Yang et. al., in *ACM Transactions on Information Systems*, Jul. 1994, vol. 12, No. 3, pp. 252-277.
- Article entitled "A Comparison of Two Learning Algorithms for Text Categorization" by Lewis et. al., in *Third Annual Symposium on Document Analysis and Information Retrieval*, Apr. 11-13, 1994, pp. 81-92.
- Article entitled "Learning Limited Dependence Bayesian Classifiers" by Sahami, in *Proceedings of the Second International Conference on Knowledge Discovery and Data Mining*, 1996, pp. 335-338.
- Article entitled "An Evaluation of Phrasal and Clustered Representations on a Text Categorization Task" by Lewis, in *15th Ann Int'l SIGIR*, Jun. 1992, pp. 37-50.
- Book entitled *Machine Learning* by Mitchell, 1997, pp. 180-184.
- Article entitled "Learning Rules that Classify E-mail" by Cohen, pp. 1-8. Date unknown.
- Article entitled "Hierarchically classifying documents using very few words" by Koller et. al., in *Proceedings of the Fourteenth International Conference on Machine Learning*, 1997.
- Article entitled "Classification of Text Documents" by Li et. al., in *The Computer Journal*, vol. 41, No. 8, 1998, pp. 537-546.
- Article entitled "Issues when designing filters in messaging systems" by Palme et. al., in *19 Computer Communications*, 1996, pp. 95-101.
- Article entitled "Text Categorization with Support Vector Machines: Learning with Many Relevant Features" by Joachims in *Machine Learning: ECML-98*, Apr. 1998, pp. 1-14.
- Article entitled "Hierarchical Bayesian Clustering for Automatic Text Classification" by Iwayama et. al., in *Natural Language*, pp. 1322-1327. Date unknown.
- Article entitled "Smokey: Automatic Recognition of Hostile Messages" by Spertus in *Innovative Applications 1997*, pp. 1058-1065.
- Article entitled "A Comparison of Classifiers and Document Representations for the Routing Problem" by Schutze. Date unknown.
- Article entitled "CAFE: A Conceptual Model for Managing Information in Electronic Mail" by Takkinen et. al. in *Proc. 31st Annual Hawaii International Conference on System Sciences*, 1998, pp. 44-53.
- Article entitled "A Comparative Study on Feature Selection in Text Categorization" by Yang et. al. Date unknown.
- Article entitled "Spam!" by Cranor et. al. in *Communications Of The ACM*, vol. 41, No. 8, Aug. 1998, pp. 74-83.
- Article entitled "Sendmail And Spam" by LeFebvre in *Performance Computing*, Aug. 1998, pp. 55-58.
- Article entitled "Implementing a Generalized Tool for Network Monitoring" by Ranum et. al. in *LISA XI*, Oct. 26-31, 1997, pp. 1-8.
- Article entitled "Method For Automatic Contextual Transposition Upon Receipt Of Item Of Specified Criteria" printed Feb. 1994 in *IBM Technical Disclosure Bulletin*, vol. 37, No. 2B, p. 333.
- Article entitled "Toward Optimal-Feature Selection" by Koller et. al., in *Machine Learning: Proc. of the Thirteenth International Conference*, 1996.
- Website: Technical Focus—Products—Entegrity AssureAccess. www2.entegrity.com.
- Website: Create Secure Internet Communication Channels—Atabok Homepage. www.atabok.com.
- Website: ATABOK VCNMAIL™ Secure Email Solution—Atabok Related Produces. www.atabok.com.
- Website: ATABOK VCN Auto-Exchange™ —Atabok Related Produces. www.atabok.com.
- Website: Controlling Digital Assets Is A Paramount Need For All Business—Atabok Related Produces. www.atabok.com.
- Website: Control Your Confidential Communications with ATABOK—Atabok Related Produces. www.atabok.com.
- Website: Entrust Entelligence—Entrust Homepage. www.entrust.com.
- Website: E-mail Plug-in—Get Technical / Interoperability—Entrust Entelligence. www.entrust.com.
- Website: E-mail Plug-in—Get Technical / System Requirements—Entrust Entelligence. www.entrust.com.
- Website: E-mail Plug-in—Features and Benefits—Entrust Entelligence. www.entrust.com.
- Website: Internet Filtering Software- Internet Manager Homepage. www.elronsw.com.
- Website: ESKE—Email with Secure Key Exchange—ESKE. www.danu.ie.
- Website: Terminet—ESKE. www.danu.ie.
- Website: Baltimore Focus on e-Security—Baltimore Technologies. www.baltimore.com.
- Website: Go Secure ! for Microsoft Exchange—Products/Services—Verisign, Inc. www.verisign.com.
- PCT/US2008/051865 International Search Report, Jun. 4, 2008.
- PCT/US2008/051869 International Search Report, Jun. 5, 2008.
- Japanese Examiner Makoto Hirai, Official Action (with uncertified Translation), Japanese Patent Application No. 2003-575222, Sep. 25, 2009, 13 pages.
- Ando, Ruo, Real-time neural detection with network capturing, Study report from Information Processing Society of Japan, vol. 2002, No. 12, IPSJ SIG Notes, Information Processing Society of Japan, 2002, Feb. 15, 2002, p. 145-150.
- Aikawa, Narichika, Q&A Collection: Personal computers have been introduced to junior high schools and accessing to the Internet has been started; however, we want to avoid the students from accessing harmful information. What can we do?, DOS/V Power Report, vol. 8, No. 5, Japan, Impress Co., Ltd., 1998, May 1, p. 358 to 361.
- Shishibori, Masami, et al., "A Filtering Method for Mail Documents Using Personal Profiles", IEICE Technical Report, The Institute of Electronics, Information and Communication Engineers, vol. 98, No. 486, Dec. 17, 1998, pp. 9-16.
- Lane, Terran et al., "Sequence Matching and Learning in Anomaly Detection for Computer Security", AAAI Technical Report WS-97-07, 1997, p. 43 to 49.

* cited by examiner

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.