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College of Humanities and Social Sciences, Carnegie Mellon University
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EDUCATION

Ph.D. Management Information Systems, University of Arizona, Tucson
(Dissertation Title: *Building Fuzzy Front-End Decision Support Systems for Global Telecommunications Projects*)
M.S. Computer Science & Engineering, Indian Institute of Science, Bangalore
B.S. Electronics and Communication Engineering, College of Engineering, Trivandrum

RESEARCH

RESEARCH INTERESTS

1. Human Computer Interaction
2. Information Security and Privacy
3. Decision Support Systems

JOURNAL PAPERS

Decision Support Systems

1. **Liginlal, Divakaran**, and Ow, Terence, "On Policy Capturing with Fuzzy Measures," *European Journal of Operational Research*, 167(2): pp. 461-474, December 2005.
2. **Liginlal, Divakaran**, Ram, Sudha, and Duckstein, Lucien, "A Fuzzy Measure-Theoretical Framework for Screening Product Innovations," *IEEE Transactions on Systems, Man, and Cybernetics-Part A: Systems and Humans*, Vol. 36, No. 3, May 2006
3. **Liginlal, Divakaran**, and Ow, Terence, "Modeling Attitude to Risk in Human Decision Processes: An Application of Fuzzy Measures," *Fuzzy Sets and Systems*, 157(23), 2006
4. **Liginlal, Divakaran**, Khansa, Lara, and Chia, Stella, "News in Hand: A Case Study in Investment Options for Mobile Content Services," *International Journal of Business Data Communications and Networking*, 6 (1):17-37, 2010
5. Khansa, Lara, and **Liginlal, Divakaran**. Predicting Stock Prices from Malicious Attacks: A Comparative Analysis of Vector Autoregression and Time-Delayed Neural Networks, *Decision Support Systems*, 51(4): pp.745-759, November, 2011.

Information Security

6. Chen, Ye, and **Liginlal, Divakaran**, "Bayesian Networks for Knowledge-Based Authentication," *IEEE Transactions on Knowledge and Data Engineering*, Vol. 19, No. 5, pp. 695-710, May 2007.
7. Chen, Ye, and **Liginlal, Divakaran**, "A maximum entropy approach to feature selection in knowledge-based authentication," *Decision Support Systems*, Vol. 46, Issue 1, December 2008, pp. 388-398.
8. Khansa, Lara, and **Liginlal, Divakaran**, "Valuing the Flexibility of Investing in Security Process Innovations," *European Journal of Operational Research*, 192 (1), pp. 216-235, January 2009.
9. Khansa, Lara, and **Liginlal, Divakaran**, "Quantifying the Benefits of Investing in Information Security," *Communications of the ACM*, 52(11), November 2009.
10. **Liginlal, Divakaran**, and Khansa, Lara, Privacy and E-Authentication: The Dangers of Self-Disclosure in Social Networks, Springer Lecture Notes in Business Information Processing, Vol. 52, 1st Edition, 2011, 166-176.

11. Khansa, Lara, and **Liginlal, Divakaran**, “Whither information security? Examining the complementarities and substitutive effects among IT and information security firms,” *International Journal of Information Management*, (forthcoming).
12. Khansa, Lara, and **Liginlal, Divakaran**, “Regulatory influence and the imperative of innovation in identity and access management,” *Information Resources Management Journal* (forthcoming).

Human Computer Interaction

13. **Liginlal, Divakaran**, Sim, Inkook, and Khansa, Lara, “How significant is human error as a cause of privacy breaches? An empirical study and a framework for error management, *Computers and Security*, 28(3-4): pp. 215-228, May-June, 2009.
14. **Liginlal, Divakaran**, Sim, Inkook, Khansa, Lara, and Fearn, Paul, “Human error and HIPAA Privacy Rule compliance: An interpretive study using Norman’s action theory, *Computers and Security*, (forthcoming).

Technology Use

15. James, Tabitha, Khansa, Lara, Cook, Deborah, and **Liginlal, Divakaran**. Technology and U.S. Politics, *IEEE Technology and Society*, 30(1): 20-27, 2011

REFEREED BOOK CHAPTERS

1. **Liginlal, Divakaran**, Khansa Lara, and Landry Jeff, “Collaboration and Compliance in Healthcare: A Threat Modeling Case Study,” *Readings and Cases in the Management of Information Security*, Vol. 2, Course Technology, 2009.
2. **Liginlal, Divakaran**, Khansa, Lara, and Landry, Jeff, “Collaboration, Innovation, and Value Creation – The Case of Wikimedia's Emergence as the Center for Collaborative Content” in *Cases on Technology Innovation: Entrepreneurial Successes and Pitfalls*, Ann Becker and Robert Niebuhr (eds.), Business Science Reference, 2010.

REFEREED CONFERENCE PROCEEDINGS

1. **Liginlal, Divakaran**, and Gordon Eda. “Building Fuzzy Rule-based Systems for Scientific Jury Selection,” *2nd Malaysian Joint Conference on AI (MJCAI2010)*, Kuching, July 2010.
2. **Liginlal, Divakaran**, and Khansa, Lara. [Privacy and E-Authentication: The Dangers of Self-Disclosure in Social Networks](#). In *Proceedings of the Pre-ICIS WeB 2009 8th Workshop on e-Business: Exploring the Grand Challenges for Next Generation e-Business*.
3. Khansa, Lara, and **Liginlal, Divakaran**, “Is the Decreasing Innovation of Information Security Firms Hurting their Stock Price? A Time Series Analysis.” *AMCIS*, San Francisco, CA, 2009.
4. Khansa, Lara, and **Liginlal, Divakaran**, “Will the Information Security Industry Die? Applying Social Network Analysis to Study Industry Convergence.” *AMCIS*, San Francisco, CA, 2009.
5. **Liginlal, Divakaran**, Sim, Inkook, Khansa, Lara, and Fearn, Paul, “Human Error in Healthcare Organizations: Causes and Management Strategies.” *AMCIS*, San Francisco, CA, 2009.
6. **Liginlal, Divakaran**, and Sim, Inkook, “To Err is Human: But are Social Networks Forgiving,” *HOIT 2007*, Chennai, India, August, 2007.
7. Khansa, Lara, and **Liginlal, Divakaran**, “The Influence of Regulations on Innovation in Information Security,” *AMCIS*, Colorado, 2007
8. Chen, Ye, and **Liginlal, Divakaran**, “An Empirical Investigation of Knowledge-Based Authentication,” *AMCIS*, Colorado, 2007.
9. Khansa, Lara, and **Liginlal, Divakaran**, “Access Granted: The Imperative of Innovation and Standardization in Information Security,” the *19th IEEE International Engineering Management Conference (IEMC 2007)*, Austin, Texas, 2007.
10. Khansa, Lara, and **Liginlal, Divakaran**, “Valuing Investments in Security Process Innovations,” *International Conference on Operations Research Applications*, Bangalore, India, December 2005.

11. **Liginlal, Divakaran**, and Attari, Mukkaram, "Technology Options for Net-Centric Enterprises," *Global Information Technology Management Conference*, Dallas, Texas, June, 2001.
12. **Liginlal, Divakaran**, Ram, Sudha, and Vettiyil, Saji, "An Intelligent Consultant for Jury Selection in a Courtroom," *AMCIS*, Milwaukee, WI, August, 1999.
13. **Liginlal, Divakaran**, Ram, Sudha, and Duckstein, Lucien. "Building Fuzzy Front-End Decision Support Systems for Global Telecommunication Projects," *COTIM*, Brussels, November, 1997.

MANUSCRIPTS UNDER REVIEW IN REFEREED JOURNALS

1. Khansa, Lara, Kim, Sung, and **Liginlal, Divakaran**, "Understanding Members' Participation Behavior in Online Question-and-Answer Communities: A Theory and Empirical Analysis."
2. Liginlal, Divakaran Sim, Inkook, and Khansa, Lara, "Online Information Disclosure and Privacy Loss: Does Situation Awareness Matter?"

WORK IN PROGRESS

1. Khansa, Lara, and **Liginlal, Divakaran**, "Access Granted: Regulatory Influence and the Imperative of Innovation in Identity Management."
2. **Liginlal, Divakaran**, and Khansa, Lara, "What Drives Innovation in Information Security: An Empirical Analysis."
3. **Liginlal, Divakaran**, "Forcing Functions or Privacy Alerts: The Case of Privacy Regulations and Human Error."

TEACHING

TEACHING INTERESTS

1. Human Computer Interaction
2. User-centered Web Design, Web Application Design, Web Services, Service-oriented Architecture
3. Data Management, XML, Data Structures and Algorithms
4. Telecommunications, Business Data Communications, Enterprise Networking.
5. Information Security Technologies, Management of Information Security, Writing Secure Code
6. Introduction to Programming, Systems Analysis and Design
7. Principles of Management Information Systems, Introduction to Computing

TEACHING AWARDS

- Mabel W. Chipman *Outstanding Faculty Teaching Award* from the University of Wisconsin, Madison School of Business, 2007
- University of Arizona *Foundation Award for Meritorious Teaching*, Spring, 1998
- Lawrence J. Larson *Curriculum Development Award* 2004 (for innovation in information security curriculum design) from the University of Wisconsin-Madison, School of Business
- Lawrence J. Larson *Curriculum Development Award* 2001 (for innovation in e-commerce curriculum design) from the University of Wisconsin-Madison, School of Business

TEACHING EXPERIENCE

2009-Present: Carnegie Mellon University, College of Humanities and Social Sciences

Associate Teaching Professor of Information Systems at CMU Qatar

Courses taught: Application Design and Development (Ruby on Rails), User-centered Web Design, XML and Web Services (C# & .NET), Information Systems Milieu, Experiences in Computer Interface Design, Supervised two undergraduate senior projects and two junior projects

2008 – 2009: The University of South Alabama, School of Computer and Information Sciences

Courses taught: Needs Analysis & Technology Evaluation, Computer Interface Design

Supervised 14 senior undergraduate capstone projects

Taught an online graduate course titled “Management Information Systems”

1999 - 2008: The University of Wisconsin-Madison, School of Business

Assistant Professor, Department of Operations & Information Management

Developed and taught MBA, graduate, and undergraduate courses in Web Services

Programming, XML Data Management, Information Security Management, Writing Secure Code, Enterprise Networking, Telecommunications, and E-Business Infrastructure

1995 - 1999: The University of Arizona, College of Business

Instructor, Department of Management Information Systems (Independently developed and taught courses such as Introduction to MIS, Data Structures and Algorithms, and Data Communications)

Teaching Assistant, Department of Management Information Systems (Teaching Assistant for several Information Systems Courses): MIS 611B Behavioral Research Methods (TA to Professor Suzie Weisband), MIS 511 Social Issues of Computing (TA to Professor Suzie Weisband), MIS 522 Linear Programming (TA to Professor Moshe Dror), MIS 507 Data Communications (TA to Professor McNeil), MIS 696B - Group Support Systems (TA to Professor Doug Vogel), and three sections of MIS 111- Introduction to Management Information Systems (TA to Professor Jim Lasalle)

COURSES TAUGHT AND TEACHING EVALUATIONS

Institution	Title	Years	Instructor Evaluation
Carnegie Mellon University (Qatar)	Application Design (Ruby on Rails)	Fall 09	4.7/5.0
	User-centered Web Design	Spring 10	4.82/5.0
	XML and Web Services Programming	Spring 10	5.0/5.0
	Information Systems Milieux	Fall 2010, 2011	4.91/5.0
	Experiences in User Interface Design	Spring 2011	4.8/5.0
University of Wisconsin-Madison, School of Business	Information Security Management for MBAs	Fall 07	5.0/5.0
	Building Secure Information Systems	07, 08 Summer	4.94/5.0
	Information Security Management	03, 04, 05, 06, 07	4.92/5.0
	XML & Web Services Programming	03, 04, 05, 06	4.88/5.0
	Enterprise Networking Technologies	01,02	4.62/5.0
	Business Data Communication	99 – 02	4.62/5.0
	Building an E-Business Infrastructure	02	4.64/5.0
University of Arizona, Dept. of MIS	Business Data Communications	98 S,F	4.80/5.0
	Data Structures and Algorithms	97 S,F	4.60/5.0
	Introduction to M.I.S	96S,F, 97S	4.60/5.0
University of South Alabama, School of Computer & Information Sciences	Needs Analysis & Technology Evaluation	Fall 2008	NA
	Computer Interface Design	Fall 2008	NA
	Undergraduate Projects	Fall 08, Spring 09	NA

PROFESSIONAL AND SERVICE RECORD

PH.D. ADVISING AND COMMITTEES

1. Chair, Ph.D. Committee of Dr. Ye Chen (Senior Scientist, Microsoft Research), 2007
2. Chair, Ph.D. Committee of Dr. Lara Khansa (Assistant Professor, Virginia Tech), 2008
3. Chair, Ph.D. Committee of Dr. Inkook Sim, 2010
4. Member, Ph.D. Committee of Dr. Joko Saputro (Currently with SAP), 2006
5. Ph.D. Minor Advisor to Dr. Stella Chia (Associate Professor, City University of Hong Kong), 2001
6. Ph.D. External Examiner for National Institute of Technology, Kozhikode, India, 2011

SERVICE AND OUTREACH AT CARNEGIE MELLON UNIVERSITY IN QATAR

1. Set up an Information Systems Lab to support undergraduate research and the laboratory requirements of specialized courses such as user experience design and XML and Web Services.
2. Partnering with the Qatar Ministry of Interior to build Qatar's drug prevention campaign website.
3. Partnering with Qatari Diar, the builders of Lusail, Qatar's futuristic city, to develop student projects, internships, and an NPRP research project on safety management and sustainable development.
4. Interdisciplinary research with CMU, George Town, and Cambridge University faculty to develop Arabic language learning technologies.
5. Member of the advisory committee that proposed a new design for Her Highness Sheikha Moza's website.
6. Lectured at Ibtikar (IS outreach event to schools), organized family day events, and reviewed papers for the undergraduate conference in Information Systems.
7. Guided two undergraduate projects that won the top two prizes at the Meeting of the Minds, 2011.

SERVICE AND OUTREACH AT UW-MADISON SCHOOL OF BUSINESS

1. Set up an academic partnership with Oracle leading to the adoption of Oracle for the InfoSys courses in 1999. Created a partnership with the Division of Information Technology at UW-Madison that has served the School of Business database courses since 1999.
2. Served in a significant role to promote School of Business academic partnerships with Microsoft, HP, CISCO, and IBM. This resulted in donations of software and equipment of high monetary value.
3. Set up an Information Systems Lab to support faculty research and the laboratory requirements of specialized courses such as e-business infrastructure and secure coding.
4. Significant role in setting up a high level computing lab aided by a gift from Cargill to support Information Systems courses.
5. Set up a virtual lab facility to teach telecommunications (was one of the five teaching and learning technology competition winners in UW-Madison in 2002) with support from the Division of Information Technology at UW-Madison.

PROFESSIONAL ACTIVITIES

- Member, Editorial Review Board, [Journal of Database Management](#) (2004 - present)
- Reviewer for *Annals of Operations Research*, *Fuzzy Sets and Systems*, *IEEE Transactions on Engineering Management*, *IEEE Transactions on Systems, Man, and Cybernetics*, *Information Sciences*, *Pattern Recognition Letters*, *AMCIS*, *ICIS*, and *HICCS*
- Invited to the first four Microsoft Faculty Summits (2000-2003), first IBM Ecommerce Curriculum Development Conference 2000, and HP EServices Workshop 2000.
- Organized Web 2006, Web 2007, and Web 2009 -- an ICIS workshop on e-business. Served as the treasurer and program committee member for these workshops.

GRANTS

Year	Description	Donor	(\$)
2011	Technology-Enhanced Arabic Language learning (PI)	Qatar Foundation (NPRP)	867,000
2011	Google TV Devices Grant	Google	1,000
2010	Google Android Grant	Google	1,250
2010	Identity Management and Privacy	Qatar Foundation Seed Grant	200,000
2005	Curriculum Development Grant	Microsoft Corporation	1,250
2005	Engage Adaptation Award Grant	DOIT, UW-Madison	1,500
2005	Curriculum Development Grant	School of Business, UW-Madison	2,500
2003	Research And Teaching of .NET Technologies	Microsoft Corporation	15,000
2002	Equipment for a Virtual Networking Lab	CISCO Systems	17,500
2002	Mobile Applications of .NET	Microsoft Corporation	8,500
2002	Curriculum Development Grant	School of Business, UW-Madison	2,500
2002	Expert Systems For Jury Selection	ICAIR (University of Florida)	33,300
2002	Virtual Enterprise Network Laboratory	DOIT, UW-Madison	21,800
2002	Expert Systems for Jury Selection	School of Business, UW-Madison	5,000
2001	.Netcentric Curriculum and Research Plan	Microsoft Corporation	75,000
2001	Mining New Product Ideas	UW-Madison Graduate School	13,350
2000	E-Services Technologies (Lead-PI)	Hewlett Packard	132,000

INDUSTRY EXPERIENCE (BEFORE EARNING PH.D.)

1983 - 1988: Indian Space Research Organization (ISRO)

- *Scientist/Engineer*: Member of the Electronics Systems Division and the Inertial Guidance System Test Group for India's satellite launch vehicle projects. Responsibilities included instrumentation interfacing and test program development for building automated test systems. Also involved in research into advanced computing architectures for flight computers.

1989 - 1995: The Saudi Iron & Steel Company, Kingdom of Saudi Arabia

- *Computer Specialist*: Designed and commissioned the incoming material management system for the plant and a personnel tracking system based on Unix and Oracle platforms. Responsible for training operators of various nationalities.
Two years supervisory experience in routine hardware maintenance of Prime super-minicomputers, managing help desk operations, and plant-wide operational maintenance.

REFERENCES

1. **Dr. James Morris**, Chair, Department of Operations and Information Management, 5297 Grainger Hall, 975 University Avenue, University of Wisconsin-Madison, Madison, WI 53706, jmorris@bus.wisc.edu, (608) 262-1284.
2. **Dr. Urban Wemmerlov**, Professor and Director of Erdman Center, 4284A Grainger Hall, 975 University Avenue, Madison, WI 53706, uwemmerlov@bus.wisc.edu, (608) 262-0305.
3. **Dr. Sudha Ram**, McClelland Professor of MIS, Eller College of Management, University of Arizona, Tucson, AZ 85721, ram@eller.arizona.edu, (520) 621-4113.
4. **Dr. Sung Kim**, Department of Operations and Information Management, School of Business, University of Wisconsin-Madison, skim@bus.wisc.edu, (608) 262-3481.