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Hsinchun Chen

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Education

Ph.D.	Information Systems	New York University	1989
M.S.	Information Systems	New York University	1987
MBA	Management Information Systems Management Science Finance	State University of New York at Buffalo	1985
B.S.	Management Science	National Chiao-Tung University, Taiwan	1981

Ph.D. Dissertation

"An Artificial Intelligence Approach to the Design of Online Information Retrieval Systems," October 1989 (Advisor: Vasant Dhar).

Personal Background

Born in Taiwan; US Citizen; **Security Clearance (FBI: Secret, effective 2007; CIA: Top Secret, TS/SI/TK/G/HCS effective 4/23/2009; both expired currently)**; Married with two children.

Academic/Professional Experience and Appointment

Sabbatical leave, University of Arizona, Spring 2026.

Head, AI4BI Center (100+ research staff; with 5 directors, 10 managers, 85+ engineers), Taiwan Semiconductor Manufacturing Company (TSMC), on-leave from UA, June 12, 2024-June 11, 2025 (retired).

Scientific Advisor, AI4BI, TSMC, team building and problem scoping, 2022-2024.

Director, AZSecure Cybersecurity Program, MIS/Eller College of Management, University of Arizona, 2012-present ($15M+ funding, 50+ SFS Ph.D./MS students graduated).

Director, Artificial Intelligence Laboratory, University of Arizona, 1989-present (20+ research staff, graduate assistants, and programmers, $60M+ federal funding, 39 Ph.D. and 200+ MS students graduated).

Program Director (Expert Consultant), Smart and Connected Health Program, National Science Foundation, 2014-2015.

Arizona Regents' Professor, University of Arizona, May 2013-present.

Thomas R. Brown Chair Professor of Technology and Management, Eller College of Management, University of Arizona, April 2013-May 2024.

China National 1000-Elite Program Chair Professor (visiting/summer capacity for 3 years), in affiliation with Tsinghua University Computer Science Department, 6/1/2013-5/31/2016; Tsinghua University Visiting Chair Professor, 8/1/2017-3/20/2019 (courtesy appointment).

Distinguished Visiting University Chair Professor, National Taiwan University, College of Management, Taiwan, 7/1/2010-5/30/2024.

Honorary/Distinguished Visiting Chair Professor, Taiwan National Chiao-Tung University, Taiwan Central Police University, Taiwan National Dong-Hua University, Taiwan; Shanghai Jiao-Tong University, Xian Jiao-Tong University, WuHan University, China, 2001-2019 (most for 2-3 years).

Director, Cyber Security Initiative (CSI), Defense and Security Research Institute, University of Arizona, 2016-2017.

Professor of Entrepreneurship and Innovation (courtesy appointment), McGuire Center for Entrepreneurship, College of Management, University of Arizona, April 2013-present.

Founder, Caduceus Intelligence Corporation, a University of Arizona spin-off company in healthcare information systems (with UA licensing agreement), May, 2010, $500,000 in start-up funding.

Director, NSF Dark Web Research Program for open-source terrorism informatics, 2008-present ($3M funding).

Director, NSF BioPortal Center for infectious disease and bioagent information sharing, analysis, and visualization research, 2004-2009 ($2.5M funding).

Director, NSF COPLINK Center for public safety and homeland security IT research, 2003-2008 ($3M funding).

Founding Director, Mark and Susan Hoffman E-Commerce Lab, University of Arizona, 2000-2005 ($2M in infrastructure funding and $10M in software donation from SAP, Oracle, Microsoft, IBM, etc., 7,000 square-foot).

Founder, Knowledge Computing Corporation (KCC), a University of Arizona spin-off company in knowledge management (with UA licensing agreement), February, 2000 ($4.6M in VC funding). KCC merged i2, a leading intelligence analytics company in 2009 (with funding from the private equity firm, SilverLake). The combined KCC/i2 company was acquired by IBM in September 2011 for a cash value of $500M.

Founder, International Biocomputing Corporation, a University of Arizona spin-off company in infectious disease informatics, January, 2006 ($100K NSF SBIR funding).

McClelland Endowed Professor of Management Information Systems, 1999.

Andersen Consulting Professor of the Year, 1999.

Visiting Senior Research Scientist, University of Illinois at Urbana-Champaign, National Center for Supercomputing Applications (NCSA), 1996-present.

Member, Arizona Cancer Center, University of Arizona, 1997.

Full Professor (with tenure), University of Arizona, Department of MIS, 1998-present.

Associate Professor (with tenure), University of Arizona, Department of MIS, 1996-1998.

Assistant Professor, University of Arizona, Department of MIS, 1989-1996.

<u>**Major Federally Funded Project Activities ($70M since 1989)**</u>

Hacker Web & AZSecure Cybersecurity Program (NSF, Secure and Trustworthy Cyberspace, Scholar-for-Service, $10M): Funded by the NSF SaTC and SFS programs, the Hacker Web project aims to collect and analyze the international hacker community and ecosystem and the AZSecure Center will

develop cyber analytics program for the future cybersecurity professionals. Both programs build upon the highly successful UA/Eller/MIS NSA/DHS Center of Excellence in Information Security & Assurance. (Collaborators: P. Goes, M. Patton, S. Hariri, R. Breiger, T. Holt)

SilverLink for Smart and Connected Senior Home Monitoring (NSF, CIC, SBIR, $1M): In collaboration with Caduceus Intelligence Corporation (CIC), a UA spin-off company, the SilverLink project aims to develop an integrated and intelligent solution for senior home monitoring and care. The SilverLink system consists of a suite of hardware, software and analytics innovations, including: human and object mobile sensors, open gateway and app, cloud based data management, web-based alerts and user dashboard, and advanced mobile analytics for fall detection and health progression monitoring. The system is under development and field testing in 200 homes across six cities in the U.S. and China/Taiwan. (Collaborators: S. Li, D. Zeng, C. Xing)

DIBBs-ISI, Data Infrastructure Building Blocks for Intelligence and Security Informatics Research and Community (NSF, DIBBs, $1.5M): Funded by the NSF DIBBs program, the DIBBs-ISI project aims to develop a data science research testbed for the emerging and high-impact ISI community. In collaboration with multiple institutions and with the support of the ISI community, the testbed consists of security-related databases, social media sites, and deep/dark web contents of relevance to public safety, terrorism studies, hacker community, and other volatile geopolitical events. (Collaborators: C. Yang, A. Abbasi, P. Hu, B. Thuraisingham)

Smart Health: Healthcare Informatics and Clinical Data Mining (NSF, Taiwan, Denmark, Venture Funding, $1M): Based on collaboration with several major hospitals in Taiwan, China, Denmark, and US, the project aims to support clinical decision support, data mining, and visualization using comprehensive electronic health records. Selected data warehousing, association mining, anomaly detection, and clinical visualization techniques are under development to support physicians and patients for quality healthcare delivery and performance improvement. (Collaborators: S. Li, F. Yang, R. Brown, Y. Lin, L. Tseng, Uffe Wiil)

AZ BizIntel: Social Media Analytics for Business Intelligence (NSF, Taiwan NRC, $500K): PI of a major business intelligence research project funded by US NSF and Taiwan National Research Council (NRC). The project aims to collect and analyze comprehensive and timely web-based business relevant contents, including financial and economic databases, news sources (WSJ, Yahoo News), and various company specific social media data (Yahoo Forums, company forums, twitter, Youtube, virtual worlds). Various data, text and web mining techniques (including topics, sentiment and time-series analysis) have been developed to model enterprise risks, predict market returns and outcomes, develop trading strategies and engines, and assess economic and political conditions. (Collaborators: B. Lusch, Y. Chen, S. Li, T. Chen, H. Lu)

Nano Mapper: Knowledge and Innovation Mapping (NSF, $1.2M): PI of a major knowledge mapping research project funded by NSF. The project develops advanced text mining, social network analysis, and visualization techniques for nanotechnology policy assessment and innovation analysis. Longitudinal and international nanotechnology patents, literature, and research projects are used to identify the research trends, diffusion paths, and innovation clusters in worldwide nanotechnology development. (Collaborators: M. Roco, C. Larson, Z. Huang, S. Kaza)

Dark Web: Open-Source Terrorism Content Collection and Analysis (NSF, DOD, ITIC, $3M): PI of a major terrorism research project funded by NSF and ITIC. In partnership with selected terrorism study centers and intelligent community agencies, the project aims to develop a systematic, computational approach to collecting and analyzing international extremist-generated Internet contents (web site, forums, chat rooms, etc.). Current research efforts include: intelligent spidering/archiving, link (social network) analysis, content analysis, web metrics analysis, multimedia analysis, sentiment analysis, and authorship analysis of online extremism. (Collaborators: E. Reid, C. Ellis, M. Sageman)

BioPortal: National Infectious Disease Infrastructure (NSF, ITIC, $2.5M): PI of a major bioinformatics demonstration project funded by NSF and ITIC. In partnership with the NY, CA, and AZ public health departments, the project aims to develop a scalable information sharing and data mining

infrastructure for infectious diseases across jurisdictions and disease types. A prototype system has been developed with West Nile Virus and Boutulism information across CA and NY. Significant research efforts are under way in HL7/XML data sharing, agent-based alerting, spatial-temporal visualization, and hotspot analysis. (Collaborators: M. Ascher, M. Thurmond, C. Lynch, J. Kvach)

National Security Research in BorderSafe (NSF/ITR. ITIC/KDD, DHS/CNRI, $1.5M)): PI of several major national security related projects. BorderSafe aims to develop an information sharing and data mining framework for the law enforcement and intelligence community. By partnering with several law enforcement and federal agencies in Southern California and Arizona, the project has developed significant criminal network analysis and (identify) deception detection components that have been adopted for national security and border protection activities. (Collaborators: J. Pitt, R. Friends, T. Petersen)

GeneScene: Gene Pathway Analysis (NLM/NIH, 2002-, $1.4M): PI of a major NIH/NLM funded project. It is widely believed that elucidation of the genes and proteins that compose biochemical pathways will define the molecular targets for future drug therapies. GeneScene is designed to utilize information derived from various medical literature sources (e.g., Medline, CancerLit, UMLS) to help suggest possible interactions between genetic and biochemical pathways. It will assist in reviewing existing literature, identifying gaps in existing knowledge, comparing and integrating knowledge and data from different fields, and as such help lead the way to new and interesting hypotheses and field research. Significant research in the areas of data mining and text mining has been performed to develop GeneScene into a public resource for biomedical research and advancement. (Collaborators: J. Martinez, G. Leroy, Z. Huang, D. McDonald)

NSDL Projects: GetSmart and EconPort (NSF, 2002-, $1.2M): PI of several major NSF funded NSDL projects. As part of the NSF National Science Digital Library (NSDL) program that aims to create sustainable, innovative digital library based e-learning and education collection, services, and research for various academic communities, our projects encompass various knowledge portals, concept mapping, and active digital library objects research activities. The GetSmart project, in collaboration with the Virginia Tech, develops concept mapping and digital library knowledge creation tools for the computer engineering domain. The EconPort project, in collaboration with the Economics Science Lab at the University of Arizona, creates a sustainable web portal environment for researching experimental economics and agent related issues on the Internet. (Collaborators: E. Fox, J. Cox, D. Zeng, B. Marshall, Y. Zhang, A. Lally, C. Larson)

Mark and Susan Hoffman E-Commerce Lab (Hoffman/HP/IBM, 2000-, $4M): Founding Director of the University of Arizona Hoffman eCommerce Lab, a state-of-the-art eCommerce education, research, and outreach environment for BPA students of all levels. Located at the McClelland Hall 218 area (a 7,000 square-foot space of high-speed, wired and wireless facility), the lab has received over $2M in infrastructure funding from Hoffman, HP, and IBM and more than $10M in software donation from major eCommerce companies including Commerce One, Oracle, SAP, Microsoft, and IBM. The lab consists of a high-end lab space, a technology lounge, and an executive training classroom. The lab is also a major part of the UA/Eller Prop 301 Internet Technology and Commerce Initiative (ITCI), which received $5.5M state funding for education, research, and outreach development, 2001-2006. The lab currently consists of a staff of 2 full-time lab and software managers and 5 GTAs. (Collaborators: M. Hoffman of Commerce One, Garry Gray of HP, D. Zeng, M. Fenstermarcher, D. Meader, B. Newman, O. Sheng)

COPLINK Center: Knowledge Management for Law Enforcement (NSF, 2000-2003, $2.5M): Principal investigator (PI) of a major NSF Digital Government project, which aims to develop information sharing and knowledge management technologies for law enforcement community and to understand the associated social and organizational impacts. The project is one of the major awards of the NSF Digital Government program, which aims to examine and develop technologies that could more efficiently and effectively deliver government services to the public in the Internet era. The COPLINK system has successfully linked the record management systems between Tucson Police Department and Phoenix Police Department and is in use by more than 500 police officers in the state of Arizona. (Collaborators: J. Schroeder of Tucson Police Department and J. Hindman of Phoenix Police Department, S. Weisband, D. Zeng, A. Lally, M. Chau)

OOHAY, From Digital Library to Knowledge Management (NSF, 1998-2003, $1M): Principal investigator (PI) of several NSF-funded projects. Project OOHAY (Object Oriented Hierarchical Automatic Yellowpage, the reverse of YAHOO) is a multi-disciplinary, long-term project that aims to create system-aided technologies and methodologies for automatically analyzing and visualizing large collections of unstructured documents in a useful organizational context. In a new Digital Library Initiative (DLI) Phase 2 project, the OOHAY approach will be compared with human knowledge structures in several large-scale knowledge domains (e.g., National Library of Medicine's UMLS and the Yahoo! subject directory). In a separate NSF/CISE funded project, we are beginning to study agent-based analysis and visualization techniques which are grounded on emerging human-computer interaction principles and new visualization metaphors (e.g., 3D and virtual reality). (Collaborators: D. Meader, D. Zeng, R. Sewell, M. Ramsey, K. Tolle, B. Zhu)

COPLINK, Database and Intranet Integration (DOJ/NIJ, 1997-2002, $1.5M): Principal investigator (PI) of an NIJ-funded project on "COPLINK: Database Integration and Access for a Law Enforcement Intranet." The project, funded by the National Institute of Justice, is intended to be a catalyst to solve law enforcement information technology problems through a partnership between the AI Lab and the Tucson Police Department. Innovative and functional technologies will expand the uses of COPLINK from database integration, secured Intranet access, and mobile computing, to criminal intelligence and case analysis, mug-shot face recognition, and intelligent agents. (Collaborators: D. Smith, B. Fund, B. Cochrane, J. Wills at Tucson Police Department, K. Lynch, C. Lin, H. Gupta, A. Clements, K. Rasmusen, C. Boarman)

Interspace Semantic Middleware (DARPA, 1997-2000, $1.1M): Principal investigator (PI) of an DARPA-funded project on "The Interspace Prototype: An Analysis Environment based on Scalable Semantics." The foundation of our proposed analysis environment will be a "semantic middleware" for scalable distributed services, which consist of a hierarchy of statistical and pattern analysis algorithms that are valid across the range of object types (e.g., texts and images) and subject domains. This middleware will be used to construct a prototype Interspace with large collections across text (abstracts in engineering) and image (aerial photos in geography), and then across subjects (medical thesaurus relationships) and classifications (personal Web documents). We plan to use NCSA-unique computing, network, and visualization resources as a "time-machine" to simulate a generation-after-next hardware and software environment. (Collaborators: B. Schatz, B. Pottenger, D. Lawrie at UIUC, M. Ramsey, T. Ng, K. Tolle, B. Zhu, D. Roussinov)

Medical Informatics (NCI/NLM, 1996-present, $300K): Principal investigator (PI) of several NIH-funded projects on "Information Analysis and Visualization for Medical Informatics." These projects aim to create concept spaces and self-organizing categories for cancer and toxicology literature (Cancerlit and Toxline databases of National Library of Medicine). Automatic indexing, linguistic parsing, cluster analysis, neural networks, and information visualization techniques have been adopted. The resulting system-generated knowledge structures will be integrated with existing fine-grained medical knowledge sources (e.g., NLM's Unified Medical Language System) and will be used to enhance medical information retrieval and knowledge sharing. (Collaborators: B. Schatz at NCSA, T. Doszkocs at National Library of Medicine, S. Hubbard at National Cancer of Institute, A. Houston, R. Sewell, D. Ng, K. Tolle, G. Leroy)

Geographic Information Systems (NSF, 1996-1998, $100K): Principal investigator (PI) of an NSF/CISE-funded project on "Supplement to Alexandria DLI Project: A Semantic Interoperability Experiment for Spatially-Oriented Multimedia Data." This research aims to examine semantic interoperability issues related to spatially-oriented, multimedia geographic information access. Based on the *concept space* approach developed by the Illinois Digital Library Initiative (DLI) project and the Alexandria (University of California at Santa Barbara) geo-referenced collections, this research proposes to develop knowledge representations and structures to capture concepts of relevance to spatial and multimedia information (natural language phrases and geo-related textures). Selected machine learning techniques and general Artificial Intelligence (AI) graph traversal algorithms will also be adopted to assist in semantic, concept-based spreading activation in integrated knowledge networks. (Collaborators: T. Smith, B. Schatz, L. Carver, M. Larsgaard, L. Hill, B. Manjunath at University of California at Santa Barbara and T. Huang at University of Illinois, M. Ramsey, B. Zhu, D. Ng)

Parallel Computing for Knowledge Discovery (NSF/NCSA, 1995-2001): Principal investigator (PI) of an National Center for Supercomputing Applications (NCSA) High-performance Computing Resources Grant ("Information Analysis and Knowledge Discovery for Digital Libraries"). The project aims to generate concept spaces for all engineering domains. The resulting concept spaces will be used to support concept-based retrieval and cross-domain vocabulary switching in scientific information retrieval. Thinking Machine's CM-5 (512 nodes), SGI's Power Challenge Array (48 nodes), Cray's CS6400 (8 nodes), and Convex's Exemplar (64 nodes) have been provided by NCSA. (Collaborators: B. Schatz, L. Smarr at NCSA)

Internet Categorization (NSF, 1995-1998, $200K): Principal investigator (PI) of an NSF/CISE-funded "Internet Categorization and Search" project. The proposed approach, which is grounded on automatic textual analysis of Internet documents (homepages), attempts to address the Internet search problem by first *categorizing* the content of Internet documents and subsequently providing semantic search capabilities based on a *concept space* and a genetic algorithm spider (agent). (Collaborators: C. Lin, E. Jan, B. Wilcox, Y. Chung)

Digital Library Initiative-1 (NSF/ARPA/NASA, 1994-1998, $500K): Co-Principal investigator (Co-PI) of an NSF/ARPA/NASA-funded "Digital Library Initiative" project. The project goal is to develop a large-scale testbed for building the next-generation digital libraries for the National Information Infrastructure (NII). The testbed collections are mainly in the engineering domains, to be contributed by major engineering societies and publishers e.g., IEEE, John Weily & Sons, etc. Project researchers mainly are information science and computer science faculty from the University of Illinois at Urbana-Champaign and research scientists from Illinois's National Center for Supercomputing Applications (the NCSA Mosaic development team). The initial platform will be based on the NCSA Mosaic, a popular multi-media, hypertext-based tool for internet resource discovery. As a Co-PI from Arizona, I am responsible for developing semantic (concept-based) retrieval, customized IR, and content-based information routing capabilities for the extended Mosaic. (Collaborators: B. Schatz, J. Harden, A. Bishop, W. Mischo, L. Star at University of Illinois)

Intelligent Groupware (Army/AT&T, 1991-present, $100K): Principal designer for an Army and AT&T funded electronic meeting system project. Artificial intelligence and information science techniques for assisting concept classification and content-based information retrieval that have been tested include: neural network classification, genetic algorithms, inductive learning algorithms, vector space modeling, and parallel search and clustering algorithms. We have successfully developed an AI tool (agent) to automatically extract and classify topics (concepts) from the electronic brainstorming comments generated by meeting participants (using GroupSystems). We are in the process of using similar techniques to develop software which could automatically classify email and assist in email routing and filtering. We are also designing an "intelligent" (concept-based) meeting memory system. (Collaborators: J. Nunamaker, D. Vogel, R. Orwig, P. Hsu, L. Hoopes, J. Kim, L. She, G. Shankar, A. Iyer)

Worm Community System (NSF, 1992-1995, $65K): Principal investigator (PI) of an NSF-funded "National Collaboratory" project. The project goal is to design a concept-based information retrieval and information sharing software for molecular biologists whose work is related to the Human Genome Initiative. A (nematode) worm concept space and a fly (Drosophila) concept space which can assist in cross-domain concept exploration and term suggestion during IR have been created and are in use by worm biologists. (Collaborators: B. Schatz, S. Ward, T. Yim, D. Fye, J. Martinez, K. Powell, E. Grossman, T. Friedman, J. Calley)

Intelligence Analysis (1989-1994): Principal designer of an intelligence analysis and retrieval system, which supports intelligence analysts who study information technology policy, manufacturing, and proliferation in the (former) USSR countries. Extensive user requirements studies were conducted. A content-based intelligence analysis and retrieval system was developed in ANSI C and runs on VAX/VMS and DECStation (UNIX based). It includes a system-generated Russian computing "concept space" and a system-assisted relevance feedback and query refinement process. The system is currently in use by the intelligence analysts. (Collaborators: S. Goodman, W. McHenry, P. Wolcott, K. Lynch, A. Himler, R. Orwig, T. Ng, K. Basu)

Neural Networks for Pharmaceutical Applications (1992-98): Principal investigator (PI) for an NIH-funded project investigating a neural network approach to pharmaceutical applications. Sample applications include drug solubility prediction and non-linear pharmacokinetics functions approximation. 1992-1993. (Collaborators: S. Yakowski, P. Myral, H. Chow, T. Ng)

Multi-lingual Information Retrieval (1991-present): Principal investigator (PI) for a University of Arizona funded project designing "intelligent" multilingual information retrieval databases. An AI-based retrieval interface to foreign language databases in Chinese and in Spanish has been designed and tested. (Collaborators: H. Saldana, C. Lin, K. Leung, P. Rodriguez)

Knowledge-based Information Retrieval (1986-1989): Principal designer and programmer for an NYU-supported project designing knowledge-based online cataloging systems. The system was designed in Lisp and runs on SUN workstations. 1986-1989. (Collaborator: V. Dhar)

DBMS-ES Coupling (1986): Programmer for a major IBM-NYU software engineering project which evaluated and designed coupling mechanisms between the Expert System development language PROLOG and Relational Database Systems (using SQL). This was part of a joint project between IBM and NYU, January-September 1986. (Collaborators: M. Yarke, Y. Vassiliou, J. Clifford)

Teaching Experience

Instructor, "Advanced Topics in Artificial Intelligence" (Ph.D. course), MIS 680, 1989-1996.

- Fall/1989: 5.25 on a 6-point scale.

- Spring/1990: 5.13 on a 6-point scale. College of Business and Public Administration (BPA) Teaching Distinction List.

- Fall/1990: 5.00 on a 6-point scale.

- Spring/1991: 5.78 on a 6-point scale. BPA Teaching Distinction List.

- Fall/1991: 5.33 on a 6-point scale. BPA Teaching Distinction List.

- Spring/1992: 5.75 on a 6-point scale. BPA Teaching Distinction List.

- Spring/1996: 4.90 on a new UA 5-point scale (top 10%).

Instructor, "Data Structures and Algorithms" (undergraduate course), using PASCAL/C, MIS 301, 1989-1998. Student instructor-evaluations:

- Fall/1989: 5.22 on a 6-point scale. BPA Teaching Distinction List.

- Spring/1990: 4.93 on a 6-point scale.

- Fall/1990: 5.04 on a 6-point scale.

- Fall/1991, 2 Sections: 5.08 and 5.15 on a 6-point scale.

- Fall/1992, 2 Sections: 5.43 and 5.38 on a 6-point scale. Both on BPA Teaching Distinction List.

- Fall/1993, 2 Sections: 4.52 and 4.80, on a new UA 5-point scale (top 10%).

- Spring/1995, 2 Sections: 4.66 and 4.82, on a UA 5-point scale (top 10%).

- Spring/1996: 4.69, on a UA 5-point scale (top 10%).

- Spring/1998, 2 sections: 4.7 and 4.2, on a UA 5-point scale (top 10%).

Instructor, "Data Structures and Algorithms" (MS/MBA course), using C/JAVA/C++, MIS 531A, 1990-2005. Student instructor-evaluations:

- Fall/1990: 3.86 on a 6-point scale.

- Fall/1994: 4.43 on a new UA 5-point scale (top 10%).

- Fall/1995: 4.52 on a new UA 5-point scale (top 10%).

- Fall/1997: 4.60 on a new UA 5-point scale (top 10%).

- Fall/1998, 2 sections: 4.60 and 4.7 on a new UA 5-point scale

- Fall/1999, 2 sections: 4.60 and 4.4 on a UA 5-point scale

- Fall/2000, 2 sections: 4.78 and 4.61 on a UA 5-point scale

- Fall/2001, 2 sections, 4.81and 4.5 on a UA 5-point scale

- Fall/2002, 2 sections, 4.63 and 4.39 on a UA 5-point scale

- Fall/2005, 4.6 on a UA 5-point scale

Instructor, "Introduction to Artificial Intelligence and Expert Systems" (MBA/MS/BS course), MIS 480/580, 1989-1997. Student instructor-evaluations:

- Fall/1990: 4.79 on a 6-point scale.

- Fall/1994: 4.75 on a new UA 5-point scale (top 10%).

- Fall/1995: 4.70 on a UA 5-point scale (top 10%).

- Fall/1997: 4.50 on a UA 5-point scale (top 10%).

Instructor, "Knowledge Management: Technologies and Practices" (MBA/MS/BS course), MIS 480/580, 1998-2009. Student instructor-evaluations:

- Fall/1998: 4.30 on a UA 5-point scale (top 10%).

- Fall/1999: 4.20 on a UA 5-point scale (top 10%).

- Fall/2004: 3.90 on a UA 5-point scale

- Fall/2005: 4.8 on a UA 5-point scale

- Spring/2007: 4.5 on a UA 5-point scale

- Spring/2008: 4.0 on a UA 5-point scale

- Spring/2009: 4.0 on a UA 5-point scale

Instructor, "Web Computing and Mining," (MS course), MIS 510, 2004-2014. Student instructor-evaluations:

- Fall/2004: 4.10 on a UA 5-point scale

- Spring/2007: 4.5 on a UA 5-point scale

- Spring/2008: 3.8 on a UA 5-point scale

- Spring/2009: 4.2 on a UA 5-point scale

- Spring/2010: 4.2 and 4.1 on a UA 5-point scale

- Spring/2012: 3.6 and 4.0 on a UA 5-point scale

- Spring/2014: 2.9 and 2.7 on a UA 5-point scale (large classes, un-motivated students)

Instructor, "Biomedical and Security Informatics," (MS course), MIS 596A, 2007. Student instructor-evaluations:

- Spring/2007: 4.10 on a UA 5-point scale

Instructor, "Topics in Data and Web Mining," (Ph.D. course), MIS 611D, 2016-present. Student instructor-evaluations:

- Spring/2016: 4.83 on a UA 5-point scale

- Spring/2019: 4.60 on a UA 5-point scale

Instructor, "Data Analytics," (BS course), MIS 496A & MIS 464, 2016-present. Student instructor-evaluations:

- Spring/2016: 4.86 on a UA 5-point scale

- Spring/2019: 3.62 on a UA 5-point scale

- Spring/2020: No rating due to COVID19

Instructor, "Cyber warfare Capstone," (Online MS in Cybersecurity course), MIS 598, 2019-present. Student instructor-evaluations:

- Spring/2019: No rating (3 students)

- Fall/2019: No rating (20 students)

- Spring/2020: No rating due to COVID19 (15 students)

- Fall/2020: No rating due to COVID19 (12 students)

Instructor, "Information Systems for Management" (MBA course), New York University, June-August, 1988.

Teaching Assistant, "AI: Concepts and Applications" (MBA course), New York University, using LISP, OPS5, FLAVORS, and PROLOG, December 1986-August 1988.

Teaching Assistant, "Software Engineering Practice" (MBA course), New York University, using COBOL, January-December, 1986.

Ph.D. Dissertations Supervised

1. Randy J. Johnson, "A Cognitive Approach to the Representation of Managerial Competitive Intelligence Knowledge," 1994

2. Richard E. Orwig, "A Graphical Self-Organizing Approach to Classifying Electronic Meeting Output," 1995 (Susquehanna University)

3. Andrea L. Houston, "Information Classification: Usability Studies of Two Automatic Approaches," 1998 (Louisiana State University, retired)

4. Dmitri Roussinov, "Information Foraging Through Automatic Clustering and Summarization: A Self-organizing Approach," 1999, CHI 1999 Consortium Student (Syracuse University, Arizona State University, University of Strathclyde, Scotland).

5. Dorbin T. Ng, "A Concept Space Approach to Semantic Exchange," 2000 (Carnegie Mellon University; Chinese University of Hong Kong)

6. Bin Zhu, "Information Visualization for Knowledge Repositories: Applications and Impacts," 2002, CHI 2001 Consortium Student (Boston University; Oregon State University).

7. Gondy Leroy, "Facilitating Knowledge Discovery by Integrating Bottom-up and Top-Down Knowledge Sources: A Text Mining Approach," 2003 (Claremont Graduate University; University of Arizona)

8. Michael Chau, "Searching and Mining the Web for Personalized and Specialized Information," 2003 (Hong Kong University)

9. Wingyan Chung, "An Automatic Text Mining Framework for Knowledge Discovery on the Web," 2004 (University of Texas at El Paso; University of Central Florida)

10. Thian-Huat Ong, "Language and Domain-Independent Knowledge Maps: A Statistical Phrase Indexing Approach," 2004 (Cal State University at Sacramento)

11. Chienting Lin, "Examining Technology Usability and Acceptance in Digital Government: A Case Study in Law Enforcement," 2004 (Pace University)

12. Zan Huang, "Graph-based Analysis for E-Commerce Recommendation," 2005 (Penn State University, industry); ICIS ACM SIGMIS Doctoral Dissertation Award

13. Jennifer Xu, "Mining Static and Dynamic Structural Patterns in Networks for Knowledge Management: A Computational Framework and Case Studies," 2005 (Bentley College)

14. Byron Marshall, "Concept Mapping in Informal Node-Link Knowledge Representations," 2005 (Oregon State University)

15. Alan Gang Wang, "Entity Matching for Intelligent Information Integration," 2006 (Virginia Tech)

16. Yilu Zhou, "Supporting Multilingual Internet Searching and Browsing," 2006 (George Washington University, Fordham University).

17. Jialun Qin, "Facilitating Knowledge Discovery by Mining the Content and Link Structure of the Web," 2006 (University of Massachusetts at Lowell)

18. Dan M. McDonald, "Combining Text Structure and Meaning to Support Text Mining," 2006 (University of Utah, Utah Valley University)

19. Jason Jiexin Li, "Feature Construction, Selection, and Consolidation for Knowledge Discovery," 2007 (Drexel University; West Washington University)

20. Rob Schumaker, "Knowledge Acquisition, Delivery and Prediction through Text Mining," 2007 (Iona College, University of Texas at Tyler)

21. Sidd Kaza, "Instance, Evolution, and Predictive Modeling of Social Networks," 2008 (Towson University)

22. Ahmed Abbasi, "Categorization, Analysis, and Visualization of Computer-Mediated Communication and Electronic Markets," 2008 (University of Wisconsin at Milwaukee, University of Virginia, University of Notre Dame)

23. Xin Li, "Graph Mining for Information Systems," 2009 (City University of Hong Kong)

24. Hsinmin Lu, "Surveillance in the Information Age: Text Quantification, Anomaly Detection, and Empirical Evaluation," 2010 (National Taiwan University)

25. Gavin Yulei Zhang, "Knowledge Discovery in Social Media: Physical World, Online World, and Virtual World," 2011 (Northern Arizona University)

26. Mandy Yan Dang, "Theory-informed Design and Evaluation of Web-based Knowledge Management Systems," 2011 (Northern Arizona University)

27. David Zimbra, "Stakeholder and Sentimental Analysis in Web Forums," 2012 (Santa Clara University)

28. Yukai Lin, "Health Analytics and Predictive Modeling: Four Essays on Health Informatics," 2015 (Florida State University, Georgia State University)

29. Shan Jiang, "Statistical Modeling of Multi-Dimensional Knowledge Diffusion Networks: An ERMG-based Framework," 2015 (University of Massachusetts at Boston)

30. Victor Benjamin, "Securing Cyberspace: Analyzing Cybercriminal Communities Through Web and Text Mining Perspectives," 2016 (Arizona State University)

31. Xiao Liu, "Health Data Analytics: Data and Text Mining Approaches for Pharmacovigilance," 2016 (University of Utah, Arizona State University)

32. Weifeng Li, "Towards Secure and Trustworthy Cyberspace: Social Media Analytics on Hacker Communities," 2017 (University of Georgia)

33. **Sagar Samtani, "Developing Proactive Cyber Threat Intelligence from the Online Hacker Community: A Computational Design Science Approach," 2018 (University of South Florida; Indiana University); ICIS ACM SIGMIS Doctoral Dissertation Award, 2019; NSF CyberCorps Scholar for Service (SFS) Hall of Fame recipient, 2022**

34. Shuo Yu, "Mobile Health Analytics for Senior Care: A Data Mining and Deep Learning Approach," 2019 (Texas Tech)

35. Hongyi Zhu, "Developing Smart and Unobtrusive Mobile Home Care; A Deep Learning Approach," 2019 (UT San Antonio)

36. **Mohammadreza (Reza) Ebrahimi, "AI-Enabled Cybersecurity Analytics: Detecting and Defending Against Cyber Threats," 2021 (University of South Florida); ICIS ACM SIGMIS Doctoral Dissertation Award**

37. **Benjamin Ampel, "Securing Cyberspace: AI-Enabled Cyber-Adversary Defense," 2024 (Georgia State U); ICIS ACM SIGMIS Doctoral Dissertation Award**

38. Amy Fangyu Lin, "Artificial Intelligence-Enabled Information Privacy Analytics and Risk Assessment," 2024 (UT San Antonio)

39. Steven Ullman, "Artificial Intelligence-Enabled Vulnerability Analysis and Management for IT Infrastructure: A Computational Design Science Approach," 2024 (UT San Antonio)

Ongoing dissertations: Andrea Ndubizu (cybersecurity analytics), Henry Chi-Heng Yang (supply chain security), James Hu (adversarial ML), Raul Reyes (cyberinfrastructure security), Sandra Sheng-Ya Liu (AI4BI)

Professional Associations

The Association of Information Systems (AIS), Fellow, elected 2022.

The Association of Computing Machinery (ACM), Fellow, elected 2015.

The Institute of Electrical and Electronics Engineers (IEEE), Fellow, elected 2006.

American Association for the Advancement of Science (AAAS), Fellow, elected 2006.

The American Association for Artificial Intelligence (AAAI).

American Medical Informatics Association (AMIA)

The American Society for Information Science (ASIS).

Institute for Operations Research and the Management Science (INFORMS).

Research Interests

Security informatics, security big data; smart and connected health, health analytics; data, text, web mining.

Digital library, intelligent information retrieval, automatic categorization and classification, machine learning for IR, large-scale information analysis and visualization.

Internet resource discovery, digital libraries, IR for large-scale scientific and business databases, customized IR, multilingual IR.

Knowledge-based systems design, knowledge discovery in databases, hypertext systems, machine learning, neural networks computing, genetic algorithms, simulated annealing.

Cognitive modeling, human-computer interactions, IR behaviors, human problem-solving process.

Intramural Services

Director, Cyber Security Initiative, Defense and Security Institute, 2016-present.

Chair, Eller College Faculty Status Committee, 2006-2007, 2010-2012.

Member, MIS Graduate Committee, 2002-present.

Member, MIS Head Search Committee, Graduate Committee, Prop 301 Committee, 2001-2004.

Founding Director, Mark and Susan Hoffman E-Commerce Lab, College of BPA, University of Arizona, 2000 (obtained $2M in infrastructure funding , $10M in software donations, and $2M in Prop 301 funding).

Chair, MIS Graduate Committee, 1999-2000.

Member, BPA Undergraduate Curriculum Task Force, 1998-1999.

Chair, MIS Department Faculty Search Committee, 1997-1999.

Member, BPA Faculty Status Committee, 1998-1999.

Member, College of Business Undergraduate Curriculum Task Force, Fall 1998.

Member, University of Arizona Faculty Senate Committee on Intellectual Property and Scholarly Communication, Spring 1998-Fall 1999 (18-month ad hoc committee).

Member, MIS Department Faculty Status Committee, Fall 1997.

Chair, Sunset Review Committee for the Center for the Management of Information (with Smith and Zajac), College of Business and Public Administration, University of Arizona, Spring 1997.

Chair, MIS Department Head Search Committee (with Puto, Issac, Holmes, Vogel, LaSalle, and Ram) College of Business and Public Administration, University of Arizona, Fall 1996-Spring 1997.

Chair and member, Undergraduate Curriculum Committee (with LaSalle, Vogel, and Slaten), MIS Department, University of Arizona, Fall 1992-present.

Ph.D. dissertation committees, Departments of MIS, ECE (Electronic and Computer Engineering), SIE (System and Industrial Engineering) and Computer Science, 1989-present.

Member, Undergraduate Program Director Recruiting Committee, College of Business and Public Administration, University of Arizona, Fall 1993.

Journal Editorial Board

Member, Information Systems Research EIC Search Committee, 2022. (Elected Suprateek Sarker of U. of Virginia)

Member, INFORMS Publications Committee, 2021-2023.

Series Editor (with Ramesh Sharda), Advances in Analytics and Data Sciences, Springer, 2016-present.

Guest Editor (with Elena Karahanna and Indranil Bardhan), MIS Quarterly, special issue on "The Role of Information Systems and Analytics in Chronic Disease Prevention and Management," 2016-2020.

Senior Editor (SE), MIS Quarterly, 2016-2019.

Area Editor (Digital and Web Computing), *Decision Support Systems*, 2001-2012.

Senior Editor, Journal of Management Science and Engineering, National Natural Science Foundation of China, 2016-2019.

Editor-in-Chief, *Security Informatics*, Springer, 2010-2018.

(Founding) Editor-in-Chief, *ACM Transactions on Management Information Systems*, 2009-2014.

Associate Editor-in-Chief, *IEEE Intelligent Systems*, 2008-2012.

Guest Editor (with Veda Storey and Roger Chiang), MIS Quarterly, special issue on "Business Intelligence and Analytics," 2010-2012.

Member, Editorial Board, *IEEE Computing Now*, 2009-2012.

Member, Editorial Board, *Journal of the American Society for Information Science and Technology*, 1997-2013.

Member, Senior Editorial Board, *Journal of Information Technology and Politics*, 2006-2008.

Member, Editorial Board, *International Journal of Digital Libraries*, 2005-2016.

Member, Editorial Advisory Board, *Encyclopedia of Library and Information Sciences*, 2005-2008.

Vice Chair, Editorial Board, *Library Journal*, Shanghai Library and Shanghai Society for Library Science, 2004-2008.

Associate Editor, *IEEE Transactions on Intelligent Transportation Systems*, 2004-2007.

Associate Editor, *IEEE Transactions on Systems, Man, and Cybernetics, Part A*, 2003-2012.

Associate Editor, *ACM Transactions on Information Systems*, 2002-2012.

Member, Editorial Board, International Journal of Electronic Business, 2002-2007.

Scientific Board

Member, Steering Committee, Diabetes Technology Society, Cybersecurity Standards for Medical Devices (DTSec), 2015.

Information Technology Counselor, Central Police University, Taiwan, 2006-2008.

Member, Advisory Committee, Digital Library of China Project, National Library of China, China, 2004-2007.

Member, Advisory Committee, Institute of Information Science, Academia Sinica, Taiwan, 2004-2008.

Scientific Counselor, Board of Scientific Counselors, Lister Hill Center, National Library of Medicine, National Institutes of Health, 2002-2006.

Professional Society

Steering Committee Chair, IEEE ISI Conference (IEEE ISI) and European ISI Conference (EISIC), 2011-present.

Member, Board of Governors (BOG), IEEE Intelligent Transportation Systems Society (ITSS), 2004-2005.

Chair, Technical Community (TC) on Intelligence and Security Informatics for Transportation Systems, IEEE Intelligent Transportation Systems Council (ITSC), 2004-present.

Chair, Technical Committee on Homeland Security (TCHS), IEEE Systems, Man, and Cybernetics (SMC) Society, 2004-present.

Member and Asian Digital Library liaison, Technical Committee on Digital Library (TCDL), IEEE Computer Society, 2004-present.

ExCom (Executive Committee) member, IEEE Intelligent Transportation Systems Council (ITSC), representing IEEE Computer Society, 2004-present.

Conference/Workshop Chair and Keynote Speaker

Co-Chair (with S. Samtani & S. Yang), "ACM KDD AI4Cyber: The 1st Workshop on Artificial Intelligence-enabled Cybersecurity Analytics," ACM Knowledge Discovery and Data Mining (ACM KDD 2021). Virtual, August 2021.

Honorary Conference Chair, IEEE Intelligence and Security Informatics (ISI) Conference, November 9-10, 2020.

Keynote Speaker, Florida Business Analytics Forum, Tampa, Florida, May 14, 2019.

Keynote Speaker, IEEE Intelligence and Security Informatics (ISI) Conference, ShenZeng, China, July 1, 2019.

Keynote Speaker, International Conference on Smart Health (ICSH), ShenZeng, China, July 1, 2019.

Keynote Speaker, University Distinguished Speaker Series, Wuhan University, Wuhan, China, July 10, 2019.

Keynote Speaker, INFORMS Second Workshop on Data Sciences, Phoenix, November 4, 2018.

Conference Co-Chair, Women in Cybersecurity (WiCys) Conference, Tucson, Arizona, March 31-April 1, 2017.

Conference Co-Chair, IEEE International Conference on Intelligence and Security Informatics, IEEE ISI-2016, Tucson, Arizona, September 27-30, 2016.

Keynote Speaker, European ISI Conference, Uppsala, Sweden, August 22-24, 2016.

Keynote Speaker, European ISI Conference, Odense, Denmark, August 22-24, 2012.

Keynote speaker, International Conference of Formal Concept Theory (ICFCA), Belgium, May 7-10, 2012.

Keynote Speaker, WITS Conference, Shanghai, China, December 4-5, 2011.

Keynote Speaker, International Conference of Business Intelligence, Shanghai, China (November 29-20, 2010) and Kunming, China (December 19-21, 2010).

Workshop Chair and Keynote Speaker, National Taiwan University Business Intelligence Workshop (pre-PACIS workshop), Taipei, Taiwan, July 9-10, 2010.

Honorary Chair and Keynote Speaker, IEEE ISI 2010, Vancouver, Canada, May 23-25, 2010.

Keynote Speaker, International Conference of Information Management, Tainan, Taiwan, May 21-22, 2010.

Conference Program Co-Chair, International Conference on Information Systems, ICIS 2009, Phoenix, Arizona, December 16-18. 2009.

Conference Co-Chair, IEEE International Conference on Intelligence and Security Informatics, IEEE ISI-2009, Dallas, Texas, June 8-11, 2009.

Honorary Chair and Keynote Speaker, First European Conference on Intelligence and Security Informatics, EuroISI 2008, Esbjerg, Denmark, December 3-5, 2008.

Conference Co-Chair, IEEE International Conference on Intelligence and Security Informatics, IEEE ISI-2008, Taipei, Taiwan, June 17-20, 2008.

Workshop Co-Chair, Second NSF Workshop on Intelligence and Security Informatics: Biosurveillance, BioSurveillance 2007, New Brunswick, NJ, May 22, 2007.

Conference Co-Chair, IEEE International Conference on Intelligence and Security Informatics, IEEE ISI-2007, New Brunswick, NJ, May 23-24, 2007.

Keynote speaker, "Exploring Extremism and Terrorism on the Web: The Dark Web Project," Pacific-Asia Intelligence and Security Informatics Workshop, PAISI 2007, Chengdu, China, April 2007.

Steering Committee Chair, IEEE International Conference on Intelligence and Security Informatics (IEEE ISI), 2002-present.

Steering Committee Chair, International Conference on Asian Digital Libraries (ICADL), 1998-2006.

Conference Co-Chair, IEEE International Conference on Intelligence and Security Informatics, IEEE ISI-2006, San Diego, CA, May 19-20, 2006.

Keynote speaker, "Digital Library Development in the Asia-Pacific," The 8th International Conference on Asian Digital Libraries (ICADL 2005), Bangkok, Thailand, December 12-14, 2005.

Steering Committee Co-Chair, The 8th International Conference on Asian Digital Libraries (ICADL 2005), Bangkok, Thailand, December 12-14, 2005.

Conference Co-Chair, IEEE International Conference on Intelligence and Security Informatics, IEEE ISI-2005, Atlanta, Georgia, May 19-20, 2005.

Program Co-Chair, The 7th International Conference on Asian Digital Libraries (ICADL 2004), Shanghai, China, December 8-12, 2004.

Technical Committee Co-Chair, The 2nd China Conference on Digital Libraries, Beijing, China, September 6-8, 2004.

Conference Chair, ACM/IEEE Joint Conference on Digital Libraries, JCDL 2004, Tucson, Arizona, June 7-11, 2004.

Symposium Chair, "NSF/DHS/ITIC/NIJ Symposium on Intelligence and Security Informatics," Tucson, Arizona, June 10-11, 2004.

Inaugural Speaker, "Knowledge Management Systems: Applications and Development," International Conference on Digital Libraries (ICDL), New Delhi, India, February 24-27, 2004.

Keynote Speaker, "Crime Data Mining and Visualization for Intelligence and Security Informatics," IEEE Carnahan 2003, Taipei, Taiwan, October 14, 2003.

Keynote Speaker, "Achieving Information Resources Empowerment: A Digital Library and Knowledge Management Perspective," CONSAL (Congress of South East Asian Librarian) XII, Brunei Darussalam, October 20, 2003.

Program Co-Chair, The 6th International Conference on Asian Digital Libraries (ICADL 2003), Kuala Lumpur, Malaysia, December 8-12, 2003.

Symposium Co-Chair, "NSF/NIJ Symposium on Intelligence and Security Informatics," Tucson, Arizona, June 2-3, 2003.

Conference Co-Chair, The 5th International Conference on Asian Digital Libraries (ICADL 2002), Singapore, December 17-20, 2002.

Keynote Speaker, "E-library, E-government, and E-commerce: Common Threads and New Opportunities," The First China Digital Library Conference, Beijing, China, July 11, 2002.

Chair, International Technical Committee, The First China Digital Library Conference, Beijing, China, July 9-11, 2002.

Keynote Speaker, "DLI1, DLI2, NSDL, JCDL, ECDL, and ICADL," The 4th International Conference of Asian Digital Libraries, Bangalore, India, December 10-12, 2001.

Chair, COPLINK User Workshop, sponsored by NSF, January 18, 2002, Tucson, Arizona.

Keynote Speaker, H. Chen, "UMLS and Linguistics Enhanced Medical Information Retrieval" and "Medical Information Retrieval in the WWW Era: Challenges and Opportunities," NHRI (National Health Research Institute) Research Resources 2000, Taipei, Taiwan, April 27-28, 2000.

General Chair/Keynote Speaker, "Information Visualization for Digital Libraries," The Second Asian Digital Library Conference, Taipei, Taiwan, November 8-9, 1999.

Conference General Chair, The 4th International Conference on Asian Digital Libraries (ICADL 2001), Bangalore, India, December 10-12, 2001.

Conference General Chair, The Third Asia Digital Library Workshop '2000 (ICADL 2000), Seoul, Korea, December 6-9, 2000.

Technical Track Chair, ICIS'2000, Brisbane, Australia, December 10-14, 2000.

Conference General Chair, The Second Asia Digital Library Workshop '99 (ICADL 1999), Taipei, Taiwan, November 8-9, 1999.

Conference General Chair, The First Asia Digital Library Workshop '98 (ICADL 1998), Hong Kong, August 6-7, 1998.

Awards (University, Industry, and International)

ICIS ACM SIGMIS Doctoral Dissertation Award, Ben Ampel, "Securing Cyberspace: AI-Enabled Cyber-Adversary Defense," 2024 (Georgia State U); ICIS ACM SIGMIS Doctoral Dissertation Award (Dissertation supervised by Dr. Hsinchun Chen)
MIS Faculty Member of the Year Award, 2022-2023.

Recipient of the INFORMS ISS Practical Impacts Award, Phoenix, Arizona, October 2023.

Recipient of the INFORMS Design Science Award (for the NSF CICI project), with Dr. Sagar Samtani of Indiana University, Phoenix, Arizona, October 2023.

Fellow, Association of Information Systems (AIS), AIS Fellow Award, December 2022.

Recipient, IEEE Big Data Security Pioneer Award, IEEE Big Data Security Conference, May 6-8, 2022, Jinan, China.

AZSecure Ph.D. alum Dr. Sagar Samtani of Indiana University (supervised by Dr. Hsinchun Chen) was elected as CyberCorps SFS Hall of Fame recipient. The Hall of Fame recognizes one SFS alum each year for their outstanding contributions to the cybersecurity community, achievements post-graduation, and overall excellence as a scholarship recipient (out of 5,000+ SFS alums). April, 2022.

ICIS ACM SIGMIS Doctoral Dissertation Award, Mohammadreza (Reza) Ebrahimi, "AI-Enabled Cybersecurity Analytics: Detecting and Defending Against Cyber Threats," International Conference on Information Systems (ICIS), Austin, Texas, December 12-15, 2021. (Dissertation supervised by Dr. Hsinchun Chen)

Organized and led by MIS MS student and AZSecure SFS scholar Raul Reyes, **the Arizona Pen Testing (APT) 100 team placed #4 out of 957 teams in the recent 2021 National Cyber League (NCL) competition.** NCL is the most inclusive, performance-based, learning-centered collegiate cybersecurity competition today, with more than 10,000 students from 500 universities participating! The UArizona participated in NCL 2020 with 4 teams. (Dr. Hsinchun Chen is PI of AZSecure SFS program)

AI Lab MS student YiZhi (Louis) Liu led a research project that won the Best Paper Award in IEEE Intelligence and Security Informatics Conference held in San Antonio, Texas, November 2-3, 2021. Liu joined University of Maryland IS department Ph.D. program in Fall 2021. Y. Liu, F.Y. Lin, M. Ebrahimi, W. Li, and H. Chen, "Automated PII Extraction from Social Media for Raising Privacy Awareness: A Deep Transfer Learning Approach," Proceedings of 2021 IEEE International Conference on Intelligence and Security Informatics (IEEE ISI 2021), San Antonio, Texas, November 2-3, 2021.

Dr. Hisnchun Chen was nominated and awarded the 2020 AIS Impact Award, which recognizes the impact of information systems research beyond academia. This award honors his work on "COPLINK – Managing Law Enforcement Data and Knowledge." COPLINK was funded by NSF/DOJ with $4M in 1997, commercialized in Tucson, AZ in 2000, acquired by IBM in 2011 for $500M, and is currently in use by 5,000+ US and EU security and law enforcement agencies for national and community safety.

Organized and led by MIS MS student and AZSecure SFS scholar Gabi Greer, **the Arizona Pen Testing (APT) 100 team placed #5 out of 957 teams in the recent 2020 National Cyber League (NCL) competition.** NCL is the most inclusive, performance-based, learning-centered collegiate cybersecurity competition today, with more than 10,000 students from 450 universities participating! The UArizona participated in NCL 2020 with 4 teams. (Dr. Hsinchun Chen is PI of AZSecure SFS program.)

MIS second-year Ph.D. student and AZSecure SFS scholar Ben Ampel is the lead author of the following paper: "**Benjamin Ampel, Sagar Samtani, Hongyi Zhu, Steven Ullman, and Hsinchun Chen, Labeling Hacker Exploits for Proactive Cyber Threat Intelligence: A Deep Transfer Learning Approach," which received the Best Paper Award of the 18th IEEE Intelligence and Security Informatics Conference in 2020.**

ACM SIGMIS ICIS Doctoral Dissertation Award, Sagar Samtani, "Developing Proactive Cyber Threat Intelligence from the Online Hacker Community: A Computational Design Science Approach," International Conference on Information Systems (ICIS), Munich, Germany, December 16-18, 2019. (Dissertation supervised by Dr. Hsinchun Chen)

Hsinchun Chen, elected Thomas R. Brown Chair Professor of Technology and Management, University of Arizona, February 2013-present.

Eller College of Management Kalt Prize for Best Doctoral Placement (Weifeng Li, University of Georgia), 2017.

Hsinchun Chen, Fellow, ACM (Association for Computing Machinery), Elected 2015 (for contributions to research and development of security informatics and health informatics systems), November, 2015.

Hsinchun Chen, 2013 Innovator of the Year, Technology Innovation Award, University of Arizona, April, 2013.

Hsinchun Chen, Distinguished Professor, China Thousand-Talent Program, in affiliation with TsingHua University Computer Science Department, October 2012-present.

Hsinchun Chen, Distinguished University Chair Professor, National Taiwan University, College of Management, July 2010-present.

Finalist, AZ Tech Council's Governor's Innovation of the Year Award 2011, for AI Lab's Dark Web research, August 2011.

Hsinchun Chen, recipient of IEEE 2011 Research Achievement and Leader Award in Intelligence and Security Informatics, July 2011.

Best Paper of 2010, MIS Quarterly, A. Abbasi, D. Zimbra, Z. Zhang, H. Chen, and J. F. Nunamaker, "Detecting Fake Websites: The Contribution of Statistical Learning Theory," Volume 34, Number 3, September, 2010.

Hsinchun Chen, Outstanding Thesis Advisor, Thesis Awards, Honors College, University of Arizona, 2011.

Hsinchun Chen, recipient of the INFORMS Design Science Award (for the COPLINK Project), Paris, France, December 2008.

Hsinchun Chen, recipient of the IEEE Computer Society 2006 Technical Achievement Award (for his innovative contributions to digital libraries, medical informatics, and intelligence and security informatics).

Hsinchun Chen, Fellow, AAAS (American Association for the Advancement of Science), Elected 2006 (for contributions to scholarship and development in information systems, digital library, biomedical informatics, and intelligence and security informatics).

Hsinchun Chen, Fellow, IEEE (Institute of Electrical and Electronic Engineers), Elected 2006 (for contributions to the development of medical, intelligence, and security informatics).

Hsinchun Chen, Outstanding Overseas Scholar of Chinese Academy of Sciences, China, July, 2005.

Hsinchun Chen, Certificate of Honor, Outstanding University Achievements, University of Arizona, 2004-2005.

Hsinchun Chen, National Chiao-Tung University Distinguished Alumnus Award, April, 2005.

Best Paper Award in WITS 2004, "A Unified Recommendation Framework Based on Probabilistic Models," Z. Huang, D. Zeng, and H. Chen, Fourteen Workshop on Information Technologies & Systems, Washington, DC, December 11-12, 2004..

Knowledge Computing Corporation (a UA spin-off company from the AI Lab), Finalist, Arizona Governors Technology Innovator of the Year Award, November, 2004.

Hsinchun Chen, Certificate of Honor, Recognition of accomplishments on behalf of the University of Arizona, awarded by the Student Unions Advisory Council, October 2004.

Hsinchun Chen, the inaugural University of Arizona Technology Innovation Award, Outstanding Faculty Entrepreneur, September, 2004 (with a cash award of $10,000).

Best Paper Award in SIGDSS (Special Interest Group in Decision Support Systems), "A Link Analysis Approach to Recommendation under Sparse Data," Z. Huang, D. Zeng, and H. Chen, Tenth Annual Americas Conference on Information Systems, August 5-8, 2004, NY, NY.

Recognition of Service Award, presented to Hsinchun Chen, In Appreciation for Contributions to ACM, General Chair, JCDL'04: ACM/IEEE Joint Conference on Digital Libraries, June 7-11, 2004, Association for Computing Machinery.

TPD COPLINK program won the Best of Breed award based on the responses from the Digital Cities Survey 2002, Center for Digital Government, 2003.

Tucson Police Department (TPD) COPLINK project receives the PTI Technology Solutions Award in the mid-size, public-safety category, January 27, 2003. The PTI Technology Solutions Awards is a national program recognizing local governments that use technology to increase revenues, improve service to their community, save tax dollars, or improve management.

Tucson Police Department Award "presented to Dr. Hsinchun Chen, Head of the UA/MIS Artificial Intelligence Lab, in recognition of his outstanding service to the Public and the Law Enforcement Community. His dedicated efforts to promote Law Enforcement Technology Development through the CopLink Project are greatly appreciated." Tucson Police Department (Chief Miranda), Phoenix Police Department (Chief Hardt), March 28, 2002.

University of Arizona, Kault Award for Best Placement of Graduates, College of BPA, 2000.

McClelland Named Professor of Management Information Systems, University of Arizona, 1999.

Andersen Consulting Professor of the Year, 1999.

SAP University Alliance Grant Awards in Research/Applications, 1998-1999.

1998 Honored Entrepreneurial Fellow, Karl Eller Center for the Study of Private Market Economy, University of Arizona.

AT&T Foundation Award in Science and Engineering, 1994-1995.

AT&T Foundation Award in Science and Engineering, 1995-1996.

Best Paper Award, "A Machine Learning Approach to Document Retrieval: An Overview and an Experiment," in the *27th Annual Hawaii International Conference on System Sciences (HICSS-27)*, Maui, Hawaii, January 4-7, 1994.

NSF Research Initiation Award, Division of Information, Robotics, and Intelligent Systems, Directorate for Computer and Information Sciences and Engineering, 1992-1994.

University of Arizona, College of Business and Public Administration Teaching Distinction List, 1989-1992.

SIM (Society of Information Management) Doctoral Fellow, 1988.

Recipient of the Taggart Fellowship, New York University, 1988-1989.

Recipient of the Stern School of Business research assistantship, New York University, 1985-1988.

Recipient of the Haakon Samuelson Memorial Award in the area of Management Science, State University of New York at Buffalo, 1985.

Beta Gamma Sigma membership, elected 1985.

Recognition (Press and Media)

"Cybersecurity Innovation at the University of Arizona," Arizona Public Media, April 8, 2016. Interview with Dr. Hsinchun Chen and SFS student Sagar Samtoni about AI Lab NSF funded hacker web research and Cyber-Corps Scholarship-for-Service (SFS) program.

"When Hackers Talk, This Research Team Listens," Discovery, National Science Foundation, October 8, 2015.

Hsinchun Chen was appointed University Chair Professor, in afflation with the National Taiwan University College of Management, June 2011-prsent.

Dr. Hsinchun Chen was named one of the Arizona Daily Star's Centennial Top 100 Scientists, 2011.

"UA Tech Spinoff Acquired by IBM Corp," UA News, September 12, 2011

"IBM buys UK crime analytics company i2," Financial Times, August 31, 2011

"IBM Buying Spree Shows Appetite for Foreign Tech Players," September 1, 2011.

"IBM to buy analytics firm with Tucson site," Arizona Daily Star, September 1, 2011. The combined i2/COPLINK company was acquired by IBM for $500M.

"Tucson TECH: UA team out to expose 'phishers'," Arizona Daily Star, September 6, 2011.

"Tracking Terrorists Using the Dark Web," KVOA, Channel 4, Tucson, April 29, 2011.

Hsinchun Chen was ranked #1 in publication productivity for 1998-2007 among all authors in *Journal of the American Society of Information Science and Technology, the flagship journal of the ARIST society* **(Chua & Yang, "The Shift Towards Multi-Disciplinarity in Information Science,"** *Journal of the American Society of Information Science and Technology***, 59(13), Pages 2156-2170, 2008).**

"Using artificial intelligence to predict short-term stock market performance," Inside Tucson Business, July 2, 2010.

"Using Artificial Intelligence to Digest News, Trade Stocks," Wall Street Journal, Digits, June 21, 2010.

"AI That Picks Stocks Better Than the Pros," MIT Technology Review, June 10, 2010.

"Web spy software hacks into secretive online forums," New Scientist, April 13, 2010.

"National Dragnet Is a Click Away," COPLINK system featured in cover page as the largest information sharing system for the US public safety agencies. The Washington Post, March 6, 2008.

"New tool automates analysis of Jihad sites," (Associated Press) Philadelphia Inquirer, November 18, 2007.

"Dark Web project designed to find Internet's most dangerous," (Associated Press) AZ Central, November 12, 2007.

"Arizona team's tool could help law enforcement link online postings and track down terrorists," (Associated Press) International Herald Tribune, November 12, 2007.

"Dark Web tool seeks online terrorists," (Associated Press) Business Week, November 11, 2007.

"Project seeks to track terror web posts," (Associated Press) Forbes, November 11, 2007.

"Project seeks to track terror web posts," (Associated Press) Chicago Tribune, November 11, 2007.

"Project seeks to track terror web posts," (Associated Press) Miami Herald, November 11, 2007.

"Project seeks to track terror web posts," (Associated Press) Newsweek, November 11, 2007.

"Project seeks to track terror web posts," (Associated Press) ABC News, November 11, 2007.

"Project seeks to track terror web posts," (Associated Press) Washington Post, November 11, 2007.

"Researchers say tool could help trace online posts to terrorists," (Associated Press) USA Today, November 11, 2007.

"Project seeks to track terror web posts," Associated Press, November 11, 2007.

"University of Arizona tool could help fight terrorism," ACC:15.com, November 5, 2007.

"Germany in the crosshairs of terrorism – tracking down extremists," Second German Television (ZDF), October 23, 2007.

"UA effort sifting web for terror-threat data," Arizona Daily Star, September 24, 2007.

"Mathematicians work to help targeting terrorists over the web," National Public Radio, September 14, 2007.

"UA Scientists Probe 'Dark Web' to Uncover Potential Terrorist Threats," AI Lab Dark Web project featured *in KVOA News 4 Tucson*, September 12, 2006.

"UA's Dark Web: Team Combing Internet to Track Terrorism," AI Lab Dark Web project featured in *Arizona Republic* front page article, July 28, 2006.

The Future of Terrorism," AI Lab Dark Web project featured in *Discover* Magazine cover article, June 2006.

Zan Huang, ICIS 2005 Best Dissertation Award, "Graph-based Analysis for E-Commerce Recommendation," co-supervised by Hsinchun Chen and Daniel Zeng, December 12-15, 2005, Las Vegas, USA.

Hsinchun Chen, Honor Professor, National Dong Hwa University, Taiwan, December 2005.

Hsinchun Chen was ranked #1 in publication productivity in Digital Library in an *Information Processing and Management* study (Liu, Bollen, Nelson, Van de Somel, "Co-authorship networks in the digital library research community," *Information Processing and Management*, 41(6), December, 2005, Pages 1462-1480).

Hsinchun Chen was ranked #8 in publication productivity in Information Systems in a Communications of the Association for Information Systems study (Huang and Hsu, "An Evaluation of Publication Productivity in Information Systems: 1999-2003, Communications of the AIS, 15, 2005, Pages 555-564).

"LAPD hopes to Add High-Tech Partner to Force," The COPLINK computer program can mesh data in minutes, a task that can take a detective weeks. Los Angeles Times, January 2, 2004.

"Cops Could Hit the Links Soon: New Search Engine Would Catalog, Interpret Data for Investigations," Los Angeles Daily News, December 6, 2003.

"Software Joins Cops on the Beat: COPLINK program links databases, speeds police investigations," COPLINK deployed at the state of Alaska. Anchorage Daily News, November 23, 2003.

COLINK project recognized as a finalist (among a field 144 nominations) by the prestigious International Association of Chiefs of Police (IACP)/Motorola 2003 Weaver Seavey Award for Quality in Law Enforcement, IACP Conference, Philadelphia, PA, October 23, 2003.

"Software Helps Police Draw Crime Links," A front page story about COPLINK deployment at the Boston Police Department, Boston Globe, July 17, 2003

"Google For Cops: Software Helps Police Search for Cyber Clues to Bust Criminals," ABC News, April 15, 2003. Also appeared on TechTV.

"A Google for Cops," COPLINK was considered as the Google search engine for cops, featured in NEWSWEEK, March 3, 2003.

"Sniper probe to get help from Tucson," Arizona Daily Star, October 23, 2002.

"Tucson cops, local software to help in D.C. sniper probe," Tucson Citizen, October 23, 2002.

"An Electronic Cop that Plays Hunches," COPLINK system was used to assist in DC sniper investigation and the project was featured in New York Times, November 2, 2002.

"Making a Digital Government," COPLINK project was featured in LA Times, May 20, 2002 as an exemplar digital government project that supports law enforcement information sharing and analysis.

"Super Detective: When University of Arizona professor Hsinchun Chen combined police databases for a consortium of city police agencies, a super-detective was born." Featured in DG (Digital Government) Online Special Issue on Homeland Security, December 2001.

"Key professor: E-commerce expert Hsinchun Chen is a pioneer in the knowledge management and IT areas." Featured in The 20 Tech-Savviest Business Schools, Business 2.0, November 2001.

"Coplink Sifts and Shares Information – Fast," Featured in POLICE The Law Enforcement Magazine, July 2001.

"Software for Data Searchers," Featured in Law Enforcement Technology, April 2001.

Article related to self-organizing maps (SOM) and spider (in Spanish), Featured in Revista Digital de InfoVis.net, April 2001.

"Information Sharing Systems: Coplink," Featured in The POLICE CHIEF, March, 2001.

"AI Lab's Chinese semantic retrieval system is the engine behind UDN's (United Daily News) acclaimed intelligent news search service," Featured in United Daily News (Taiwan), February 2, 2001.

"Technology developed in Tucson is helping police catch criminals faster. COPLINK product let police agencies rapidly share crime information across jurisdictional lines," Featured in Arizona Daily Star, January 7, 2001.

"Changing the Rules of the Game. How Coplink is helping police departments match evidence across boundaries of time and space," Featured in FCW.com, April 3, 2000.

"Map of the Month is based on the ET-Map created by a team lead by Dr. Hsinchun Chen," Featured in Mapa Mundi Magazine, February, 2000.

"A Cybermap Atlas: Envisioning the Internet," Featured in TeleGeography, 2000.

"Cartes interactives ou dynamiques (Dynamic and Interactive Maps)," article in French, Featured in Science & Vie, 2000.

"A Smart Itsy Bitsy Spider for the Web," Featured in BotSpot, 2000.

"Beyond Geography: Mapping Unknowns of Cyberspace," Featured in September 30, 1999 issue of New York Times (Technology – Circuits Section cover article).

"Coplink: Database Detective," Summer, 1999, TECH Beat (cover article).

"Information Retrieval in Digital Libraries: Bring Search to the Net," Featured in Volume 275 of *Science*, January 17, 1997 (cover article).

"NCSA and the Digital Library Initiative: Finding Critical Information Quickly and Easily," Featured in *Hewlett Packard* Technical Report (5965-3214E), September 1996.

"The Ultimate Indexing Job," Featured in *Business Week*, Developments to Watch Column, August 12, 1996.

"DLI Breaks the Semantic Barrier," Featured in Volume 10, No. 2 of *Access, High-performance Computing Magazine* (Page 17), National Center for Supercomputing Applications, Summer 1996.

"Digital Libraries Computation Cracks Semantic Barriers between Databases," Featured in Volume 272 of *Science*, June 7, 1996.

"Digital Library Concept Space Research," Featured in Volume 9, No. 2 of *Access, High-performance Computing Magazine* (Page 17), National Center for Supercomputing Applications, Summer 1995, Volume 269 of *Science* (Page 1361, "Off-the-Shelf Chips Conquer The Heights of Computing," September 8, 1995.

"Digital Library Initiative Tackles Grand Challenge of Information Science," Featured in Volume 5, Number 15 of HPCWire, April 12, 1996 and Volume 2, Number 17 of WEBster, April 30, 1996

Research Grants ($70M+ since 1989)

Current/Funded: ($10M+)

1. Principal investigator (PI), (with co-PIs, S. Brown, M. Wu, B. Zhang), NSF, CyberCorps SFS Program, "Cybersecurity Scholarship-for-Service (Renewal): The AZSecure Program Empowering Cybersecurity through Artificial Intelligence," $3,765,723, June 2024-May 2029.

2. Principal investigator (PI), NSF (with co-PI, S. Samtani), "CICI: UCSS: Enhancing the Usability of Vulnerability Assessment Results for Open-Source Software Technologies in Scientific Cyberinfrastructure: A Deep Learning Perspective," $600,000, DGE-2038483, August 2023-July 2026.

3. Co-Principal investigator (co-PI, with PI R. Mejias, CSU Pueblo), NSF, "CISE-MSI: DP: SaTC: MSI Research Capacity Building for Artificial Intelligence (AI)-enabled Vulnerability Assessment and Remediation in Cyberinfrastructure," $380,000 (total award $600,000), August 2022-July 2026.

4. Principal investigator (PI), NSF (with co-PI, S. Samtani), "EAGAR: SaTC-EDU: Artificial Intelligence and Cybersecurity and Education at Scale," $297,719, DGE-2038483, August 2020-July 2024.

5. Principal investigator (PI), (with co-PIs, S. Brown, S. Hariri, B. Zhang), NSF, CyberCorps SFS Program, "Cybersecurity Scholarship-for-Service Renewal at the University of Arizona: The AZSecure SFS Program," $3.7M, September 2019-August 2026.

6. Principal investigator (PI), (with co-PI, S. Samtani), NSF, CICI Program, "CICI: SSC: Proactive Cyber Threat Intelligence and Comprehensive Network Monitoring for Scientific Cyberinfrastructure: The AZSecure Framework," $998,014, July 2019-June 2024.

7. Principal investigator (PI, with co-PI, W. Li), NSF, SaTC Program, "SaTC: CORE: Small: Cybersecurity Big Data Research for Hacker Communities: A Topic and Language Modeling Approach," $510,624, October 2019-September 2023.

Past/Funded: ($60M+)

1. Key Faculty (with Dr. S. Brown), Provost Investment Fund, University of Arizona, Digital Business in the 4IR: Cybersecurity Infrastructure, $1,624,649, July 2019-July 2022.

2. Principal investigator (PI), NSF, "EAGAR: A Longitudinal Study of Knowledge Diffusion and Societal Impact of Nanomanufacturing Research and Development: Harnessing Data for Science and Engineering," $160,000, CMMI-1832926, August 2018-July 2020.

3. Principal investigator (PI), NSF, "Cybersecurity Big Data and Analytics Sharing," $180,000, DGE-1719477, March 2017-February 2020.

4. Principal investigator (PI), (with co-PIs, P. Goes, S. Hariri, M. Patton), NSF, CyberCorps SFS Program, "Cybersecurity Scholarship-for-Service at the University of Arizona, $5,312,942, DUE-1303362, September 2013-August 2019.

5. Principal investigator (PI), NSF, Cybersecurity Scholarship-for-Service at the University of Arizona Supplement, "Hacker Web Education Portal: Exploring the Hacker Community Assets," $350,000, DUE-1303362, September 2014-Agust 2019.

6. Principal investigator (PI), (with co-PIs, S. Hariri, T. Holt, R. Breiger), NSF, Secure and Trustworthy Cyberspace (SaTC) Program, "Securing Cyber Space: Understanding the Cyber Attacks and Attacks via Social Media Analytics," $1,190,722, SES-1314631, September 2013-August 2018.

7. Principal investigator (PI), NSF, Data Infrastructure Building Blocks (DIBBs), "CIF21: DIBBs for Intelligent and Security Informatics Research and Community," $1,500,000, October 2014-September 2018, ACI-1443019.

8. Principal investigator (PI), NSF, Cybersecurity Scholarship-for-Service at the University of Arizona Supplement for additional scholarship increase, $226,000, DUE-1303362, July 2016-Agust 2018.

9. Principal investigator (PI), NSF, Cybersecurity Scholarship-for-Service at the University of Arizona Supplement for additional scholarship increase, $321,000, DUE-1303362, July 2016-Agust 2018.

10. Principal investigator (PI), NSF, SBE TTP Supplement, "Securing Cyber Space: Understanding the Cyber Attacks and Attacks via Social Media Analytics," $95,000, July 2015-June 2018.Principal investigator (PI), NSF, Cybersecurity Scholarship-for-Service at the University of Arizona Supplement for hosting IEEE ISI and WiCys conferences, $75,000, DUE-1303362, July 2016-Agust 2018.

11. Principal investigator (PI), NSF, Cybersecurity Scholarship-for-Service at the University of Arizona Supplement for hosting IEEE ISI and WiCys conferences, $75,000, DUE-1303362, July 2016-Agust 2018.

12. Co-Principal investigator (Co-PI, UA; PI, Caduceus Intelligence Corporation), NSF, "STTR Phase I: Advanced health progression monitoring and fall detection in a novel home health monitoring system," $225,000 (IIP-1622788), July 2016-June 2017.

13. Principal investigator (PI), Tennessee Technological University, "Women in Cybersecurity Conference" $453,000, September 2016-August 2017.

14. Principal investigator (PI), NSF, "EAGAR: A Systems Approach for Identification and Evaluation of Nanoscience and Nanomanufacturing Opportunities and Risks," $250,000, CMMI-1442116, June 2014-May 2018.

15. Co-Principal investigator (Co-PI, UA; PI, Caduceus Intelligence Corporation), NSF, "STTR Phase I: The Development and Evaluation of an Intelligent Diabetes Self-Management Tool," $225,000 (IIP-1417181), July 2014-June 2015.

16. Principal investigator (PI), NSF, "EAGAR: Two Decades of Nanotechnology Development: Global Competitive Landscape and Knowledge Diffusion and SIR Analysis," $300,000, CMMI-1249210, September 2012-August 2015.

17. Principal investigator (PI), Danish NSF, "Patients@home: Innovative Welfare Technology for the 21st Century," $240,000, with South Denmark University, August 2012-July 2015.

18. Principal investigator (PI), NSF, "EAGAR: Long-term View on Nanotechnology R&D as Reflected in Scientific Papers, Patents, and NSF Awards," $280,000, CMMI-1057624, September 2010-August 2013.

19. Principal investigator (PI), DOD Defense Threat Reduction Agency (DTRA), Basic and Applied Research Directorate, "WMD Intent Identification and Interaction Analysis Using the Dark Web," $1,047,000, HDTRA-09-0058, July 2009-July 2013.

20. Principal investigator (PI), NSF, "Unveiling Trends in Global Nanotechnology Research and Development," $250,000, EAGER, CMMI-0926270, May 2009-April 2011.

21. Principal investigator (PI), NSF, "CRI: Developing a Dark Web Collection and Infrastructure for Computational and Social Sciences," $500,000 (CNS-0709338), October 2007-Septembert 2010.

22. Principal investigator (PI), (with Dr. Shu-Hsing Li of National Taiwan University), Taiwan National Science Council, "Taiwan Smart Health Cloud," $150,000, July 2012-December, 2014.

23. Principal investigator (PI), (with Dr. Shu-Hsing Li of National Taiwan University), Taiwan National Science Council, "Text Mining for Business Intelligence Applications," $70,000, January 2008-December, 2011.

24. Principal investigator (PI), NSF, "EXP-LA: Explosives and IEDs in the Dark Web: Discovery, Categorization, and Analysis," $800,000 (CBET-0730908), December 2007-November 2010.

25. Principal investigator (PI), DHS, The National Center for Border Security and Immigration, "Project 3.2: Fusion of Spatial-Temporal Sensor Data," $300,000 ($60,000 per year), August 2008-July, 2012.

26. Principal investigator (PI), DOD Counter Terrorism Fellowship Program (CTFP), "Dark Web Research Program: Collection, Portal, Research, and Training," $300,000, in partnership with Naval Postgraduate School (NPS), #N00104-10-C-Q381, March 2010-March 2011.

27. Principal investigator (PI), NSF, REU (Research Experience for Undergraduate) "A National Center of Excellence for Infectious Disease Informatics" $16,000, April 2010-September 2010.

28. Principal Investigator (PI, Co-PI: D. Zeng), NSF, Information Technology Research (ITR) Program, "A National Center of Excellence for Infectious Disease Informatics," $1,200,000 (IIS-0428241), August 2004-July 2009. (subcontracts: University of Utah, California Department of Health, and NY Department of Public Health) (UA matching: $75,000)

29. Principal investigator (PI), Air Force Research Lab (AFRL), "Dark Web WMD-Terrorism Study," $89,500, August 2008-May 2009.

30. Principal investigator (PI), NSF, REU (Research Experience for Undergraduate) "BioPortal Research" $12,000, August 2008-July 2009.

31. Principal Investigator (PI), NSF, Digital Government Program, "COPLINK Center: Social Network Analysis and Identity Deception Detection for Law Enforcement and Homeland Security," $600,000 (IIS-0429364), September 2003-August 2009. (UA matching: $75,000)

32. Principal Investigator (PI, Co-PI: D. Zeng), NSF, Information Technology Research (ITR) Program, "COPLINK Center for Intelligence and Security Informatics – A Crime Data Mining Approach to Developing Border Safe Research," $700,000 (EIA-0326348), September 2003-August 2009. (UA matching: $175,000)

33. Principal investigator (PI), Library of Congress, "Capture of Multimedia, Multilingual Open Source Web-based Terrorist Content – Phase 2," $60,000, May 2007-April 2008.

34. Principal investigator (PI), New Mexico Tech, "Border Crossing Network Analysis," $125,000, June 2007-September 2007.

35. Principal investigator (PI), NSF, "Inter-Repository Patent Analysis to Understand Worldwide Nanotechnology Research and Development, $100,000, SGER, December 2007-December 2008.

36. Principal investigator (PI), NSF, "Worldwide Nanotechnology Development: A Comparative Study of Global Patents," $100,000, SGER, January 2007-December 2007.

37. Principal investigator (PI), NSF, "Multilingual Online Stylometric Authorship Identification: An Exploratory Study," $75,000 (IIS-0646942), SGER, October 2006-September 2007.

38. Founder, International BioComputing Corporation, received NSF SBIR funding (PI: H. Su), "BioPortal: An Informatics Infrastructure for Infectious Disease and Biosecurity Information Sharing, Analysis, and Visualization," $100,000, January 2007-June 2007.

39. Principal investigator (PI), DHS, USDA, DOD, Defense Intelligence Agency, Armed Forces Medical Intelligence Center (AFMIC), "Foot-and-Mouth (FMD) BioPortal: Global FMD Surveillance, Information Sharing, and Analysis," $260,000, September 2006-March 2008.

40. Principal Investigator (PI), NSF (from DHS RISC Regional Information Sharing and Collaboration Program, "Supplement to COPLINK Center for Intelligence and Security Informatics – A Crime Data Mining Approach to Developing Border Safe Research," $300,000 (EIA-0326348), July 2006-August 2007.

41. Principal investigator (PI), NSF (CIA/DHS), "International Conference on Intelligence and Security Informatics (ISI 2006)," $100,000 (IIS-0636210), July 2006-June 2007.

42. Principal investigator (PI), NSF, "Arizona Biosurveillance Workshops," $20,000 (IIS-0636637), August 2006-July 2007.

43. Principal investigator (PI), NSF, "NanoMap: Mapping Nanotechnology Development," $200,000 (DMI-0533749), August 2005-July 2007.

44. Principal investigator (PI), Federal Government (Non-Disclosure Agreement), "Terrorism Informatics Workshop," $150,000, October 2007-June, 2008.

45. Principal investigator (PI), Arizona Department of Public Health, "Chief Complaint and Disease Surveillance," $250,000, September 2005-October 2006.

46. Principal investigator (PI), Kansas State University, DOD, Defense Intelligence Agency, Armed Forces Medical Intelligence Center (AFMIC), "Enhancing and Extending RSVP-A Based on the BioPortal Framework," $250,000, July 2005-December 2006.

47. Principal investigator (PI), NSF, "Mapping Nanotechnology Development based on the ISI Literature-Citation Database," $100,000, SGER, September 2005-August 2006.

48. Principal investigator (PI), Library of Congress, "Capture of Multimedia, Multilingual Open Source Web-based Terrorist Content," $60,000, July 2005-June 2006.

49. Principal Investigator (PI), Department of Homeland Security (DHS), CNRI, "BorderSafe Initiative Phase-2," $780,000, June 2004-October 2005. subcontract: Tucson Police Department. (UA matching: $100,000)

50. Principal investigator (PI), NIH, NLM, Innovations in Biomedical Information Science and Technology Program, "GeneScene: A Toolkit for Gene Pathway Analysis," $1,394,224 (1 R33 LM07299-01), January 2002-December 2006.

51. Principal Investigator (PI), Department of Homeland Security (DHS), CNRI, "BorderSafe Initiative Phase-2 DHS Relevance Extension (CBP)," $200,000, October 2004-October 2005. (UA matching: $15,000)

52. Principal investigator (PI), NSF/CIA/DHS, "Workshop: Symposium on Intelligence and Security Informatics (ISI 2005)," $120,000, January 2005-December 2005.

53. Principal Investigator (PI), NSF/CIA, Knowledge Discovery and Dissemination (KDD) Program, "Detecting Identity Concealment," $150,000, September 2004-August 2005. (UA matching: $25,000)

54. Principal Investigator (PI), Department of Homeland Security (DHS), CNRI, "BorderSafe Initiative," $550,000, October 2003-September 2004. subcontracts: Tucson Police Department and Arizona Department of Customs and Border Protection. (UA matching: $100,000)

55. Principal investigator (PI), NSF/CIA/DHS, "Workshop: IEEE Intelligence and Security Informatics Conference (ISI 2004)," $120,000, September 2004-August 2005.

56. Co-Principal Investigator (Co-PI, PI: D. Zeng), NSF, Information Technology Research (ITR) Program, "Developing a Collaborative Information and Knowledge Management Infrastructure," $220,000 (IIS-0114011), 2001-2004.

57. Principal investigator (PI), NSF/CIA/DHS, "Workshop: Symposium on Intelligence and Security Informatics (ISI 2003)," $90,000, January 2004-December 2004.

58. Principal Investigator (PI, Co-PIs: Ed Fox, Ann Lally), NSF, National Science Digital Library (NSDL) Program, "Intelligent Collection Services for and about Educators and Students: Logging, Spidering, Analysis and Visualization," $480,000 (DUE-012741), 2001-2004.

59. Principal investigator (PI), NSF, "NSF/CIA KDD ARJIS/COPLINK Border Safe Research and Testbed," (in collaboration with TPD and San Diego ARJIS), $751,996 (EIA-9983304), supplement to "COPLINK Center: Information and Knowledge Management for Law Enforcement," March 2003-March 2004. (UA matching: $62,500)

60. Co-Principal Investigator (Co-PI, PIs: Jim Cox, Daniel Zeng, Jim Austin), NSF, National Science Digital Library (NSDL) Program, "An Active Object-Oriented Digital Library for Microeconomics Education," $700,000, September 2002-August 2004.

61. Principal Investigator (PI, Co-PI: D. Zeng; subcontracts: NY and CA Departments of Health), NSF, "COPLINK Center (Disease Informatics Supplemental Request): Developing a National Infectious Disease Information Infrastructure: An Experiment in West Nile Virus and Botulism," $800,000 (EIA-9983304), October 2003-March 2004. subcontracts: New York State Department of Health and California Department of Health Services. (UA matching: $50,000)

62. Principal Investigator (PI), NSF, Digital Government Program, "COPLINK Center: Information and Knowledge Management for Law Enforcement," $1,600,000 (EAI-9983304), July, 2000-March, 2004.

63. Principal investigator (PI), NSF, SGER, "Intelligent Patent Analysis and Visualization," $100,000 (IIS-0311628), May 2003-April 2004. (UA matching: $25,000)

64. Principal investigator (PI), NSF, SGER, "Intelligent Patent Analysis for Nanoscale Science and Engineering," $99,935 (CTS-0311652), May 2003-April 2004. (UA matching: $25,000)

65. Principal investigator (PI), NSF, SGER, "DGPort: Intelligent Web Searching for Digital Government Research," $92,965 (EIA-0302353), January 2003-December 2003. (UA matching: $23,000)

66. Principal investigator (PI), NSF/CIA, "Workshop: Symposium on Intelligence and Security Informatics (ISI 2003)," $90,000 (EIA-0317269), March 2003-December 2003.

67. Principal Investigator (PI, Co-PI: Bob Fund, Knowledge Computing Corporation), NSF/CIA, Knowledge Discovery and Dissemination (KDD) Program, "COPLINK Testbed for Homeland Security Data Mining," $201,000, September 2002-June 2003.

68. Principal investigator (PI), NIH, NLM, "UMLS-Enhanced Dynamic Agents to Manage Medical Knowledge," $400,000 (1 R01 LM06319-01 A1), February 2000-January 2003.

69. Principal Investigator (PI), The University of Arizona NSF Digital Government Matching Account #210199, $100,000, July, 2000-June 2003.

70. Principal investigator (PI), NSF, SGER, "NanoPort: Intelligent Web Searching for Nanoscale Science and Engineering," $99,980 (CTS-0304375), January 2002-December 2002.

71. Principal Investigator (PI), The University of Arizona Intellectual Property Account #239760, $34,000, 2001.

72. Principal investigator (PI), NSF Digital Library Initiative-2, "High-performance Digital Library Systems: From Information Retrieval to Knowledge Management," $500,000 (IIS-9817473), April 1999-May 2002.

73. Principal investigator (PI), NSF/CISE/CSS, "An Intelligent CSCW Workbench: Personalized Analysis and Visualization," $331,451 (IIS-9800696), June 1998-June 2001.

74. Founding Director, Mark and Susan Hoffman E-Commerce Lab, $1M lab naming endowment; $500,000 equipment donation fro HP; ERP and e-commerce software donations from Oracle, SAP, J.D. Edward, IBM, Microsoft, and IFS for a combined value of $10M, October 2000.

75. Principal investigator (PI), Digital Equipment Corporation, External Technology Grants Program, "COPLINK: Database Integration and Access for a Law Enforcement Intranet," DEC AlphaServer 4100 (5/533 Mhz CPU, 2 GBs RAM, 100 GBs disk), $184,893, 1997-2001 (equipment donation).

76. Principal Investigator (PI, Co-PI: O. Sheng), "E-Commerce Agent Research and Curriculum Development through HP E-speak: A Framework for Creating Wireless B2B Solutions," $122,729, June, 2000-May, 2001.

77. Principal investigator (PI), City of Tucson, "Coplink Concept Space: An Intelligence Analysis Tool," $250,000, January-September, 2000.

78. Principal investigator (PI), Hewlett-Packard Company University Grant, "Hewlett-Packard Enterprise Computing Lab for Enterprise Information Systems Education and Research," $305,578, July, 1999.

79. Principal investigator (PI), Silicon Graphics Inc. (SGI), SGI Origin2000 supercomputer (8 R10000 processors, 1 GB RAM, 100 GBs disk), $210,000, 1998-2001 (equipment donation).

80. National Center for Supercomputing Applications (NCSA), "Parallel Computation for a Semantic Interoperability Environment," High-performance Computing Resources Grants on SGI/Cray Origin2000 (512 processors), July 1997-June 2000.

81. Principal investigator (PI, with B. Schatz at NCSA), Department of Defense, Advanced Research Projects Agency (DARPA), "The Interspace Prototype: An Analysis Environment based on Scalable Semantics," $3,309,000, June 1997-May 2001 (subcontract to H. Chen, PI, University of Arizona: $1,078,991, N66001-97-C-8535).

82. Principal investigator (PI), National Cancer Institute, National Institutes of Health (NIH), "Information Analysis and Visualization for Cancer Literature: Phase II," $100,000, January 1999-December 1999.

83. Principal investigator (PI, with D. Smith, Chief of Tucson Police Department) National Institute of Justice, "COPLINK: Database Integration and Access for a Law Enforcement Intranet," $1,200,459, July 1997-January 2000 (subcontract to H. Chen, PI, University of Arizona: $941,887).

84. Principal investigator (PI), 3COM, "High-Performance Multimedia System Benchmarking: An Experiment for Internt-2," $90,000, October 1998-February 1999.

85. Principal investigator (PI), SAP University Alliance Grant Awards, "Knowledge Management for SAP R/3: An Experiment on Call Center Record Management," $75,000, January 1999-December 1999.

86. Principal investigator (PI), Department of Defense, Advanced Research Projects Agency (DARPA), "GeoWorlds, Task 5.1 Under Dasher" $194,000, June 1998-December 1998.

87. Co-Principal investigator (Co-PI, PI: B. Schatz, University of Illinois) Digital Library Initiative, NSF/ARPA/NASA, "Building the Interspace: Digital Library Infrastructure for a University Engineering Community," $4,000,000, September 1994-August 1998 (IRI9411318) (subcontracts to H. Chen, PI, University of Arizona, Period 1 (9/94-2/95): $61,880; Period 2 (2/95-2/96): $85,760; Period 3 (2/96-2/97): $188,368; Period 4 (2/97-2/98): $242,032; Period 5 (2/98-9/98): $150,000).

88. Principal investigator (PI), National Science Foundation, CISE, IRIS, "Concept-based Categorization and Search on Internet: A Machine Learning, Parallel Computing Approach," $200,755, September 1995-August 1998 (IRI9525790).

89. Co-Principal investigator (Co-PI, PI: T. Smith, UCSB), NSF, CISE, "Supplement to Alexandria DLI Project: A Semantic Interoperability Experiment for Spatially-Oriented Multimedia Data," $100,000, June 1996-May 1998 (subcontract to H. Chen, PI, University of Arizona, $49,220, KK7022, IRI9411330).

90. National Center for Supercomputing Applications (NCSA), "Medical Information Analysis and Knowledge Discovery," High-performance Computing Resources Grants on SGI/Cray Origin2000 (512 processors), January 1997-July 1997.

91. Principal investigator (PI, with B. Schatz at National Center for Supercomputing Applications), National Cancer Institute, National Institutes of Health (NIH), "Information Analysis and Visualization for Cancer Literature," $150,000, July 1996-July 1997.

92. Principal investigator, Special Information Services, National Library of Medicine, NLM Research Participant Program (sponsoring two research fellows: M. Ramsey and K. Tolle), "Semantic Retrieval for Toxicology and Hazardous Substance Databases," $50,000, October 1996-July 1997.

93. Principal investigator, National Center for Supercomputing Applications (NCSA), "Parallel Semantic Analysis for Spatially-Oriented Multimedia GIS Data," High-performance Computing Resources Grants (Peer Review Board), on Convex Exemplar (64 processors, 24,000 SUs), June 1996-June 1997 (IRI960001N).

94. Co-Investigator (Co-I, PI: J. Yen, Hong Kong University of Science and Technology), Hong Kong Research Grants Council, "Intelligent Agent for the Financial Databases," HK$544,000, July 1995-June 1997.

95. Principal investigator (PI), National Center for Supercomputing Applications (NCSA), "Parallel Computation for a Semantic Interoperability Environment," High-performance Computing Resources Grants (Peer Review Board), on SGI Power Challenge Array (128 R8000 processors, 8000 SUs) and CRAY SGI Origin2000 (128 R10000 processors, 4,000 SUs), June 1997-June 1998 (IRI970002N).

96. Principal investigator (PI), National Center for Supercomputing Applications, "Information Analysis and Visualization for Business Applications," $20,000, May 1996-December 1996.

97. Principal investigator (PI), AT&T Foundation Special Purpose Grants in Science and Engineering, "Intelligent Internet Resource Categorization and Discovery," $10,000, October 1996-September 1996.

98. Principal investigator (PI), National Center for Supercomputing Applications (NCSA), "Information Analysis and Knowledge Discovery for Digital Libraries," High-performance Computing Resources Grants (Peer Review Board), on SGI Power Challenge Array (48 R8000 processors, 3000 SUs), October 1995-September 1996 (IRI950001N).

99. Co-Investigator (Co-I, PI: N. Strausfeld, University of Arizona), National Science Foundation, Database Activities Program - Division of Biological Intrumentations and Resources, Database Activities Relating to identifiable Neurons, "FLYBRAIN, The First in a Federation of Databases for Insect Neurology," $896,424, September 1995-August 1998.

100. Principal investigator (PI), National Center for Supercomputing Applications (NCSA), "NSF/ARPA/NASA Digital Libraries," High-performance Computing Resources Grants, on Cray CS6400 (8 processors) July 15, 1995-Dec 31, 1995 (IRI950003N).

101. Principal investigator (PI), National Center for Supercomputing Applications (NCSA), "Terabyte Information Analysis and Knowledge Discovery," High-performance Computing Resources Grants, on Connection Machine CM-5 (521 nodes), SGI Power Challenge (16 R8000 processors), and Convex Exemplar (24 HP processors), September 1994-July 1995 (IRI950001N).

102. Principal investigator (PI), AT&T Foundation Special Purpose Grants in Science and Engineering, "An Artificial Intelligence Approach to Creating an Intelligent GroupSystems Environment," $10,000, September 1994-August 1995.

103. Principal investigator (PI), College of Business and Public Administration Summer Research Grant, University of Arizona, "Using AI Techniques for GroupSystems," $13,000, June-August, 1994.

104. Principal investigator (PI), Small Grants Program, University of Arizona, "A Concept Space Approach to Multilingual Information Access," $4,540, January 1, 1994- December 31, 1994.

105. Principal investigator (PI), Research Initiation Award, National Science Foundation, "Building a Concept Space for an Electronic Community System," $63,804, June 1, 1992- November 30, 1994 (IRI9211418).

106. Principal investigator (PI), International Program Development Funds, University of Arizona, "UA/ITESM International Technology and Business Information System," $4,000, 1992-1993.

107. Faculty mentor/sponsor (MIS Department senior: Wilcox), Undergraduate Summer Research Grant, University of Arizona, "Building an Internet Spider," $1,000, 1996-1997.

108. Faculty mentor/sponsor (MIS Department seniors: Buntin, Sommer, Neely, Womersley), Undergraduate Summer Research Grant, University of Arizona, "A Machine Learning Approach to Prediction: A Greyhound Racing Example," $800, 1992-1993.

109. Principal investigator (PI), Biomedical Research Support Grant Program, Division of Research Resources, National Institutes of Health, "A Neural Network Approach to the Estimation of the Aqueous Activity Coefficients (Solubility)," $5,000, 1992-1993 (BRSG S07RR07002).

110. Principal investigator (PI), SIM (The Society for Information Management) grant, "A Knowledge-Based Approach to the Design of Information Retrieval Systems," $3,000, 1989-1990.

Founder of UA Spin-off Companies

1. **Knowledge Computing Corporation** (venture capital funding, 2000-2011, $4.6M): Founder of a University of Arizona technology spin-off company. Knowledge Computing Corporation (KCC) receives exclusive licensing from the University of Arizona for the Artificial Intelligence Lab technologies. In return, the University receives annual licensing and royalty fees. KCC is based in Tucson and is committed to making Tucson a successful community for information technology companies. The company has grown to more than 40 employees and is managed and owned by professional managers and software engineers. The company has received more than $4.6M in VC funding (from Arizona, Silicon Valley, and overseas VCs) and is growing rapidly in the law enforcement and knowledge management sectors. KCC's most recent annual revenues total more than $15M with over $4M in profits. KCC's major product, COPLINK Solution Suite, has been adopted by more than 3,500 police agencies in 20 states. **KCC merged i2 in 2009 and was acquired by IBM in 2011.**

2. **International BioComputing Corporation** (2006-2012): Co-founder of IBC (with D. Zeng and L. Tseng) for international biosurveillance. IBC received SBIR funding ($100,000) from NSF in January 2007. The company currently targets at public health and biodefense agencies.

3. **Caduceus Intelligence Corporation** (2010-2020, $1.5M): Founder of CIC for health and security analytics applications. Received seed funding ($500,000) and NSF STTR Phase I ($250,000). Current products include DiabeticLink for diabetes patient support and SilverLink for mobile home monitoring.

Industrial Consulting

NCSA Commercial Application Group (digital libraries, knowledge discovery), Convex/Hewlett Packard (supercomputing applications, call center), Caterpillar Corporation (textual knowledge discovery), National Cancer Institute (textual analysis), National Institute of Allergy and Infectious Disease (medical concept mapping), Caterpillar (knowledge management), Ventana Corporation (collaborative computing), Honk Kong University of Science and Technology (financial digital libraries), Information Handling Services (automatic indexing), AllState (Intranet/Internet), IBM (competitive intelligence), 3Com (QoS applications), Allied Signal (competitive intelligence), Andersen Consulting (knowledge management).

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