UNITED STATES DISTRICT COURT
DISTRICT OF OREGON

TANYA ANDERSEN, individually and on)
behalf of all others similarly situated.)
)
)
Plaintiff)
)
v.)
)
)
ATLANTIC RECORDING)
CORPORATION, a Delaware corporation;)
PRIORITY RECORDS, LLC, a California)
limited liability company; CAPITOL)
RECORDS, INC., a Delaware corporation;)
UMG RECORDINGS, INC., a Delaware)
corporation; and BMG MUSIC, a New)
York general partnership; RECORDING)
INDUSTRY ASSOCIATION OF)
AMERICA; SAFENET, INC., f/k/a)
MEDIA SENTRY, INC., a Delaware)
corporation; SETTLEMENT SUPPORT)
CENTER, LLC, a Washington limited)
liability company)
)
)
)
Defendants.)

No. CV 07-934 BR

**DECLARATION OF DOUG
JACOBSON, Ph.D.**

I, Doug Jacobson, pursuant to 28 U.S.C. § 1746, declare as follows:

1.   I, Doug Jacobson, Ph.D., CFCE, am a Professor of Electrical and Computer

Engineering at Iowa State University and the Director of the Iowa State University Information

Assurance Center. I also have an appointment with the Iowa State University police department where

I aid in computer forensics. In addition, I am the Chief Technical Officer and founder of Palisade

Systems, a high-tech computer security company that specializes in network monitoring and filtering

technologies.

2.   My employment with Iowa State University began in 1982 as a computer programmer.

I completed my Ph.D. in Computer Engineering with a focus in computer networking in December

1985. In January 1986, I was hired by the Department of Electrical and Computer Engineering as an

Assistant Professor to teach and research in the area of computer networks. Since that time, I have taught over 25 classes in computer networks at both the undergraduate and graduate level. I have received over 5 million dollars in funding for my research and have written several articles and made numerous presentations on the topic.

3.   In 1995, I created and taught one of the first computer security classes at Iowa State University and in the country. Under my guidance, in 1999, Iowa State University was recognized by the National Security Agency as a center of excellence. And in 2000, the Iowa State University Information Assurance Center was created. I am its first and only director. I am a Certified Forensics Computer Examiner.

4.   I have been teaching computer networking since 1986, and I have written papers and performed research on computer networks. I have given over 50 presentations on computer security and networks at conferences, workshops, and various meetings. I hold two patents in the area of computer network security and have won two R&D 100 awards for technologies I developed at Palisade Systems. One of these technologies is designed to detect and block peer-to-peer network protocols in addition to over 100 other network protocols. As a result of my experience, I have testified before the U.S. Senate Judiciary Committee on the uses of peer-to-peer protocols.

The Internet and IP Addressing

5.   The Internet is a collection of interconnected computers or network devices. In order to be able to deliver traffic from one computer or network device to another, each computer or network device must have a unique address within the Internet. The unique address is called the Internet Protocol (IP) address. Vinton Cerf, who is largely credited with creating the Internet, has described IP addressing as roughly analogous to the postal system, where each mail drop has a unique address.

6.   Each computer or network device is connected to a network which is administered by an organization like a business, internet service provider, college or university. Each network, in turn, is analogous to a zip code.

7.   Information is transported through the Internet in small chunks called packets. Each packet traverses the Internet and is reassembled by the destination machine. Each packet contains both the source and destination IP addresses. The source address is roughly analogous to the return address on a letter and the destination IP address is roughly analogous to the send to address on a letter.

IP Address Assignment

8.   The Internet is designed so that every computer or network device directly connected to the Internet must have a unique IP address. To ensure each IP address is unique, a block of IP addresses is allocated to an organization such as an Internet Service Provider, business, college or university. The IP address allocation is done in a highly structured manner with each set of IP addresses (a network) allocated by a single centralized authority. Each organization is then responsible for allocating the addresses to individual devices.

9.   There are two allocation methods for the devices connected to the Internet. The first allocation method provides the device with a static IP address and requires the user of the device to provide the IP address to the device during configuration. The owner of the network typically will provide the user of the device with the address information. This method is often used in businesses and colleges or universities. Two devices cannot effectively function if they are directly connected to the Internet simultaneously with the same IP address. If, for some anomalous reason, there were two computers that had the same IP address, individuals would not likely be able to communicate with either of the computers since the network would not know where to route the communications.

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10.   The second method involves dynamic addressing. With this method the device asks the network provider for an IP address when it wishes to use the network. The device will send a request, and the network provider will respond back with a packet that contains an IP address. The IP address is often allocated for a short period of time, and the device must request a renewal from the network provider. This method is called DHCP and is commonly used by Internet Service Providers (ISPs). The network provider will maintain a log of address allocations. As in the static case, two devices cannot effectively function if they are directly connected to the Internet simultaneously with the same IP address.

Peer-to-Peer Networks

11.   Peer-to-peer networks exist to distribute files from one user's computer to those operated by other users on the internet and to obtain files from those other users. Peer-to-peer networks are often used to distribute copyrighted material like songs, software, and movies. In addition, peer-to-peer networks are also used to distribute other files including pornography, child pornography, computer virus, and data files.

12.   The basic idea behind peer-to-peer networks is to allow people to connect to each other and distribute files or other information. Unlike the World Wide Web (web sites) where data is stored on central web services and users connect to a central web server to download information from the web site, peer-to-peer networks allow users to connect to each other and transfer files directly from user to user. The users of peer-to-peer networks typically do not know each other nor do they have any relationship outside the peer-to-peer network. Many users of the peer-to-peer network mistakenly think they are anonymous when they distribute files. In fact, they are easily associated with a specific IP address because the IP address of the computer distributing the files can be captured by a user during a search or a file transfer. That IP address can be associated with an organization such as an

ISP, business, college or university, which, in turn, can identify a particular user account assigned that IP address.

13.   Peer-to-peer networks are designed to facilitate the searching and transfer of data. Two basic types of peer-to-peer networks are decentralized and semi-decentralized.

14.   The semi-decentralized peer-to-peer network uses a central index server that contains an index of files that are offered for distribution by the users of the network. The files themselves are still stored on the user's computer and not on the central server. Files are transferred directly from one user to another user. In addition, users can communicate directly to each other like in the decentralized peer-to-peer networks. The central server makes searching more efficient. The semi-decentralized model can have more than one central server interconnected in their own peer-to-peer network. Benefits of this model include speeding up searches and distributing the work load. This also provides redundancy so that if one server node quits, the other nodes can still function and the network is still usable.

KaZaA

15.   KaZaA was one of the most popular semi-decentralized based peer-to-peer software programs in use for the period of 2002-2005. KaZaA uses a protocol referred to as FastTrack to create the semi-decentralized peer-to-peer network. When KaZaA software is installed on a computer, it creates a folder, called the "shared folder," that is used to store files that are downloaded from other users and for distribution to other users. By default this shared folder is located in the KaZaA program directory. KaZaA also provides the ability for the user to set up additional sharing folders that are used to share files with other KaZaA users. When a user starts KaZaA, he or she is connected to an index server (Supernode). The FastTrack network is designed so that any computer on the network can function as a Supernode.

16.   All files distributed on the FastTrack network are files that are in one or more shared folders of each user on the network. Each computer distributing files on the network uploads information about the files it is distributing to one or more Supernodes, where that information is made publicly available to other users on the network. Any changes to the list of files in the shared folder on a user's computer are reported by the distributing computer to the Supernode. The user of the sharing computer has the option of disabling the sharing function. This would prevent the sharing computer from uploading the file list to the index server and would also prevent the sharing computer from sending files from its shared folder to another user.

17.   Once KaZaA has been installed and files have been placed in the shared folder, all files in the shared folder are being distributed to anyone on the FastTrack network whenever the computer is on and connected to the Internet. This distribution occurs regardless of whether the individual user is physically present at the computer.

18.   When files are distributed, a set of identifiers tie the files back to the user distributing the files. These include (a) the IP address of the client distributing the files, (b) the name of the file, (c) file size, (d) the content hash, and (e) the port information. In addition, there are file descriptors that provide information like the artist name, album name, and description field. This information, metadata, is used in the search process. The description field is used to provide a description of the files and is part of the KaZaA system. This field is not part of the original data stored on a CD, but rather is generally added by users who rip the songs to the computer. This field is sometimes employed by the user who made the copy or "ripped" the original copyrighted material to brand the file with their name or handle (a fake name). The content hash is a mathematical function that is used to identify files that are the same. This allows the user to search for the file if the original download fails or to increase the transfer speed.

19.   To find a particular file, the user submits a query using the KaZaA application, which forwards the query to the Supernode. This process works much like a search engine. The Supernode looks in its database for the file(s) that match the search parameters. If one or more of the users connected to the super node has the files(s) that match the request, then the Supernode returns to the searching user the IP address(s) and the file description(s) of all matches. Supernodes will also forward the query to other Supernodes, thus expanding the search. Users also may connect directly to each other, so if a user finds a file on another user's machine he or she may then query the machine directly to see what other files are offered for distribution.

20.   Once a user finds the desired file, he or she sends a request to the computer sharing the file requesting that it send a copy of the file to the user. The sharing computer will copy the file from the shared folder(s), set up by the KaZaA user, into the computer's memory. The sharing computer then transmits the copy of the file contained in its memory to the computer that requested the file as a sequence of network packets. The network packets are transferred across the Internet. The requesting computer takes the packets it receives and places them into a file in the shared folder on the receiving computer. At the end of the process, each computer has a copy of the file.

21.   At no time during the process of communicating or sharing files does one user gain entry into another user's computer. Rather, the user requesting files simply communicates a request that the sharing computer send files. Neither KaZaA, nor any other popular file sharing program of which I am aware, permits one user to gain access into or in any way alter or manipulate the contents of another user's computer, or even to view any contents of another user's computer except those that the other user specifically placed in a shared folder.

22.   In addition to KaZaA, there are several other applications that use the FastTrack protocol. These applications include iMesh, Grokster, KazaaLite, and iSwipe. These applications are

available on computers using Microsoft Windows, Apple OS, and Linux. Because these applications

all use the FastTrack protocol, users with one application can share files with users using another

application. The name KaZaA is often used to refer to the applications running the FastTrack

protocol.

Limewire and Bearshare

23.   LimeWire and Bearshare are based on the Gnutella protocol which is an ad hoc peer-to-

peer network. When a user installs LimeWire or Bearshare, the user creates a shared folder on his or

her computer to store files downloaded from other users on the Gnutella network and to distribute files

to other users on the network. When a user starts a Gnutella based program like LimeWire or

Bearshare, they are connected to the entire Gnutella network. A LimeWire or Bearshare user can also

set up additional shared folders that are used to share files with other users on the Gnutella network.

24.   To make files publicly available for transfer to others, the user must put the files into

either the shared folder to which files are downloaded from other Gnutella users or into another shared

folder. Any files within these shared folders are easily found, and can be downloaded, by other users

of the Gnutella network. The publicly available information consists of a set of identifiers that are

used to tie the file back to the users. These identifiers include the IP address of the client offering the

files, the name of the file, file size and the content hash. In addition, there is metadata that provides

information like the artist name, album name, and user text. All of this information is available during

the search process. The user text field is used to provide a description of the files and is part of the

Gnutella system. This field is not part of the original data stored on a CD and is added by users who

put files into the Gnutella shared folder(s). This field is sometimes employed by the user who made

the copy of the original copyrighted material to put his or her name or handle (a fake name). The

content hash is a mathematical function that is used to identify files that are the same. This allows the user to search for the file if the original file download fails.

25.   A LimeWire or Bearshare user wishing to download a file from another user on the network uses the LimeWire or Bearshare program to submit a query (search request) to the Gnutella network for the particular artist or song title the user is looking for. If one or more of the users connected to the network has the files(s) that match the request, then the server node returns the IP address(s) of the user that has the file(s) and the file description(s) of all matches.

26.   Once a LimeWire or Bearshare user has found the file he or she wants to download, he or she sends a request to copy the file to the computer sharing the file. The sharing computer copies the file from the sharing computer's shared folder into the computer's memory. The sharing computer then transmits the copy of the file contained in its memory to the requesting computer as a sequence of network packets. The network packets are transferred across the Internet from the sharing computer to the requesting computer. At the end of the process, each computer has a copy of the file.

Identifying Peer-to-Peer Users Through IP Protocol Addresses

27.   The primary protocol used to identify a computer sharing files on a file sharing network is the IP address protocol, which is very well understood. In addition, most file sharing applications, including KaZaA, have been reverse engineered in order to create public domain versions of the applications to support the various file sharing protocols. One such version, stripped of spyware, is called "KazaaLite." Many of these applications, including KaZaA, have been tested and examined in the academic environment and the protocols for sharing files between computers are understood.

28.   MediaSentry did not need to take any kind of extraordinary step in order to note the IP address of the person from whom it downloaded music files. The IP address is transmitted as part of the normal process of connecting one computer to another over the Internet.

29.   The work MediaSentry performed to download music files from users on peer-to-peer networks, and to identify the IP addresses of computers offering to share these files, is straightforward and easily replicable by anyone who is knowledgeable in the field of computer science. For example, as part of an effort to assist law enforcement, a graduate student under my direction developed a process that searched for, downloaded and verified child pornography on peer-to-peer networks. The same process could be used to replicate MediaSentry's methods.

30.   When identifying infringers on peer-to-peer networks, MediaSentry does only what any other user on the network can do. It uses the same network protocols used by every other user on the network to search for and download files. Files transferred from the uploader's computer to MediaSentry are sent by the uploader in the form of data packets, which contain information identifying the source IP address, *i.e.*, the IP address from which the file is being transferred. In the case of KaZaA, the KaZaA program further reports a KaZaA-IP address in packets transmitted to the receiving computer. The KaZaA-IP address shows the IP address of the machine running the KaZaA software independent of the presence of any Network Address Translation ("NAT") device such as a router. Using well-known packet capture technology, MediaSentry records the interaction between itself and a given user on the network to demonstrate the file and data transfer from a computer connected to the Internet at a given IP address. In other words, when downloading files on a peer-to-peer network, the downloading process itself allows MediaSentry to identify the computer distributing the copyrighted material from a specific IP address. MediaSentry captures this IP address information, along with other information about the file, including the specific date and time of file transfer.

31.   As part of its process, once MediaSentry has identified a user distributing copyrighted material, MediaSentry may initiate the download of every file that user's shared folder – another step specifically permitted by the KaZaA network. This process allows MediaSentry to confirm the

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existence of an actual file in the shared folder(s) on the user's computer. It also provides the metadata associated with each file in the user's shared folder(s). For sound recordings, this metadata typically includes file name, album name, artist, file size, and file quality. Frequently, the metadata also include written descriptions indicating that the sound recordings were "ripped" (or saved to a hard drive) by another user on the network. This information can be used to show that the files in a given user's shared folder(s) were not legitimate copies of music in a user's collection, but were likely downloaded from another source.
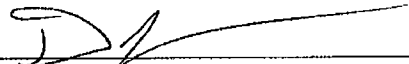
32.   By logging the specific IP address and the specific date and time of file transfer provided by MediaSentry, a copyright holder is then able to contact the Internet Service Provider ("ISP") responsible for allocating that IP address and obtain from the ISP the identity of the person responsible for that specific IP address at the time in question. ISPs keep logs of their IP address assignments, which show which IP address was assigned to a given customer at a given time. These logs are typically generated automatically and are reliable sources of information because they are generally used for billing purposes (as well as regularly relied upon by law enforcement). Publically available information can be used to determine which ISP is responsible for allocating the specific IP address found by MediaSentry. With this information, the copyright holder can go to the ISP to obtain the identity of the person responsible for the specific IP address at the specific date and time of file transfer. The process used by MediaSentry and the copyright holders of identifying users on the Internet is a standard process, one that is used by law enforcement and that is well known in the field of computer science.

33.   I am being compensated at the rate of $200 per hour.

Attachment: Doug Jacobson -- Curriculum Vitae -- Exhibit (A)

I declare under penalty of perjury and the laws of the United States that foregoing is true and correct.

Executed this 8ᵗʰ day of MAy , 2009, at 10:15 Am .

Dr. Doug Jacobson, Ph.D., CFCE

IOWA STATE UNIVERSITY
Electrical and Computer Engineering Department

Revised 4/30/2009

I. PERSONAL DATA

Name: Douglas W. Jacobson
Address: 2419 Coover Hall, 515-294-8307
Fax: 515-294-8432
Email   dougj@iastate.edu
Orig. Date of Employment: July 1, 1985
Citizenship: U.S.A.

II. EXPERT TESTIMONY

1) September 9th 2003, I testified in front of the U.S. Senate Judiciary Committee on the uses of peer-to-peer protocols.
2) February 23 2007, I gave a deposition in the case UMG Recordings v. Marie Lindor, Case No. 05-cv-1095 (E.D.N.Y.).
3) October 1 & 2 2007, I testified at the trial in the case of Virgin Records v. Jammie Thomas, Case No. 06-cv-1497 (D. Minn.).
4) April 2 2009, I gave a deposition in the case of Atlantic Recording Corp. v. Jenna Raleigh, Case No. 06-cv-01708 (E.D. MO).

III. EDUCATION & ACADEMIC EXPERIENCE

Ph.D. CprE   Iowa State University 1985
M.S.   EE   Iowa State University 1982
B.S.   CprE   Iowa State University 1980

7/08 - present	University Professor Electrical and Computer Engineering, Iowa State University
5/07 – 7/08	Professor Electrical and Computer Engineering, Iowa State University
7/06 – present	Director of Undergraduate Education, Electrical and Computer Engineering Department
9/05 – present	Director NSF I/U CRC Center for Information Protection
9/03 – present	Computer Forensics Analyst, ISU Police Department
9/01 – present	Director of Graduate Education, Information Assurance Program
11/00-present	Director, ISU Information Assurance Center
5/98 – 8/06	Computer Engineering Learning Community Coordinator
7/99 - present	Coordinator Active Learning Complex
7/98 - 6/02	Miller Faculty Fellow

7/89 - 5/2007	Associate Professor
	Electrical and Computer Engineering, Iowa State University
1986 - 6/89	Assistant Professor
	Electrical and Computer Engineering, Iowa State University
1985 - 1986	Temporary Instructor
	Electrical and Computer Engineering, Iowa State University

EXHIBIT A
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IV. INDUSTRIAL AND NON-ACADEMIC EXPERIENCE

1996 - Present	Chief Technical Officer Palisade Systems
1996	Founded Palisade Systems, Inc.
1983 – 1996	Founded D & D Digital Systems
1982 - 1985	Senior Design Engineer- ISU Computation Center

V. HONORS AND AWARDS

2008	Mervin S. Coover Distinguished Service Award
2007	Educator of the Year, Technology Association of Iowa
2006	Distinguished Service Award, Iowa Academy of Science
2005	InfraGard Meeting the Challenge Award
2004	Board of Regents Faculty Excellence Award
2004	Faculty Escort College Engineering summer commencement
2004	ISU Inventor
2003	R&D 100 Award
2003	Warren Boast Undergraduate Teaching award
2003	Certificate of Appreciation, Department of Public Safety
2002	Engineering Student Body, e-Week professor of the semester
2002	Finalist, EY Entrepreneur of the year
2002	Louis Thompson Distinguished Undergraduate Teaching Award
2001	R&D 100 Award
2001	Iowa diVinci Award
2000	Special Recognition Award, College of Engineering LEAD program
1999	ISU Inventor
1999	Wakonse Fellow
1999	Warren Boast Undergraduate Teaching award
1999	Engineering Student Council Outstanding Engineering Professorship in Computer Engineering
1998	College of Engineering Superior Engineering Teacher Award
1998	Engineering Student Council Outstanding Engineering Professorship in Computer Engineering
1996	College of Engineering Superior Engineering Extension Award
1995	Eta Kappa Nu
1985	Iowa State University Research Excellence Award
1983	Phi Kappa Phi

VI. ACADEMIC AREAS OF SPECIALIZATION

Teaching

CprE 181X Introduction to Computer Engineering I (98F)
CprE 182X Introduction to Computer Engineering II (99S)
CprE 183 Introduction to Computer Engineering and Problem Solving I (99F, 00F, 01F)

CprE 184 Introduction to Computer Engineering and Problem Solving II (00S, 01S, 02S)
CprE 185 Introduction to Computer Engineering and Problem Solving (02F, 03F, 04F, 05F)
CprE 211 Digital Systems Design (95F,96S,96F,97S, 97SS, 97F, 98S, 98F)
CprE 281 Intro to Digital Systems Design (93F,94S,94F,95S)
CprE 284X UNIX and C Fundamentals (89F)
CprE 287 Digital Laboratory I (91F)
CprE 389 Introduction to Design of Computer Based Systems (88F)
CprE 487X PC Bas Intfac Inst (89F)
CprE 489 Data Communications and Computer Networks (87F,90F,91F,93F,94F,96F)
CprE 580 Advanced Computer Networks
(88S,89S,90S,91S,92S,92SS,93S,93SS,94S,94SS,95S, 97F, 98F, 99F,00F)
CprE 530 Advanced Computer Networks (01F, 01S, Every fall 2002 though 2009)
CprE 587X Local Area Network (88F)
CprE 532 Information Warfare(Every spring 1996S through 2009)
CprE 534X Ethics in computer Security (99S)
CprE 592 Seminar (94S,94F)
CprE 685 Advanced Topics in Local Area Networks (87F,88S,90S,90F)
CprE 699 Research (87F-current)

Course Supervision (Current courses)

CprE 530	Advanced Computer Networks
CprE 532	Information Warfare
CprE 632	IA capstone

Course Development

CprE 181X	Introduction to Computer Engineering I
CprE 182X	Introduction to Computer Engineering II
CprE 183X	Introduction to Computer Engineering and problem solving I
CprE 184X	Introduction to Computer Engineering and problem solving II
CprE 185	Introduction to Computer Engineering and Problem Solving
CprE 211	Digital Systems Design
CprE 281	Digital Systems Design
CprE 284X	Fundamentals of UNIX and C (with J. A. Davis)
CprE 287	Digital Laboratory I
CprE 389	Introduction to Design of Computer Based System (Lab Development)
CprE 685	Advanced Topics in Local Area Networks
CprE 580	Advanced Computer Networks
CprE 532	Information Warfare
CprE 534X	Ethics in computer security (with J. A. Davis)
CprE 587X	Local Area Networks
CprE 632	IA Capstone

VII. GRANTS AND CONTRACTS

In Progress

Submitted

1. **Jacobson, D.W.,** Licklider, B., Bergman, C., Wong, J., "SFS Fellowships for information assurance students", 5/1/09-4/30/13, NSF, $1,956,883
2. **Jacobson, D.W.** "CPS:A Unified Framework for Complex Critical Infrastructure Predictive Modeling in Disaster Preparedness and Response: The Critical Infrastructure Modeling and Response Environment", NSF, 10/1/2009-9/30/2012, $558,603
3. **Jacobson, D.W.** "Scale-up: IT-Adventures: Engaging High School Students with Information Technology Using Inquiry-Based Learning, IT-Clubs, IT-Mentors and Real World Challenges", NSF", 10/1/2009-9/30/2014, $2,451,832

Funded

1. **Jacobson, D.W.** "IT-Adventures", Iowa Math and Science Education", 5/30/2009-5/1/2010, $60,000
2. **Jacobson, D.W.** "IT-Adventures", Iowa Department of Economic Development, 3/1/2009-12/31/2010, $50,000
3. **Jacobson, D.W.** "IT-Adventures", Iowa Math and Science Education", 3/1/2009-5/1/2009, $43,200
4. Daniels, T., **Jacobson, D.W.** "Scalable Virtual Machine Laboratory Systems", NSF, 9/1/08-8/31/10, $180,000
5. **Jacobson, D.W.** "ISEAGE: Internet-Scale Event and Attack Generation Environment ", Department of Justice, 12/31/07-12/31/10, $611,000
6. **Jacobson, D.W.** "IT-Adventures", Iowa Department of Economic Development, 3/1/2008-12/31/2009, $50,000
7. **Jacobson, D.W.** "ISEAGE: Internet-Scale Event and Attack Generation Environment ", Department of Justice, 8/1/06-7/31/09, $148,048
8. **Jacobson, D.W.** "High School Cyber Defense Competition", Iowa Department of Economic Development, 3/1/2007-12/31/2008, $15,000
9. **Jacobson, D.W.,** Licklider, Daniels, "Scholarship Program", 8/1/2006-1/31/2008, DoD, $112,600
10. **Jacobson, D.W.,** Daniels, T. "Programmable security devices", Boeing, 11/1/2005-6/1/2006, $15,000
11. **Jacobson, D.W.,** "NSF I/U CRC Center for Information Protection", NSF, 8/1/2005-7/31/2009, $230,000
12. **Jacobson, D.W.,** "NSF I/U CRC Center for Information Protection", 7 companies, 8/1/2005-12/31/2007, $300,000
13. **Jacobson, D.W.** "ISEAGE: Internet-Scale Event and Attack Generation Environment ", Department of Justice, 7/1/05-12/31/07, $496,750
14. **Jacobson, D.W.** "ISEAGE: Internet-Scale Event and Attack Generation Environment ", Department of Justice, 7/1/05-12/31/07, $197,329
15. **Jacobson, D.W.,** Licklider, B., Bergman, C., Wong, J., "SFS Fellowships for information assurance students", 7/1/05-6/30/09, NSF, $888,008

16. **Jacobson, D.W.,** "Computer Engineering Learning communities", ISU Provost 2005, $10,000

17. **Jacobson, D.W.,** "Active Directory Penetration Test", State of Iowa Department of Administrative Services, 5/24/04-5/23/05, $6,000

18. **Jacobson, D.W.** "ISEAGE: Internet-Scale Event and Attack Generation Environment ", Department of Justice, 10/1/04-10/31/05, $496,750

19. **Jacobson, D.W.,** Davis, J.A., Schmidt, S., Bergman, C., Wong, J., "Information assurance educational support program", 2003-2004 NSF, $75,000 Supplemental funding

20. **Jacobson, D.W.,** "Computer Engineering Learning communities", ISU Provost 2004, $7,500

21. Guan, Yong, **Jacobson, D.W.,** Davis, J.A. "Cyberspace Forensics: Research, Course Development, and Laboratory Development (Capacity Building Track)", NSF, $200,000, 7/1/03-6/30/05

22. **Jacobson, D.W.,** "Cyber Protection Laboratory", John Deere Foundation, $30,000

23. **Jacobson, D.W.,** "Computer Engineering Learning communities", ISU Provost 2003, $15,000

24. **Jacobson, D.W.,** Davis, J.A., "NSF I/U CRC Cyber protection center: Planning Grant", NSF, $10,000

25. **Jacobson, D.W.,** "Computer Engineering Learning communities", ISU Provost 2002, $15,000

26. **Jacobson, D.W.,** Davis, J.A., Schmidt, S., Bergman, C., Wong, J., "Information assurance educational support program", 2001-2003 NSF, $200,000

27. Davis, J.A., **Jacobson, D.W.,** Miller, C., Bergman, C., Wong, J., "SFS Fellowships for information assurance students", 2001-2006 NSF, $2,637,027

28. **Jacobson, D.W.,** "Computer Engineering Learning communities", ISU Provost 2001, $22,000

29. Ryan, S., Egbelu, P., Gemmill, D., Min, J., Qamhiyah, A., **Jacobson, D.,** "An enabling system for market driven product design and recycling", 1999, NSF, $180,002.

30. **Jacobson, D.W.,** Davis, J.A., Lawson, K., Covert, G., Miller Fellowship "A web-based Information Assurance Awareness Delivery System", July 2000 - June 2001, $17,500

31. Daniel Berleant (Primary) and Steve Russell, Carolina Cruz-Neira, Julie Dickerson, **Doug Jacobson,** John Lamont, Arun Somani, and Charles Wright, Miller Fellowship, "Using Software Engineering Concepts to Enhance Learning: A Novel Approach", July 2000 - June 2001

32. Barbara Licklider (Primary) and J. Davis, G. Nonnecke, M.J. Oakland, W. Slagle, S. Mickelson, A. Rohach, S. Ravenscroft, M. Wiedenhoeft, B. Keller, T. Boylston, and **D. Jacobson,** Miller Fellowship, " Impacting Students LEA/RNing Through a Faculty Mentoring Program" July 2000 - June 2001

33. **Jacobson, D.W.,** ISU Provost "Support for Project Success", Aug 2000 - May 2001, $32,000

34. Davis, J.A., **Jacobson, D.W.,** Russell, S, Bergman, C., Wong, J. "Integrated Security Curricula Modules", Total 467,000, NSF, $325,000, ISU match $162,000 8/1/99-7/31/02

35. **Jacobson, D.W.,** Davis, J.A., Russell, S, Bergman, C., Wong, J. "NSA Certification of ISSL as a Center of Excellence in Information Assurance Education"

36. **Jacobson, D.W.,** ISU Provost "Peer Mentors for Learning Communities", Aug 1999 - May 2000, $7,500

37. **Jacobson, D.W.,** Miller Fellowship "Project SUCCESS", July 1999 - June 2000, $24,000

38. **Jacobson, D.W.,** ISU Provost "Project Success", May 1999 - June 1999, $8,000

39. **Jacobson, D.W.**, ISU Provost "Peer Mentors for Learning Communities", January 1999 - May 1999, $1,000

40. Davis, J.A., **Jacobson D.W.** NSA Information Security University Research Program, "Detection of and countermeasures for network denial of service attacks", 8/15/98 - 8/14/01, $195,226

41. **Jacobson, D.W.**, ISU Provost "Peer Mentors for Learning Communities", September1998 - December 1998, $2,000

42. **Jacobson, D.W.**, Miller Fellowship "A Student Centered Approach to Computer Engineering Through Learning Communities", July 1998 - June 1999, $25,000

43. Evans, M, **Jacobson, D. W.**, Wright, C.W., Maney, A., Vary, J, "International Women in Science and Engineering", ISU Promag, January 1998 - December 1998, $20,000

44. **Jacobson, D. W.** and Davis, J. A., "Network watchdog," CATD, January 1998 - December 1998 $49,000.

45. **Jacobson, D. W.** and Davis, J. A., "CISE Research Instrumentation," 1996, NSF, $49,500.

46. **Jacobson, D. W.** and Davis, J. A., "Network Security," CATD, June 1995 - June 1996, $60,000.

47. **Jacobson, D. W.** and Davis, J. A., "A Multilevel Security Access Mechanism for Distributed Tasks," NSA, June 1994 - June 1996, $200,000.

48. **Jacobson, D. W.**, "Network Security Bridge," Department of Commerce, July 1992-June 1995, $91,800.

49. Director of Computer Systems Affiliate program. $29,000 in 1990
    a. $17,000 in 1993
    b. $17,000 in 1992
    c. $17,000 in 1991
    d. $29,000 in 1990

50. **Jacobson, D. W.**, "Real-Time Programming Course," NSF, October 1993 - September 1994, $3,000.

51. **Jacobson, D. W.**, "NEEDS Image Navigator/NEEDS Access Server," NSF, October 1993 - September 1994, $42,000.

52. **Jacobson, D. W.**, "NEEDS database," NSF, October 1992 - September 1993, $35,000.

53. **Jacobson, D. W.**, "Real-Time Control," Fisher Controls, September 1991 - August 1992, $10,800.

54. **Jacobson, D. W.** and Davis, J. A., Co-Principal Investigators, "A Virtual Transport Protocol for Interconnecting Networks," US West, August 1989 - August 1991, $97,340.

55. Davis, J. A. and **Jacobson, D. W.**, "3B2 Parallel Processing Upgrade, "ISU Engineering College Research Grant, October 1990, $3,200.

56. **Jacobson, D. W.**, "Local Area Network Protocols for Integrated Voice, Data and Video Services," U S West Advanced Technologies, August 1, 1988 - July 31, 1989, $40,521.

57. **Jacobson, D. W.**, "Local Area Network Laboratory," Texas Instruments, January 1988 - December 1988, $46,804.

58. **Jacobson, D. W.**, "Local Area Network Protocols for Integrated Voice, Data and Video Services," Northwestern Bell, July 1987 - July 1989, $20,000.

59. **Jacobson, D. W.**, "Local Area Network Protocols for Integrated Voice, Data and Video Services," US West Advanced Technologies, July 1987 -July 1988, $57,000.

60. **Jacobson, D. W.**, "Token Ring Network Laboratory," Texas Instruments, February 1987 - December 1987, $12,490.

61. **Jacobson, D. W.,** "Network Protocol Analysis," Rockwell-Collins, July 1985 - July 1987, $108,000.
62. **Jacobson, D. W.** and J. A. Davis, "Distributed Network Performance Monitor," AT&T Information Systems, September 1985 - December 1987, $25,000.
63. Russell, S. F., Basart, J. P., and **Jacobson, D. W.,** "Research in Networking for HF Frequency Hopping Radio Communication Systems," RCA/Communications and Information Systems Division Grant, December 1985 - March 1986, $25,000.

Equipment Grants

1. **Jacobson, D.W.,** Davis, J.A. "Security equipment grant" November 2003 Cisco Systems, $99,930
2. **Jacobson, D. W.,** Equipment Grant from Intermec, November 2000, $25,000
3. **Jacobson, D. W.,** Software Grant from NFR, December 2000, $4500
4. **Jacobson, D. W.,** Equipment Grant from Anacot, July 1993, $4000. (SCSI bus Analyzer)
5. **Jacobson, D. W.,** Equipment Grant from AMD, July 1990, $36,000. (FDDI interface cards)
6. **Jacobson, D. W.,** Equipment Grant from HP, July 1991, $75,000. (Network test equipment)
7. **Jacobson, D. W.** and Davis, J. A., Equipment Grant from AT&T, July, 1988, $89,000.
8. **Jacobson, D. W.** and Davis, J. A., Equipment Grant from Tektronix, December 1987, $75,280.
9. **Jacobson, D. W.** and Davis, J. A., Equipment Grant from AT&T, July, 1987, $150,000.
10. **Jacobson, D. W.** and J. A. Davis, Equipment Grant from AT&T, September 1985, $1,800,000.

VIII. TECHNICAL PUBLICATIONS

Refereed Journals

1. Julie Rursch, Andy Luse, and Doug Jacobson, "IT-Adventures -- A Program to Spark IT Interest in High School Students using Inquiry-Based Learning with Robotics, Game Design, and Cyber Defense", Accepted, IEEE Transactions on Education.
2. Gaitonde, S., **Jacobson, D. W.,** Pohm, A. V., "Bounding Delay on a Token Ring Network With Voice, Data and Facsimile Applications: A Simulation Study," Communications of the ACM, January 1990.
3. **Jacobson, D. W.,** et al., "A Master/Slave Monitor Measurement Technique for an Operating Ethernet Network," IEEE Network, Vol. 1, No. 3, July 1987.
4. Rowley, W. A., **Jacobson, D. W.,** Jones, M.D. and Clarke, S. L., "A Microcomputer Monitored Mosquito Activity System," Annals of the Entomological Society of America, 80(4):534-538, 1987.
5. Clarke, J. L., III, Rowley, W. A., Christiansen, S. and **Jacobson, D. W.,** "Microcomputer Based Monitoring and Data Acquisition System for a Mosquito Flight Mill," Annals of the Entomological Society of America, 77(2): 119-122, 1984.
6. **Jacobson, D. W.** and Steffen, D. D., "Low Cost Ski Jump Timer," IEEE Student Papers, pp. 302-306, 1980.

Proceeding Articles

1. Rursch, J., **Jacobson, D.W.**, "Using Cyber Defense Competitions to Build Bridges Between Community Colleges and Four Year Institutions: A Footbridge for Students into an IT Program", Accepted 2010 FIE conference.
2. Rursch, J., Burkhardt, B.**, Jacobson, D.W.**, "Training Non-IT Teachers to Advise and Facilitate Inquiry-Based Learning in IT: A Pilot Study", Accepted 2010 FIE conference.
3. Rursch, J., **Jacobson, D.W.**, "IT-Adventures: Turning High School Students "ON" to Information Technology", Accepted 2010 FIE conference.
4. Evans, N., Blakely, B.**, Jacobson, D.,** "A Security Capstone Course: An Innovative Practical Approach to Distance Education", Accepted 2010 FIE conference.
5. Pubali Banerjee, **Doug Jacobson,** "Optimal Configuration of Clustering Protocols for Sensor Networks", 18th IASTEAD International Conference on Parallel and Distributed Computing and Systems, Dallas, TX, November 13-15, 2007
6. Pubali Banerjee, **Doug Jacobson,** "Optimal configuration of a secure clustering protocol for sensor networks", 20th ISCA International Conference on Parallel and Distributed Computing Systems, September 24-26, 2007, Las Vegas, Nevada, pp. 145-150. ISBN 978-1-880843-64-2.
7. Pubali Banerjee, **Doug Jacobson,** Soumendra Lahiri "Security and performance analysis of a secure clustering protocol for senor networks", 6th IEEE International Symposium on Network Computing and Applications, Cambridge, MA, July 12-14, 2007, pp134-144
8. **Doug Jacobson,** "Computer Security Summer Camp", InfraGard Guardian 3/30/2006
9. **Doug Jacobson,** Tom Daniels, "Information Assurance Faculty Development Workshop", Proceedings of the 2006 American Society for Engineering Education, Chicago, June 18-21 2006.
10. **Doug Jacobson,** "Computer Security Summer Camp for High School Students", Proceedings of the 2006 American Society for Engineering Education, Chicago, June 18-21 2006.
11. **Doug Jacobson,** Nate Evans, "Cyber Defense Competition", Proceedings of the 2006 American Society for Engineering Education, Chicago, June 18-21 2006.
12. **Doug Jacobson,** "Teaching Information Warfare with Lab Experiments via the Internet", 2004 FIE conference Savanna Georgia, October 20-23.
13. **Doug Jacobson,** James A. Davis "Computer Security Faculty Development Workshop", 2004 FIE conference Savanna Georgia, October 20-23
14. **Doug Jacobson,** "Development of a Graduate Certificate in Information Assurance", Proceedings of the 2004 American Society for Engineering Education, Salt Lake City, June 2004.
15. **Doug Jacobson,** "Teaching Information Warfare with a Break-in Laboratory", Proceedings of the 2004 American Society for Engineering Education, Salt Lake City, June 2004.
16. Tom Richardson, James A. Davis, and **Doug Jacobson,** "Developing a database of vulnerabilities to support the study of denial of service attacks", Second Annual CERT conference, September 27-29, 2000, Omaha, NE
17. Tom Richardson, James A. Davis, and **Doug Jacobson,** "Countermeasures for Denial of Service Attacks", First Annual CERT conference, August 29-31, 1999, Omaha, NE
18. **Jacobson, Doug,** Licklider, Barb, "Freshman year learning communities in a computer engineering program", 2000 FIE Conference October, 2000
19. **Jacobson, Doug,** Licklider, Barb, "Project SUCCESS", 2000 ASEE Conference June 2000

20. **Jacobson, Doug,** Venkata, S.S., "An Active Learning Complex: Can Space be used to foster student interaction?" 2000 ASEE Conference June, 2000

21. **Jacobson, Doug,** Davis James, Licklider, Barb, "See one, do one, teach one .... Two faculty member's path through student-centered learning", 1998 Frontiers in Education Conference, Nov 1998

22. **Jacobson, Doug,** Davis James, Licklider, Barb, "Ten Myths of Cooperative Learning in Engineering Education", 1998 Frontiers in Education Conference, Nov 1998

23. Davis, J., **D. Jacobson,** "Capstone Laboratory Exercise for CprE 532: Computer Security II", Workshop on Education in Computer Security, Pacific Grove, CA January 19-21, 1998.

24. **D. Jacobson,** S. Bridges " Hiring a lifeguard: Keeping your kids safe while surfing the Internet", Techlaunch 2010, Sioux City, IA, September 18, 1997.

25. Davis, J., **D. Jacobson,** S. Bridges, K. Wright, "An Implementation of MLS on a Network of Workstations Using X.500/X.509", IEEE International Performance, Computing, and Communications Conference, Phoenix, AZ, February 5-7, 1997.

26. Hastings, N., J. Whitmer, J. Davis, and **D. Jacobson,** "A Case Study of Authenticated and Secure File Transfer: The Iowa Campaign Finance Reporting System (ICFRS)", IEEE International Performance, Computing, and Communications Conference, Phoenix, AZ, February 5-7, 1997.

27. Davis, J.A., **Jacobson, D.,** "MLS Access method", INFOSEC Research and Technology Transfer Conference, Baltimore, MA, August 6-8, 1996

28. **Jacobson, D.,** Reddy, S., Kuhl, J., Hassoun, M., Jones, E. C., Jr., "A Course Exchange Using Television," Frontiers in Education Conference, November 1994. (Received honorable mention in the best paper competition)

29. Ahuja, R., Gaitonde, S., and **Jacobson, D. W.,** "Design of an Integrated Services Lan Architecture," Proceedings of the International Conference on Communications, Denver, Co., June 23-26, 1991.

30. Gercek, G., Ahuja, R. P. S., and **Jacobson, D. W.,** "LAN Interconnection Via Bridges: Congestion Control Issues," Proceedings of the Infolan 89, Local Area Network Show and Conference, 1989.

31. **Jacobson, D. W.,** "Design and Implementation of an Integrated Voice, Data, and Video Services Network," Proceedings of the IEEE Pacific RIM Conference on Communication, Computers and Signal Processing, Victoria, BC, Canada, pp. 500-505, June 1-2, 1989.

32. Gaitonde, S., **Jacobson, D. W.,** Pohm, A. V., "Bounding Delay on a Token Ring Network with Voice, Data and Facsimile Applications: a Simulation Study," Proceedings of the Phoenix Conference on Computers and Communications, Phoenix, AZ, pp. 201-205, March 22-24, 1989.

33. Ghansah, I. and **Jacobson, D.,** "A Prioritized Reservation Protocol for Fiber Optic Ring Local Area Computer Networks," Proceedings of the 13th Conference on Local Computer Networks, Minneapolis, MN, October 10-12, 1988.

34. Lee, J. Y. and **Jacobson, D. W.,** "Design and Implementation of the High Performance Integrated Voice/Data Token Ring Protocol," Proceedings of COMSAC88, Chicago, IL, pp. 97-104, October 5-7, 1988.

35. Ghansah, I. and **Jacobson, D.,** "A State-Oriented Architecture Model for Validation and Performance Prediction of Computer Networking Protocols," Proceedings, Nineteenth Annual Pittsburgh Conference on Simulation and Modeling, Pittsburgh, PA, May 1988.

36. **Jacobson, D. W.,** "Network Performance Analysis using Queuing Model Simulation Techniques," Proceedings Eighteenth Annual Pittsburgh Conference on Simulation and Modeling, Pittsburgh, PA, April 23-24, 1987.
37. **Jacobson, D. W.,** "Network Protocol Verification and Performance Analysis using Discrete Event Simulation," Proceedings Eighteenth Annual Pittsburgh Conference on Simulation and Modeling, Pittsburgh, PA, April 23-24, 1987.
38. **Jacobson, D. W.,** "High Performance Multiple Channel Token Bus Protocol," Proceedings IEEE Pacific RIM Conference on Communications, Computers and Signal Processing, Victoria B.C. Canada, pp. 465-468, June 4-5, 1987.
39. **Jacobson, D. W.,** "Token Bus Interconnection Network for Tightly-Coupled Multiprocessor Systems," Proceedings Phoenix Conference on Computers and Communication, Phoenix, AZ, pp. 18-24, February 25-27, 1987.
40. **Jacobson, D. W.,** "Measurement Technique for an Operating Ethernet Network," Fifteenth Annual Computer Science Conference, Proceedings, pp. 458, St. Louis, MO, February 17-19, 1987.
41. **Jacobson, D. W.,** "High Performance Reliable Token Bus for the MAP Network Architecture," Proceedings Conference on Local Computer Networks, p. 27-33, October 6-8, 1986.
42. **Jacobson, D. W.,** "Network Protocol Analysis," Proceedings of Fourteenth Annual Computer Science Conference, (ACM), p. 426, Cincinnati, OH, February 4-6, 1986.

Books or Chapters of Books

1. **Jacobson, D. W.,** "Introduction to Network Security", ISBN 1584885432, Chapman & Hall/CRC; 1 edition (November 18, 2008)
2. **Jacobson, D. W.,** "Teaching Large Classes Well: A handbook for Faculty in Higher Education" Contributed a chapter "Getting students in a technical class involved in the classroom", ISBN 1-882982-51-7, pp210-220, Anker Press
3. **Jacobson, D. W.,** "Local Area Network (LAN) Lab Manual," Texas Instruments, Dallas, Texas, 1989.
4. Davis, J. A. and **Jacobson, D. W.** "Processor Design Using Microprogramming and Bit-Slice Techniques," Texas Instruments, Dallas, Texas, 1987.

IX. TECHNICAL PRESENTATIONS

1. **Jacobson, D.W.** "Information Warfare", IEEE Central Iowa Section, Ames, Iowa, April 16, 2009. (Invited)
2. **Jacobson, D.W.** "Computer Security", Newton Rotary, Eldora, Iowa, April 7, 2009. (Invited)
3. **Jacobson, D.W.** "Computer Security", Hardin County foster parent group, Eldora, Iowa, November 18, 2008. (Invited)
4. **Jacobson, D.W.** , Rursch J, "IT-Adventures, ITEC, Des Moines, IA, October 21, 2008
5. **Jacobson, D.W.** "Cyber Crime", ISSA, Mankato, MN, March 20, 2008. (Invited)
6. **Jacobson, D.W.** "Computer Security", Senior Citizen group, Des Moines, Iowa, March 4, 2008. (Invited)

7. **Jacobson, D.W.** "Identity Theft", IEEE Central Iowa Section, Ames, Iowa, February 28, 2008. (Invited)
8. **Jacobson, D.W.** "Computer security", Des Moines Lions Club, Des Moines, IA, August, 23, 2007. (Invited)
9. **Jacobson, D.W.** "What's Transforming the InfoSec landscape" Panel presentation, SoBIS, Metro State, Minneapolis, Minnesota, April 21, 2006. (Invited)
10. **Jacobson, D.W.** "Protecting Critical Network Assets" SoBIS, Metro State, Minneapolis, Minnesota, April 21, 2006. (Invited)
11. **Jacobson, D.W.** "Palisade Systems" Panel presentation, Innovation Iowa, Iowa Board of Regents, Des Moines, Iowa, February 15, 2006. (Invited)
12. **Jacobson, D.W.** "Computer Forensics", IEEE Central Iowa Section, Ames, Iowa, February 9, 2006. (Invited)
13. **Jacobson, D.W.** "Information Warfare", Anti-Terrorism Advisory Council – Northern and Southern Districts of Iowa, Des Moines, Iowa, February 7, 2006 (Invited)
14. **Jacobson, D.W.** "Computer Security – How to stay safe in Cyber Space", 2005 Midwest Election Officials Conference, Overland Park, KS., December 13, 2005 (Invited)
15. **Jacobson, D.W.** "Computer security", Des Moines Lions Club, Des Moines, IA, December, 13, 2005. (Invited)
16. **Jacobson, D.W.** "Developing a Comprehensive Security Program – How to Avoid Catastrophic Losses", Iowa Technology Showcase, Des Moines, IA, October 13, 2005 (Invited)
17. **Jacobson, D.W.** "IT Security", Iowa HIPAA SNIP Work Group Meeting, Des Moines, IA., October 4, 2005. (Invited)
18. **Jacobson, D.W.** "Security Risks in 2006", Security Leadership Roundtable, Web conference, September, 22, 2005 (Invited)
19. **Jacobson, D.W.** "Design of a Test-bed network for security research", IEEE EIT conference, May 23, 2005, Lincoln, NE.
20. **Jacobson, D.W.** "Secure your data with identity management", Iowa Technology Showcase, Des Moines, IA, October 28 2004. (Invited)
21. **Jacobson, D.W.** "Wireless Security", Iowa Community Action Association training conference, Des Moines, IA., October, 27 2005 (Invited)
22. **Jacobson, D.W.** "Computer Security", Iowa Community Conference hosted by Congressman Tom Latham, Iowa State University, Ames, IA, May 27 2004. (Invited)
23. **Jacobson, D.W.** "Information Warfare: What is the role of a university in the battle" BIG XII internal Auditors Conference, May 24, 2004, Ames, IA. (Invited)
24. **Jacobson, D.W.** "Computer Engineering Learning Community" Learning Community Institute, May 11, 2004, ISU, Ames, IA. (Invited)
25. **Jacobson, D.W.** "Future of Information Security", The Academy of Private Investigators, April 30 2004, Des Moines Area Community College, Ankeny, IA. (Invited)
26. **Jacobson, D.W.** "Computer Security" Simpson College, April 15 2004, Des Moines, IA. (Invited)
27. **Jacobson, D.W.** "Computer Security" INC 500 Annual Conference, March 26 2004, Miami, FL. (Invited)
28. **Jacobson, D.W.** "Technology Solutions: The role of Iowa's Universities", The Iowa Partnership for Homeland Security, Iowa Business Council, Des Moines, IA, March 12 2004. (Invited)

29. **Jacobson, D.W.** "Computer Security", Des Moines Rotary, Des Moines, IA, February 19, 2004. (Invited)
30. **Jacobson, D.W.** "Computer Forensics", Guest Speaker Chem 619 Special Topics in Analytical Chemistry. Forensic Science ISU , IA, January 24, 2004. (Invited)
31. **Jacobson, D.W.** "Computer Security", Simpson College Computer Science Department, Indianola, IA, November 24, 2003. (Invited)
32. **Jacobson, D.W.** "Securing Your Perimeter: Strategies for Protecting Business Assets", Iowa Technology Showcase, Des Moines, IA, October 22 2003. (Invited)
33. **Jacobson, D.W.** "Computer Security", Ames Rotary, Ames, IA, October 22, 2003. (Invited)
34. **Jacobson, D.W.** "Security problems with peer to peer networks", US Senate Judiciary Committee, September 9 2003
35. **Jacobson, D.W.** "Computer Forensics", Symposium on Information Assurance and Security, St. Cloud State University, St. Cloud, MN., April 18 2003. (Invited)
36. **Jacobson, D.W.** "Computer Security", Clear Lake Economic Development Corporation, Des Moines, IA, December 6 2002. (Invited)
37. **Jacobson, D.W.** "Information Warfare: How do hackers hack", Iowa Technology Showcase, Des Moines, IA, October 24 2002. (Invited)
38. **Jacobson, D.W.** "The care & feeding of a security program: A panel group discussion", Iowa Technology Showcase, Des Moines, IA, October 24 2002. (Invited)
39. **Jacobson, D.W.** "Information Assurance at Iowa State University", InfraGard, Des Moines, IA, September 19 2002. (Invited)
40. **Jacobson, D.W.** "Information Assurance at Iowa State University", State of Iowa Security Staff, Des Moines, IA, June 19 2002. (Invited)
41. **Jacobson, D.W.** "Information Assurance at Iowa State University", Iowa Association of Business and Industry, Ames, IA, May 15 2002. (Invited)
42. **Jacobson, D.W.** "Information Warfare", ISACA meeting, Des Moines, IA, March 19 2002. (Invited)
43. **Jacobson, D.W.** "Serve and Secure Iowa", Iowa legislative meeting, Des Moines, IA, February 28th 2002. (Invited)
44. **Jacobson, D.W.** "Information Warfare", IEEE Central Iowa Section meeting, Ames, IA, February 2002. (Invited)
45. **Jacobson, D.W.** "Computer Security Panel Discussion", Iowa Technology Showcase, Des Moines, IA, October 25 2001. (Invited)
46. Davis, J.A., **Jacobson, D.W.** "Computer Security", State of Iowa Conference on Cyber Terrorism and Critical Infrastructure Assurance, STARC Armory April 25, 2001 (invited)
47. **Jacobson, D.W.** "Computer Security", Software Information Technology of Iowa, Annual meeting, March 6, 2001 (invited)
48. **Jacobson, D.W.** "Faulty Entrepreneurship" Entrepreneurship & Innovation at Iowa State University, ISU Memorial Union, March 29, 2001 (invited)
49. **Jacobson, D.W.** "Computer Security", Security Seminar Des Moines Country Club, March 15, 2001 (invited)
50. **Jacobson, D.W.** "Online Privacy and Security", Personal Privacy Issues Study Committee of the Iowa Legislature, Des Moines Capital Building, January 2, 2001 (invited)
51. **Jacobson, D.W.** "Computer Security at ISU", Cert Conference, Omaha, NE, September 27 2000. (Invited)

52. **Jacobson, D.W.** "Security and Privacy for a Small Business", Iowa Technology Showcase, Des Moines, IA, November 8 2000. (Invited)

53. **Jacobson, D.W.** "Security and Privacy for a Small Business", Iowa Technology Showcase, Des Moines, IA, November 7 2000. (Invited)

54. **Jacobson D.W.** "Faculty Entrepreneurship Experiences", Entrepreneurship & Innovation at ISU Breakfast & Discussion, Ames, IA, October 24, 2000 (Invited)

55. **Jacobson D.W.** "Computer Security", Iowa CIO Forum, Des Moines, IA, October 16, 2000 (Invited)

56. **Jacobson D.W.** "Securing Your Business: What to Fear from the E", Midwest E-Business Conference, September 18-20, 2000 (Invited)

57. **Jacobson, D.W.,** "Palisade Systems: Entrepreneurial Success in Iowa", Iowa Venture Capital Conference, Des Moines, IA, September 6, 2000 (Invited)

58. **Jacobson, D.W.,** "Computer Security", ISU Computation Center, June 30, 2000 (Invited)

59. **Jacobson, Doug,** Venkata, S.S., "An Active Learning Complex: Can Space be used to foster student interaction?" 2000 ASEE Conference, St. Louis, MO., June 18-21, 2000

60. **Jacobson, Doug,** Licklider, Barb, "Project SUCCESS", 2000 ASEE Conference, St. Louis, MO., June 18-21 2000

61. **Jacobson, D.W.,** "Network Security", Palisade Systems Seminar, Des Moines, IA, May 19, 2000

62. **Jacobson, D.W.** "The Benefits of Starting a Business: A faculty Perspective", Entrepreneur Forum, ISU Pappajohn Center, ISU, March 24, 2000 (Invited)

63. **Jacobson, D.W.** "Computer Security", ISU Unix Users Group, March 8th 2000. (Invited)

64. **Jacobson D.W.** "Information Warfare", ISU Scholars Fair, February 26, 2000

65. **Jacobson, D.W.,** Davis, J.A., "Network Security and ISSL", ISACA meeting February 21st 2000. (Invited)

66. **Jacobson, D.W.,** "Brief history of Palisade Systems", Joint State of Iowa Senate/House Economic Development Appropriations Committee, Des Moines, February 1, 2000 (Invited)

67. Jacobson, D.W. "Computer Security", Iowa Technology Showcase, Des Moines, IA, December 16th 1999. (Invited)

68. Davis, J.A., **Jacobson, D.W.** "Overview of NSF security education grant", National Security Agency, September 9th 1999. (Invited)

69. **Jacobson, D.W.** "Productivity Management: Keeping your employees on task", Iowa Technology Showcase, December 16, 1999 (Invited)

70. **Jacobson, D.W.** "Computer Security", ISU Society of Women Engineers, November 8th 1999. (Invited)

71. **Jacobson, D.W.** "Reality Works", ISU New Student Days, August 21st 1999.

72. **Jacobson, D.W.,** Jungst, S. "Experiences with Project LEA/RN", ISU College Teaching Seminar 1999, August 18th 1999. (Invited)

73. Richardson, T., Davis J.A., **Jacobson, D.W.,** "Countermeasures for Denial of Service Attacks", First Annual CERT conference, August 29-31, 1999, Omaha, NE.

74. Richardson, T., Davis J.A., **Jacobson, D.W.,** "Developing a database of vulnerabilities to support the study of denial of service attacks", research talk at the 1999 IEEE Symposium on Security and Privacy, May 10, 1999.

75. **Jacobson, D.W.** "Computer Security in Schools", ICN course for school administrators, April 24th 1999 (invited)

76. **Jacobson D.W.,** Stewart, J "Computer Crime", 1999 International Association of Campus Law Enforcement Administrator's (IACLEA) Region 6 Conference, May 5, 1999 (invited)

77. **Jacobson, D.W.** Davis, J.A., "Hackers, Viruses and Worms (Oh MY!)", Iowa Government Management Information Sciences, April 22, 1999, Gateway - Ames. (Invited)

78. **Jacobson, D.W.** "Computer Security in Schools", ICN course for school administrators, April 24th 1999

79. **Jacobson, Doug,** Davis James, Licklider, Barb, "See one, do one, teach one .... Two faculty member's path through student-centered learning", 1998 Frontiers in Education Conference, Nov 1998

80. **Jacobson, Doug,** Davis James, Licklider, Barb, "Ten Myths of Cooperative Learning in Engineering Education", 1998 Frontiers in Education Conference, Nov 1998

81. **Jacobson, D.W.,** "Computer & Network Security" IEEE Central Iowa Section, September 10, 1998 (invited)

82. **D. Jacobson,** S. Bridges " Hiring a lifeguard: Keeping your kids safe while surfing the Internet", Techlaunch 2010, Sioux City, IA, September 18, 1997.

83. Davis, J.A., **Jacobson, D.,** "MLS Access method", INFOSEC Research and Technology Transfer Conference, Baltimore, MA, August 6-8, 1996

84. **Jacobson, D.W.** "X.500 / X.509" ISU Comp Center, 1996

85. **Jacobson, D. W.,** Davis, J. A. "Network security" Vet Med College May 6th 1996

86. **Jacobson, D. W.,** Davis, J. A. "Network security" Ames Laboratory, June 5th 1996

87. **Jacobson, D. W.,** "Design and Implementation of an Integrated Voice, Data, and Video Services Network," IEEE Pacific RIM Conference on Communication, Computers and Signal Processing, Victoria, BC, Canada, June 1-2, 1989.

88. Ahuja, R. P. S., Gaitonde, S. S., and **Jacobson, D. W.,** "Internetworking of Token Ring and Ethernet," Iowa Academy of Science, One-Hundredth Annual Meeting, April 23, 1988.

89. Gaitonde, S. S., Ahuja, R. P. S., and **Jacobson, D. W.,** "Performance Investigation of a Document Retrieval System on an Integrated Voice/Data Token Ring," Iowa Academy of Science, One-Hundredth Annual Meeting, April 23, 1988.

90. **Jacobson, D. W.,** "Network Performance Analysis using Queuing Model Simulation Techniques," Eighteenth Annual Pittsburgh Conference on Simulation and Modeling, Pittsburgh, PA, April 23-24, 1987.

91. **Jacobson, D. W.,** "Network Protocol Verification and Performance Analysis using Discrete Event Simulation," Eighteenth Annual Pittsburgh Conference on Simulation and Modeling, Pittsburgh, PA, April 23-24, 1987.

92. **Jacobson, D. W.,** "High Performance Multiple Channel Token Bus Protocol, "IEEE Pacific RIM Conference on Communications, Computers and Signal Processing, Victoria B.C. Canada, June 4-5, 1987.

93. **Jacobson, D. W.,** "Token Bus Interconnection Network for Tightly-Coupled Multiprocessor Systems," Phoenix Conference on Computers and Communication, Phoenix, AZ, February 25-27, 1987.

94. **Jacobson, D. W.,** "Measurement Technique for an Operating Ethernet Network," Fifteenth Annual Computer Science Conference, Proceedings, St. Louis, MO, February 17-19, 1987.

95. **Jacobson, D. W.,** "High Performance Reliable Token Bus for the MAP Network Architecture," Conference on Local Computer Networks, October 6-8, 1986.

96. **Jacobson, D. W.,** "Network Protocol Analysis," Fourteenth Annual Computer Science Conference, (ACM), Cincinnati, OH, February 4-6, 1986.

X. OUTREACH ACTIVITIES

Off Campus Courses

National Technological University (NTU)

CprE 530 Advanced Computer Networks	F01, S02, S03, F03, S04, F04
CprE 532 Information Warfare	S96, S98, S00, S01, S02, S03, S04
CprE 587 Local Area Network	F88
CprE 580 Advanced Computer Networks	S87, S88, S91, S92, SS92, S93, S94, SS94, S95, F97

Engineering Outreach

CprE 530 Advanced Computer Networks	F01, S02, F02, S03, SS03, F03, S04, SS04, F04, (S SS F) 05, (S SS F) 06, (S SS F) 07, (S SS, F) 08
CprE 532 Information warfare	S96, S97, S98, S99, S00, S01, S02, S03, S04, S05, S06, S07, S08, S09
CprE 587 Local Area Network	F88
CprE 580 Advanced Computer Networks	S86, S87, S88, S90, S92, S94, S95, F97, F98, F00
CprE 489 Computer Networks	F86, F87, F91

Tutorials

1. **Jacobson, D.W.** "Computer security", ISACA, May 30 – June 1 2007
2. **Jacobson, D.W.** "Authentication Methods", ISU ADP July 31, August 2,4 2000 (Invited)
3. **Jacobson, D.W.** "Authentication Methods", ISU ADP July 31, August 2,4 2000 (Invited)
4. **Jacobson, D.W.** "Authentication Methods", ISU Computation Center July 26, 27, 28 2000 (Invited)
5. **Jacobson, D. W.** and Davis, J. A., "Current technology in Computer Security" (IEEE), ICC 98, Atlanta, GA, June 11, 1998.
6. **Jacobson, D. W.** and Davis, J. A., "Introduction to Computer Security and Current Technology in Computer Systems Security" (IEEE), Phoenix Conference on Computers and Communication, Phoenix, AZ, March 27, 1996.
7. **Jacobson, D. W.** and Davis, J. A., "Internetwork Systems," (IEEE), Phoenix Conference on Computers and Communication, Phoenix, AZ, March 16, 1988.
8. **Jacobson, D. W.** and Davis, J. A., "Internetworking," 12th Conference on Local Computer Networks, Minneapolis, MN, October 5, 1987.

XI. PATENTS

1. **Jacobson, D.W.** and J.A. Davis. "Network Connection Blocker, Method, and Computer Readable Memory for Monitoring Connections in a Computer Network and Blocking the Unwanted Connections." US Patent #6,044,402, awarded March 28, 2000

2. **Jacobson, Douglas**, "Network Security Bridge and associated method." US Patent #5,548,649, Awarded Aug 20, 1996
3. **Jacobson, D.W**. and G, Helmer, "Network security suite" Patent Pending

XII. GRADUATE STUDENTS

ME & MS Non-Thesis Degrees

1	2009	Secure Computing via Security-Enhanced Linux	Smith, Ryan
2	2009	Engineering Secure Software Systems	Kirkhhoff, Jason
3	2009	Analysis of Information Security Exercise Architectures	Kruse, Brian
4	2008	Enterprise-wide Information Security Compliance Management	Williams, Megan
5	2008	Primary Direct Healthcare Provider Performance: Compiling, Warehousing, Securing, and Presenting Data	Williams, Jeremy
6	2008	Mobile Ad Hoc Network Security	Rolfes, Mark
7	2007	Certification of Industrial Security	Burkhardt, Bryan
8	2007	A high bandwidth to low bandwidth network appliance for legacy communication infrastructures in remote industrial control applications	Bryngelson, Ryan
9	2007	An architecture for secure command encryption and telemetry decryption	McVicker, Kenneth
10	2007	The use of digital forensics in investigating corporate system attacks	Musa, Fadl
11	2007	A study of performance and characteristics of computer security experimental testbeds	Haddush, Nesreen
12	2007	KIDO.S. Operating System for Kids	Coughlin, Brian
13	2006	A scalable – business enabling framework for strategic malware threat and incident mitigation within an organization	Alexander, Brylan
14	2006	Using Electronic Design Automation Tool Integration Environment for Static Timing Analysis	Corbett, Matthew
15	2006	Anatomy of an Insecure Web Application	David Linder
16	2006	Cellular Automata: Ann Application in Cryptography	Susan Helser
17	2005	Analysis of InfiniBand Security	Bailey, Dave
18	2005	Real-time UART control in ADA	Rowenhorst, Bruce
19	2003	A study of Information Assurance Technologies related to Networking	Ray, Niloy
20	2003	Commercial Integrated Modular Avionics*	Daley-Fell, Adam
21	2003	Safety-Critical Systems design in a UML Model-Based Environment	Jacobowitz, Brian
22	2002	Client-server based Internet Communication & analyzing software for NIR instrumentation	Dzupin, Robert
23	2002	Enhancing wireless network security IEEE 802.1X	Qleibo, Haider
24	2002	Reducing SIP Call Setup Latency in CDMA 2000 Networks	Bergan, Patrick
25	2002	Lifecycle of a LINUX cluster	Orman, David

26	2001	Task Analysis Tool	Mueggenberg, Craig
27	2001	Software Requirements for Avionics Systems	Feldkamp, Keith
28	2001	Structural Coverage Analysis of a Dynamic Device Driver*	Radack, David
29	2001	Performance Comparison and a new QoS routing protocol for Ad Hoc Networks	Lin, Bin
30	2001	767 Desktop Simulation	Dineen, Tom
31	2000	Web Server Development Using Java	Jiang, Shuguang
32	2000	Security Impact of Changes on the Internet	Buhr, Orlin
33	2000	The Love-Bug and ways to Avoid Future Virus Attacks	Li, Tianshi
34	2000	Hardware and Software Design for the Control of a New Scanning Pulsed Eddy-Current System	Xu, Wen
35	2000	Prospective Applications of Java Language and Java Platforms in Embedded and Real-time Systems	Yang, Jinchao
36	2000	Secure Socket Layer	Zhong, Jie
37	2000	Virtual Private Network Technology	Chen, Jinyuan
38	1999	Security on the World Wide Web	Lam, Loius
39	1999	Integrated security models in an Unix and NT environment	Cheng, Xiaohua
40	1999	Remote Sharing of Applications across platforms	Zhang, Lei
41	1999	DLXV: A vector Architecture Extension for DLX	Sama, Kiran
42	1999	Mobile Agent Technology for distributed network computing: information retrieval	Aji, Pandu
43	1999	Security on the World Wide Web	Zhang, Benqun
44	1998	An implementation of a distributed multilevel access control system	Richmand, Colin
45	1998	Detection of DNS probes	Michael, Scott
46	1998	ATM Signaling	Ansari, Muhammad
47	1998	X.500 Directory Service	Zhang, Jing
48	1998	HTTP traffic analyzer	Bull, Axel
49	1998	Effective System Functional Testing	Bejarno, Anthony
50	1998	Tomographic Inspection System Redesign and Remote Control	Yang, Zhou
51	1998	Overview of SS7 (MTP level2 & Level 3)	Chahal, Ajay
52	1998	Intrusion Detection Systems	Xu, Lianlian
53	1998	Security using Audit files	Yu, Jingchu
54	1997	Desktop network topologies related to Ethernet upgrades & ATM networks	Chen, Wei
55	1997	Integration of DNSSEC (keyserver) with SSH application	Dash, Sunita
56	1997	Packet Editor / Responder	John, Tara
57	1997	A framework for achieving non-reputability of web based transactions in electronic commerce	Apsani, Lavanya
58	1997	Low-cost Link Encrypter	Rajesh Gandhi
59	1996	Fault tolerant Communications in a railroad environment	Haag, Robert
60	1996	Network Security Topologies	Cheng, Xinhong
61	1996	Logic programming and Deductive database	Tang, Yanguo
62	1996	A world Wide Web Search Engine	Balsara, Cyrus
63	1996	Network security - protocols	Morampudi, Chandra

64	1995	Business on the Internet: the next step	McClean, Paul
65	1995	Network Security -- Firewall	Chen, Zai
66	1992	Microprocessor Based Baler Controller	Zacharia, Pavlos
67	1991	Vincent Network Analysis	Willoz, Aimee
68	1989	Interconnecting of Ideal Area Networks	Sadrerafi, Ezzatollah
69	1988	PRISM: Fault Tolerant Data Communications for Multiprocessing Applications	McGahee, Kevin

Masters Degree Theses

1.	2008	Web Application vulnerability detection using automated tools	Johnson, Eric
2.	2008	Crawler 2.0: A search tool to assist law enforcement with investigations	Harkness, Dan
3.	2008	SnoScan: An Iterative functionality scanner for large networks	Murphy, Jon
4.	2008	High Performance password cracking by implementing rainbow tables on nVidia graphics cards	Graves, Russell
5.	2008	Condenser: A custom tool for capturing and summarizing network traffic for avalanche and ISEAGE	Maughan, Jason
6.	2008	Cryptic backup: A framework for automated compression, encryption, and backup of data.	Hoff, Christopher
7.	2008	ISEHARVEST: TCP packet data re-assembler framework for network traffic content	Eilers, Stephen
8.	2008	Intercept system to edit, control, and analyze packets (ISECAP)	Btinkmeyer, Grant
9.	2007	Internet Scale Endpoint Management	Gillispie, Thad
10.	2007	Polymorphic malware detection	Shanklin, Teresa
11.	2007	DeepFreeze: a management interface for ISEAGE	Karstens, Nathan
12.	2007	Automation in digital photo management	Brady, Benjamin
13.	2007	Security Integrated Messaging – a protocol for secure electronic mail	Hoernecke, Andrew
14.	2007	Customization and Automation in the future of digital forensics: Live OS forensics with FENIX (Forensic Examiner UNIX)	Howard, Sean
15.	2007	The Intrusion Collector and Emulator	Wilden, Matthew
16.	2007	Designing an interactive visualization for intrusion detection systems with video game theory and technology	Paustain, Shane
17.	2006	ISECUBE – A portable ISEAGE	Rathje, Ryan
18.	2006	Network Services for Large Scale Distributed Science Instruments	Metzger, Joe
19.	2006	Advanced Packet Obfuscation and Control Program (APOC)	Hahn, Adam
20.	2006	Medium Resolution computed Tomography through Phosphor Screen Detector and 3D Image Analysis*	Sheikh, Nadia
21.	2005	Network Centric Operations Infrastructure Considerations	Clark, Joe

22.	2005	Secure Group Communications Protocol and Implementation for JetMeeting, an Application Based on P2P	Li, Yan
23.	2005	Hiding out in plaintext: covert messaging with bitwise summations	Perkins, Michael
24.	2005	A Modular Architecture for Critical Events (MACE)	Openshaw, Pascal
25.	2005	A definitive way to block unsolicited Internet e-mail	Davis, Justin
26.	2005	Roaming user-based distributed firewalls	Luse, Andrew
27.	2004	Benchmark with Small Business Database Module	Zhu, Yancong lucy
28.	2004	The design and development of SNIP (simple network imitator program)	Myers, Brett
29.	2003	A Comparative study of routing protocols in MANETs*	Ali, Muhammad
30.	2003	A systematic security analysis of the AODV protocol*	Jones, Ben
31.	2003	Development of a high resolution 3D computed tomography system: data acquisition, reconstruction and visualization*	Zhang, Jie
32.	2002	FileAccessManager: A Key Management Program Including an Implementation of RFC 2945: The SRP Authentication and Key Exchange System	Whitaker, Katherine
33.	2002	Blocking API calls for security	Truckenmiller, James
34.	2001	Deadlock detection in MPI programs *	Zou, Yan
35.	2001	Three-Dimensional free-hand Ultrasound imaging system for medical applications*	Wang, Bo
36.	2001	Establishing security and privacy policies for an on-line auction	Meiners, Michael
37.	2001	High-resolution CT data acquisition software and 3D visualization tool	Fan, Peng
38.	2001	Design and implementation of real time image acquisition and processing systems	Liu, Junhong
39.	2001	Scanning macro virus in Microsoft Word files macros under UNIX operating system	Zhang, Wei
40.	2000	System Security for Windows for Personal Computers (WINDS)	Khan, Tauquir
41.	2000	Implementation of Integrated Computer Control for X-ray Material Characterization Systems*	Lu, Huafu
42.	2000	Implementation of a site survey application	Hammer, Terry
43.	1999	Portable networking software for near-infrared instrument	Siska, Juraj
44.	1998	Test-case Development for an Industrial, Multi-Tasking, Embedded Operating System via Reverse Engineering, Equivalence Partitioning, and Boundary Value Testing	Zhu, Zhaobin
45.	1997	Creation of an advanced network embedded system software environment	Schwadrer, Curtis
46.	1996	Automation of real time X-Ray Scans *	Midhe, Madhushdhan
47.	1996	A novel Inspection systems for aircraft engine turbine disks *	Bohra, Naveen
48.	1996	An implementation of multi-level security for distributed	Bridges, Stephanie

		applications using X.500/X.509	
49.	1996	Fault tolerant distributed computing system for heterogeneous network: application to non-destructive testing *	Gadiyar, Vivek
50.	1996	Msplayer: A software-only design and analysis of a MPEG-1 systems player	Kaas, Gerald
51.	1996	Network Protocol guard	Omdahl, Svein-Tore
52.	1995	Home Automation via a Telephone Line	Waters, Tim
53.	1995	An Internet Information Browser for use in a Digital-Audio/Video Interactive-Decoder Environment	Thompson, Brent
54.	1995	Performance Model of AFS Using OPNET	Morampudi, Chandra
55.	1995	Stereography for Flaw Inspection *	Nutakki, Gangdhar
56.	1995	Multimedia Presentation in a Distributed Environment	Prasad, A. N.
57.	1995	Remote control of X-Ray Hardware *	Puvvadi, Sudha
58.	1994	Remote Service on a Mid-Range Computer System	Sokhey, Sarab
59.	1995	Design and Implementation of Networked NEEDS 239.50 Database	Xioug, Siqiang
60.	1994	High Speed Computer Tomography System	Kasiviswanathan, Rangarajan
61.	1994	Performance Measurement of NFS Using OPNET	Seetharaman, Dhiraviam
62.	1994	LAN Interconnection Using ATM	Damm, Kurt
63.	1994	Practical Network Security	Kroymann, Kenneth
64.	1994	Distributed Instrumentation System on a Local Area Network	Arsikere, Amarnath
65.	1994	Methods of Multiple Access to an Aeronautical Satellite Communications Network: Simplifying Multiple Access Software	Lessman, Ronald
66.	1994	Design and implementation of an automated scheme for an Eddy current scanning system *	Hebdalae, Chetan
67.	1994	Advanced Land Transportation Communication System	Freeland, Joe
68.	1994	Administration of a Hetrogeneous UNIX Network	Detterman, Jeff
69.	1993	Hierarchical Distributed Network Monitor for a Heterogeneous Network	Urali, Prem
70.	1993	Server Program for File Retrieving and Transferring with Internet	Ding, Shujin
71.	1993	Interconnection of Ethernet Using ISDN	Vardharajan, Satya
72.	1993	The Design of an Ethernet to Ethernet Bridge	Chen, Yue
73.	1993	Distributed Computing Using C-Linda	Wijaya, Valentina
74.	1993	Simulation and Performance Analysis of an FDDI Backbone	Viswanathan, Gautham
75.	1993	Computer Network to Control and Monitor a Remote Process	Dhawan, Rakesh
76.	1993	Software design and implementation of a contactless surface scanning NDE Scanning System *	Bugar, Alexandru
77.	1993	High Speed Switch for High Speed Networks	Al-Khatib, Mohammad

78.	1992	PC Based ISND Central Office	Dongre, Suresh
79.	1991	A Data Communication Study on ATCS, Advance Train Control Systems, as Define by ARINC Standards	Birkenberger, Lisa
80.	1991	Enhancements to the ARINC 629 Avionics Bus	Tietz, Randy
81.	1991	Design of a B-channel Multiplexer for Integrated Services Digital Network	Rajasekaran, Bharathi
82.	1991	Design of an ISDN Central Office, U-interface	Toillion, Tim
83.	1991	Design of a PC-Based ISDN Central Office	Bradley, Angela
84.	1991	Vincent Network Analysis	Willoz, Aimee
85.	1990	Development of a monitoring system for FDDI campus and local area network *	Christiansen, Lynn
86.	1990	Performance analysis of interconnected networks using decomposition techniques	Varadachari, Anand
87.	1990	Dynamic Server Selection in a Multithreaded Network Computing Environment	Stapleton, Joseph
88.	1990	Design and Implementation of a PC Token Bus Network Interface Card	Lin, Chih-Hung
89.	1990	The Design of a Token Ring Local Area Network Bridge	Freeman, Paul
90.	1990	Design of a Central Office for an ISDN System	Venkataraman, Geetha
91.	1989	Design of a Token Ring to ISDN Gateway	Kim, Jangkyung
92.	1989	Local Area Network Monitoring Between Token-Ring and Ethernet	Kang, Hun
93.	1989	Design and Implementation of an ISDN Telephone	Zhang, Xiao
94.	1989	The Core Fault Tolerant Computer Architecture for Advanced Aviation Flight Control	Ambros, Martin
95.	1988	Design of a Token Ring ETHERNET Bridge	Ahuja, Ratinder
96.	1988	Graphical Computer Network Performance Simulation	Prayugo, Murniwati
97.	1988	Implementation of Voice/Data Integration on a Token Ring Network	Lioe, Hidayat
98.	1988	Network Monitor Based on Token Ring	Tzeng, Shun-Ren

Ph.D. Degree Dissertations

1.	2009	Wireless Sensor Network Integrity Model	Qleibo, Haider
2.	2007	Performance and security measures of clustering protocols for senor networks	Banerjee, Pubali
3.	2006	Security Enhancement in Passive Optical Networks though Wavelength Sequences Cycling Technique*	Walid Shawbaki
4.	2005	Incorporating TQM and CQI techniques into evaluation tools for a computer engineering learning community	Freeman, Richard
5.	2004	MAC-Level Approaches for security and performance enhancement in IEEE 802.11	Wang, Haoli
6.	1999	Test suite development using a structured framework*	Hastings, Nelson
7.	1999	Bandwidth Allocation and Routing in Virtual Path based ATM Networks	Ahn, Byungjan
8.	1995	A Continuous Media Transport Protocol	Freeman, Paul

9.	1993	Multimedia Synchronization on a High Speed Transport Layer	Kang, Hun
10.	1992	Design of a multiprocessor High Bandwidth Communication Gateway Based on a Protocol Processor Pool Architecture	Jangkyung, Kim
11.	1990	Transport Interoperability Using a Virtual Transport Layer	Ahuja, Ratinder
12.	1989	Design and Analysis of a Medium Access and Control Strategy for Extending ISDN Services to LAN Users	Shafiq, Muhammad
13.	1988	Performance Investigation of a Document Retrieval System on a Voice/Data Integrated Token Ring Local Area Network	Gaitonde, Sunil
14.	1987	Performance Analysis of Token Bus Protocol with Maintenance Functions *	Kim, Joon-Kyun
15.	1986	A Distributed Channel-Sense Non-Preemptive Static Priority Ring for Local Area Computer Networks and its Performance *	Ghansah, Isaac
16.	1986	Design and Performance Analysis of an Integrated Voice-Data (IVD) Protocol for a Token Ring Network *	Lee, Jai

Note: * indicates co-major professor.

XIII. PROFESSIONAL ACTIVITIES

2007-present	Member	IT Career Pathways Sector Board
2007-present	Member	IDED IT Council
2005-present	Member	Advisory board CMNet
2004-present		Certified Computer Forensic Examiner
2001-present	Member	InfraGard
2000-2001	Member	International Advisory Board, Software and Internet Quality Week Conference
1991- Present	Member	ASEE
1991- Present	Member	Internet Society
1990-1991	Chairman	IEEE Central Iowa Section
1990-Present	Senior Member	IEEE
1989	Member	IEEE 802.10 Standards Committee
1989-1990	Vice Chairman	IEEE Central Iowa Section
1988-1989	Sec/Treas	IEEE Central Iowa Section
1987	Member	SME
1987	Member	MAP/TOP Users Group
1986	Member	ACM
1979-1990	Member	IEEE

Active Learning Activities:

In addition to modifying courses to included cooperative learning methods, Dr. Jacobson has participated in the following activities:

May 2001	Attended and presented the ISU Learning Communities workshop
May 1999	Attended Wakonse teaching conference
May 1999	Attended ISU learning community workshop
November 1998	Attended and presented at a Learning Communities workshop
August 1998	Facilitator at the Engineering College "Foundations for effective Assessment workshop
August 1998	Helped facilitate one session of cooperative learning workshop
Summer 1998	Helped facilitate one session of cooperative learning workshop
May 1998	Attended and presented at a Learning Communities workshop
May 1998	Attended a Leadership & Ethics Workshop
April 1998	Attended learning centered syllabi workshop
February 1998	Presentation at active learning workshop
January 1998	Helped facilitate one day cooperative learning workshop
January 1998	Helped facilitate one session of cooperative learning workshop
AY 1997 - 1998	Co-facilitated bi-weekly student athletes leadership training workshop
October 1997	Helped facilitate one session of cooperative learning workshop
Summer 1997	Participated in a four day cooperative learning workshop
Summer 1997	Participated in a four day advanced cooperative learning workshop
1997- 2000	Facilitator of a bi-weekly faculty development workshop (project LEA/RN)
1996 - 2002	Participant in bi-weekly faculty development workshop (project LEA/RN)

XIV. UNIVERSITY ACTIVITIES

University Committees & activities

2004 -		Council of Institute and Center Directors
2004 -		Interdepartmental Programs committee
2003		Information Security Task Force
2002-2005		Faculty Senate Curriculum Committee
2001		Graduate Curriculum and catalog committee
2000		Authentication Committee
1999-2000		Faculty Spring Conference Planning Committee
1999-2002		Goldwater Scholarship nominating committee
1999		Reviewer for carver trust grants
1998		Summer orientation panel 6/2/98 & 6/29/98
1998-2001		Learning Communities advisory Committee
1998		Reviewer for Carver Trust Grants
1997-2000		University Computer Security Policy Group
1997-98		Academic Information Technology Director Search
1996-97		Teaching Building
1995-2000		Computer Advisory
1995-97	Chair	Computation Center Advisory
1992-93		Distributed Computing Planning
1992		Email Planning
1992		WOI Review

1991		Review of Vice President/Office for Business and Finance
1990-1996		Project Vincent Implementation Group
1989	Chair	Ad-Hoc Computer Science/Computer Engineering Program Review

College Committees

2004-present		Student Learning Task Force
2002-2005	Chair	Curriculum Committee
2003		EE/CPRE department chair search committee
2001-2004		Academic Quality management team
2001-present		Curriculum Committee
1998-2000		ABET Task Force
1998-2001		Learning Communities Task Group
1998		ABET Assessment planning group
1998		College retreat to review college plan
1997		Undergraduate Program Task Group
1996		Basic Program Review
1996	Chair	Engineering Computer Services and Policy Task Group - Computer Plan subgroup
1995- 2000		Engineering Computer Services & Policy Task Group
1995		EE/CPRE DEO Search
1991-1995	Chair	Ad Hoc Network Planning
1991-1991		Computer Policy
1991-1995		NSF Coalition
1990-1992		Engineering Extension, (Chairman 1991)
1990		OES Review
1990		EE/CPRE DEO Search
1988-1989		Engineering Network Planning
1987-1988		Engineering Research

Department Committees

2007- 2008	Chair ECpE 100th year celebration committee
2004-	Chair Building Committee
2004-	Administrative Committee
1999-2000	Ad-Hoc ABET task group
1998-2002	Student recruitment and retention advisory board
1996-Present	Chair Information Security and Networking group
1996-2001	Advisory
1990-Present	Curriculum (chair 2004)
1991-1992	Computer Planning
1990-1993	Long Range Planning
1987-1989	Faculty Governance
1988-1990, 1994-1996	Graduate
1986-1991	Research
1986-Present	Computer Area

Other Professional Activities

Book Reviews

2003	TCP/IP Protocol Suite	Forouzan	McGraw-Hill
2001	TCP/IP Protocol Suite	Forouzan	McGraw-Hill
1998	Computer Networks: A systems Approach	Larry Peterson and Bruce Davie	Morgan Kaufmann
1998	Information Security	Neil Rowe	Morgan Kaufmann
1997	Communications Networks	Jean Walrand	McGraw-Hill
1995	Data and Computer Communications	Stallings	Prentice Hall
1995	Advanced Data and Computer Communications	Stallings	Prentice Hall (Book Proposal)
1993	Scientific C++: A primer for Engineers and Scientists	Salmon	MacMillan Publishing (Book Proposal)
1993	Data Communications and Object Orientation: Concepts and Implementations	Anil Ananthaswamy	Addison-Welsey (Book Proposal)
1993	Data Communications, Computer Networks, and Open Systems, Third edition	Fred Halsall	Addison-Wesley
1993	Mathematical toolkit in C++	Lawrence Williamson	MacMillan Publishing
1992	Open for Business: Introducing the open Systems Movement	Howard Berkowitz	Addison-Wesley
1992	Distributed Systems Software Development	Aggarwal & Kintala	Addison-Wesley (Book proposal)
1989	Digital Logic and Computer Design	Stephen Ben-Avi	Saunders College Publishing
1989	An Introduction to Distributed Operating Systems	Andrzej Goscinski	Addison-Wesley
1988	Local Area Networks	Keiser	McGraw-Hill

Journals and Conferences reviews

2009	2010 FIE conference
2006	ASEE Conference
2005	International Journal of Computers and Applications
2005	SDCS 2005 Conference
2005	2005 IEEE EIT conference
2005	2nd international workshop on security in distributed systems
2001	ASEE Conference
2000	Software Quality Week 2000
1999	IEEE transactions on Education
1998	Infocom

1997	Electronics and Telecommunications Research Institute journal
1997	12 Articles on network installation for Electrical Contractor
1996	Electronics and Telecommunications Research Institute journal
1992	IEEE Transactions on Systems, Man and Cybernetics
1991	IEEE Transactions on Knowledge and Data Engineering
1990	International Journal of Microcomputer Applications
1989	IEEE Software

Proposal Review

2005	NSF	CRI proposal review panel
2004	South Dakota	Reviewer for South Dakota 2010 Initiative
2002	NSF	SBIR proposal review panel
1987	NSF	Division of networking and communications

Other

ABET Evaluator, 2008-
Program Chair Annual Conference on Education in Information Security September 2006
Program committee for 2005 University Synergy Program International Conference
Program committee for SDCS 2005 conference
Program committee for 2nd international workshop on security in distributed systems
Program committee for 2005 Electro/Information Technology Conference
Steering Committee "NSF Cyber Defense Exercise Workshop", 2004
Attended "NSF Cyber Defense Workshop", February 26-28 2004, San Antonio TX.
Planning committee Partnership for Homeland Security, Iowa Business Council, Infrastructure
    interdependencies table top exercise (Amber waves), 2004
Attended the CRA "Grand Challenges in Computer Security Workshop" November 16-19 2003,
    Airlie Center, Warrenton Virginia
Participated in a NSF workshop on Cyber Infrastructure hosted by the engineering directorate.
    June 5 & 6, 2003. (invited)
Coordinated and developed curriculum material for the ISU summer connections program,
    Summer 1999.
Program review for MS program in Computer Science at Winona State University, March 1998
Detailed study of State Fiber Optic Network for State Auditor
Attended and helped organize the local viewing of the IEEE Video Conference on the
    Interdisciplinary World of Computing, 1989
Voting Member in the IEEE 802.10 Network Security Standardization Committee,
1989-92
Voting member in the IEEE P1003 UNIX standardization committee, 1987-1989

XV. OTHER INFORMATION

Senior design projects:

Year	Project	Number of

		students
2009-10	Science Center 3	4
2008-09	NCAA compliance system	4
2008-09	Science Center 2	4
2007-08	Science Center	4
2005-06	Attack database for ISEAGE	4
2005-06	Network Specification and Report System for ISEAGE	4
2004-05	Attack Collector/Watcher/Replayer for ISEAGE	4
2004-05	Network Specification and Report System for ISEAGE	4
2004-05	Optical Encoder for a Game Steering Wheel	4
2004	Personal Record Keeper	4
2003-04	Travel Software for Kids for Laptop or PDA	4
2003	CyberSim	4
2002-03	Smart Appliance	5
2002-03	Serial port to serial port switch	4
2002	A secure wireless interface between PDAs	4
2000-01	Java Embedded Network Intrusion Security	6
2000-01	Smart Digital Valve Control Simulator	4
2000-01	MP3-Based Digital Record and Playback device	6
2000-01	One time passwords using Biometrics	4
2000-01	Computer Security	4
1999-00	CD-ROM Based Portable MP3 Player	4
1999-00	Graphical Output Package for Industrial Sensors	5
1999-00	Java Embedded Network Intrusion Security	4
1999-00	Transportation and Logistics Simulator	3
1999-00	One time passwords using Biometrics	4
1999-00	Generator based backup system	4
1998-99	STREAMS Compatibility API for mwSoftStax	5
1998-99	Temperature monitoring Systems	3
1998-99	Child Monitoring Device	3
1997-98	Microelectromechanical Systems (MEMS) flow injection Analysis	3
1997-98	Graphical Keyboard Display	3
1997-98	Automated Livestock feeder	3
1997-98	Secure Network Monitor System	4
1996-97	ScopeBoy	2
1996-97	Smart Answering Machine	4
1996	Design of an ISDN switch	5
1996	Digital Design lab for CprE 211	6
1995	Virtual Orchestra Project	3
1995	Real Time Programming - Robotic Tanks	5
1994-95	ISDN Central Office Design	4
1994	Car Navigator	7
1994	Weather Station Project	4
1994	Real time programming Platform Project	9
1991-92	ISDN software design	4
1991-92	Motorola Graphical User interface of Cell Phone design	5
1990	ISDN phone	5

EXHIBIT A
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