

## Curriculum Vitae

# Anthony Vance

Associate Professor and Elmer R. Deaver Senior Research Fellow  
Department of Management Information Systems

Director of the Center for Cybersecurity  
Fox School of Business  
Temple University

Associate Editor, *MIS Quarterly*  
Board Member, *Journal of the Association for Information Systems*

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## EDUCATION

**Ph.D., Information Processing Science** 2010  
University of Oulu, Oulu, Finland

Dissertation: "Why Do Employees Violate IS Security Policies? Insights from Multiple Theoretical Perspectives"

**Ph.D., Computer Information Systems** 2009  
Georgia State University, Atlanta, Georgia, USA

Joint-dissertation: "Trusting IT Artifacts: How Trust Affects our Use of Technology"

**Ph.D., Management Science** 2008  
Université Paris-Dauphine, Paris, France

Research Center in Management and Organization (DRM/CREPA)

Joint-dissertation: "Trusting IT Artifacts: How Trust Affects our Use of Technology"

**Master of Information Systems Management, Marriott School** 2004  
Brigham Young University, Provo, Utah, USA

**Bachelor of Science, Information Systems, Marriott School** 2003  
Brigham Young University, Provo, Utah, USA

## **WORK EXPERIENCE**

**Associate Professor & Elmer Deaver Senior Research Fellow** 2018-Present  
Temple University, Pennsylvania, USA

**Danny & Elsa Lui Distinguished Associate Professor** 2017-2018  
University of Hawai'i at Mānoa, Hawaii, USA

**Associate Professor** 2015-2018  
Brigham Young University, Utah, USA

**Assistant Professor** 2009-2015  
Brigham Young University, Utah, USA

**Visiting Research Professor** 2008-2010  
University of Oulu, Oulu, Finland

**Instructor** 2006-2008  
Georgia State University, Atlanta, Georgia

**Fraud Investigator** 2005  
Data Quality Integrity, Deloitte LLP, Atlanta, Georgia

**Information Security Consultant** 2004  
Enterprise Risk Services, Deloitte LLP, Atlanta, Georgia

## **RESEARCH INTERESTS**

1. Behavioral and organizational information security
2. Neuroscience applications to information security

## **SCHOLARSHIP METRICS**

- 4,039 citations per Google Scholar
- 23 H-index

## JOURNAL PUBLICATIONS

27. Siponen, M., **Vance, A.**, Puhakainen, P. "Can Employees' Neutralizations be Overcome? A Field Experiment on Password Policy," **Computers & Security**, forthcoming.
26. **Vance, A.**, Jenkins, J., Anderson, B., Bjornn, D., Kirwan, B. 2018. "Tuning Out Security Warnings: A Longitudinal Examination of Habituation through fMRI, Eye Tracking, and Field Experiments," **MIS Quarterly**, 42 (2), pp. 355-380.
25. Jenkins, J., Anderson, B., **Vance, A.**, Kirwan, B., Eargle, D. 2016. "More Harm than Good? How Security Messages that Interrupt Make Us Vulnerable," **Information Systems Research**, 27 (4), pp. 880-896. Awarded ISR's "**Best Published Paper**" for 2016.
24. Anderson, B., Jenkins, J., **Vance, A.**, Kirwan, B., Eargle, D. 2016. "Your memory Is Working Against You: How Eye Tracking and Memory Explain Habituation to Security Warnings," **Decision Support Systems**, 92, pp. 3-13.
23. Anderson, B., **Vance, A.**, Kirwan, B., Jenkins, J., Eargle, D. 2016. "From Warning to Wallpaper: Why the Brain Habituates to Security Warnings and What Can Be Done About It," **Journal of Management Information Systems**, 33 (3), pp. 713-743.
22. Hui, K.L., **Vance, A.**, Zhdanov, D. 2016. "Securing Digital Assets," in **MIS Quarterly Research Curations**, Ashley Bush and Arun Rai, Eds., <http://misq.org/research-curations>.
21. Anderson, B., **Vance, A.**, Kirwan, B., Eargle, D., Jenkins, J. 2016. "How Users Perceive and Respond to Security Messages: A NeuroIS Research Agenda and Empirical Study," **European Journal of Information Systems**, 25 (4), pp. 364-390.
20. Anderson, B., Kirwan, B., Eargle, D., Jensen, S., **Vance, A.** 2015. "Neural Correlates of Gender Differences and Color in Distinguishing Security Warnings and Legitimate Websites: A Neurosecurity Study," **Journal of Cybersecurity**, 1 (1), pp. 109-120.
19. **Vance, A.**, Lowry, P.B., Eggett, D. 2015. "Increasing Accountability through User-Interface Design Artifacts: A New Approach to Addressing the Problem of Access-Policy Violations," **MIS Quarterly**, 39 (2), pp. 345-366.

18. **Vance, A.**, Anderson, B., Kirwan, B., Eargle, D. 2014. "Using Measures of Risk Perception to Predict Information Security Behavior: Insights from Electroencephalography (EEG)," **Journal of the Association for Information Systems**, 15 (10), pp. 679-722.
17. Siponen, M., **Vance, A.** 2014. "Guidelines for Improving the Contextual Relevance of Field Surveys: The Case of Information Security Policy Violations," **European Journal of Information Systems**, 23 (3), pp. 289-305.
16. Lowry, P.B., Moody, G., Galletta, D., **Vance, A.** 2013. "The Drivers in the Use of Online Whistle-Blowing Reporting Systems," **Journal of Management Information Systems**, 30 (1), pp. 153-190.
15. **Vance, A.**, Lowry, P.B., Eggett, D. 2013. "Using Accountability to Reduce Access Policy Violations in Information Systems," **Journal of Management Information Systems**, 29 (4), pp. 263-289.
14. Abbasi, A., Albrecht, C., **Vance, A.**, Hansen, J. 2012. "MetaFraud: A Meta-Learning Framework for Detecting Financial Fraud," **MIS Quarterly**, 36 (4), pp. 1293-1327.
13. Siponen, M., **Vance, A.**, Willison, R. 2012. "New Insights into the Problem of Software Piracy: The Effects of Neutralization, Shame, and Moral Beliefs," **Information & Management**, 49 (7-8), pp. 334-341.
12. Mahmood, M., Siponen, M., López, F., **Vance, A.** 2012. "Measuring Electronic Commerce Technology Enabled Business Value: An Empirical Investigation," **Journal of Organizational Computing and Electronic Commerce**, 22 (3), pp. 256-279.
11. **Vance, A.**, Siponen, M., Pahnla, S. 2012. "Motivating IS Security Compliance: Insights from Habit and Protection Motivation Theory," **Information & Management**, 49, pp. 190-198.
10. Lowry, P.B., Moody, G., **Vance, A.**, Jensen, M., Jenkins, J., and Wells, T. 2012. "Using an Elaboration Likelihood Approach to Better Understand the Persuasiveness of Website Privacy Assurance Cues for Online Consumers," **Journal of the American Society for Information Science and Technology**, 63 (4), pp. 755-776.
9. Borthick, F., Schneider, G., **Vance, A.** 2012. "Using Graphical Representations of Business Processes in Evaluating Internal Control," **Issues in Accounting Education**, 27 (1), pp. 123-140.

8. **Vance, A.**, Siponen, M. 2012. "IS Security Policy Violations: A Rational Choice Perspective," **Journal of Organizational and End User Computing**, 24 (1), pp. 21-41.
7. Barlow, J., Giboney, J., Keith, M., Wilson, D., Schuetzler, R., Lowry, P.B., **Vance, A.** 2011. "Overview and Guidance on Agile Development in Large Organizations," **Communications of the AIS**, 29 (2), pp. 25-44.
6. Siponen, M., **Vance, A.** 2010. "Neutralization: New Insights into the Problem of Employee Information Systems Security Policy Violations," **MIS Quarterly**, 34 (3), pp. 487-502.
5. Borthick, A. F., Schneider, G., **Vance, A.** 2010. "Preparing Graphical Representations of Business Processes and Making Inferences from Them," **Issues in Accounting Education**, 25 (3), pp. 569-582.
4. **Vance, A.**, Lowry, P.B., Ogden, J. 2010. "Testing the Potential of RFID to Increase Supply-Chain Agility and to Mitigate the Bullwhip Effect," **International Journal of Applied Logistics**, 1 (1), pp. 48-56.
3. Myyry, L., Siponen, M., Pahnla, S., Vartiainen, T., and **Vance, A.** 2009. "What Levels of Moral Reasoning and Values Explain Adherence to Information Security Rules? An Empirical Study," **European Journal of Information Systems**, 18, pp. 126-139.
2. **Vance, A.**, Elie-dit-Cosaque, C., and Straub, D. 2008. "Examining Trust in Information Technology Artifacts: The Effects of System Quality and Culture," **Journal of Management Information Systems**, 24 (4), pp. 73-100.
1. Lowry, P.B., **Vance, A.**, Moody, G., Beckman, B., Read, A. 2008. "Explaining and Predicting the Impact of Branding Alliances and Web Site Quality on Initial Consumer Trust of E-Commerce Web Sites," **Journal of Management Information Systems**, 24 (4), pp. 201-227.

#### **CONFERENCE PUBLICATIONS**

25. **Vance, A.**, Eargle, D., Jenkins, J. L., Kirwan, C. B., & Anderson, B. B. 2019. "The Fog of Warnings: How Non-essential Notifications Blur with Security Warnings." In *Fifteenth Symposium on Usable Privacy and Security (SOUPS)*, San Jose, CA. 23% acceptance rate.

24. **Vance, A.**, Kirwan, B., Bjornn, D., Jenkins, J., Anderson, B. 2017. "What Do We Really Know about How Habituation to Warnings Occurs Over Time? A Longitudinal fMRI Study of Habituation and Polymorphic Warnings," *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI)*, Denver, Colorado. 25% acceptance rate.
23. Lerner, A. Saxena, A., Ouimet, K., Turley, B., **Vance, A.**, Kohno, Y., Roesner, F. 2015. "Analyzing the Use of Quick Response Codes in the Wild," *Proceedings of the Thirteenth International Conference on Mobile Systems, Applications and Services, (MobiSys)*, Florence, Italy. 13% acceptance rate.
22. Anderson, B., Kirwan, B., Eargle, D., Jenkins, J., Howard, S, **Vance, A.** 2015. "How Polymorphic Warnings Reduce Habituation in the Brain—Insights from an fMRI Study," *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI)*, pp. 2883–2892. Seoul, Korea, 24% acceptance rate.
21. Anderson, B., **Vance, A.**, Kirwan, B., Eargle, D., Howard, S. 2014. "Users Aren't (Necessarily) Lazy: Using NeuroIS to Explain Habituation to Security Warnings," *International Conference on Information Systems*, Auckland, New Zealand.
20. Anderson, B., **Vance, A.**, Kirwan, B., Eargle, D., Howard, S. 2014. "Why Users Habituate to Security Warnings: Insights from fMRI," *The Dewald Roode Workshop on Information Systems Security Research*, IFIP WG8.11/WG11.13, Newcastle, UK.
19. Eargle, D., **Vance, A.**, Eggett, D., Lowry, P.B. 2013. "How Moral Intensity and Impulsivity Moderate the Influence of Accountability on Access Policy Violations in Information Systems," *Workshop on Information Security & Privacy*, AIS SIGSEC and IFIP TC11.1, Milan, Italy.
18. Anderson, B., **Vance, A.**, Eargle, D. 2013. "Is Your Susceptibility to Phishing Dependent on Your Memory?," *Workshop on Information Security & Privacy*, AIS SIGSEC and IFIP TC11.1, Milan, Italy.
17. Anderson, B., **Vance, A.**, Eargle, D., Brock, K. 2013. "Your Memory is Working Against You: How Eye Tracking and Memory Explain Susceptibility to Phishing," *The Dewald Roode Workshop on Information Systems Security Research*, IFIP WG8.11/WG11.13, Niagara, NY.

16. **Vance, A.**, Anderson, B., Brock, K., Eargle, D. 2013. "Using Measures of Risk Perception to Predict Information Security Behavior: Insights from Electroencephalography (EEG)," JAIS workshop, *Gmunden Retreat on NeuroIS*, Gmunden, Austria.
15. **Vance, A.**, Eargle, D., Ouimet, K., Straub, D. 2013. "Enhancing Password Security through Interactive Fear Appeals: A Web-based Field Experiment," *Hawaii International Conference on Systems Sciences*, Wailea, HI.
14. Eargle, D., **Vance, A.**, Allen, G., Barrick, D., Peck, D., Bearnson, T., Tian, J. 2012. "Justifying Breaking the Glass: How Accountability Can Deter Unauthorized Access," *Workshop on Information Security & Privacy*, AIS SIGSEC and IFIP TC11.1, Orlando, FL.
13. Anderson, B., **Vance, A.**, Hansen, J., Kirwan, B., Eargle, D., Hinkle, L., Weagel, A. 2012. "Neural Correlates of Gender Differences in Distinguishing Malware Warnings and Legitimate Websites: A NeuroIS Study," *The Dewald Roode Workshop on Information Systems Security Research*, IFIP WG8.11/WG11.13, Provo, UT.
12. **Vance, A.**, Eargle, D., Ouimet, K., Straub, D. 2012. "How Interactivity Can Enhance the Effectiveness of Fear Appeals: A Web-based Field Experiment of Password Security," *The Dewald Roode Workshop on Information Systems Security Research*, IFIP WG8.11/WG11.13, Provo, UT.
11. **Vance, A.**, Molyneux, B., Lowry, P.B. 2012. "Reducing Unauthorized Access by Insiders through End-User Design: Making Users Accountable," *Hawaii International Conference on Systems Sciences*, Wailea, HI.
10. **Vance, A.**, Siponen, M., Warkentin, M. 2011. "Deterrence Without Borders: How National Culture Affects IS Security Policy Violations," *Workshop on Information Security & Privacy*, AIS SIGSEC and IFIP TC11.1, Shanghai.
9. **Vance, A.**, Molyneux, B., Lowry, P.B. 2011. "A New Approach to the Problem of Unauthorized Access: Raising Perceptions of Accountability through User Interface Design Features," *The Dewald Roode Workshop on Information Systems Security Research*, IFIP WG8.11/WG11.13, Blacksburg, VA.

8. **Vance, A.**, Allen, G., Molyneux, B., Lowry, P.B. 2010. "Making Systems Users Accountable: Using Accountability to Reduce Unauthorized Access of Information," *The Dewald Roode Workshop on Information Systems Security Research*, IFIP WG8.11/WG11.13, Waltham, MA.
7. Siponen, M., **Vance, A.**, and Willison, R. 2010. "New Insights for an Old Problem: Explaining Software Piracy through Neutralization Theory," *Hawaii International Conference on Systems Sciences*, Poipu, HI.
6. **Vance, A.**, Siponen, M., Pahnla, S. 2009. "How Personality and Habit Affect Protection Motivation," *Workshop on Information Systems & Privacy*, Phoenix, AZ.
5. Borthick, A. F., Schneider, G. P., and **Vance, A.** 2009. "Using Graphical Representations of Business Processes in Evaluating Internal Control," *American Accounting Association Annual Midyear Meeting*.
4. Borthick, F., **Vance, A.** 2007. "Preparing Graphical Representations of Business Processes and Making Inferences from Them," *American Accounting Association Annual Meeting*.
3. **Vance, A.** 2007. "Modeling Sarbanes-Oxley Compliance as a Knowledge-intensive Process," *40th Annual Hawai'i International Conference on System Sciences*.
2. Pallud, J., Monod, E., **Vance, A.** 2006. "The Implications of the Linguistic Turn on IS," *Proceedings of the Twelfth Americas Conference on Information Systems*.
1. **Vance, A.** 2005. "An Empirical Test of the Potential of RFID Technology to Enhance Supply Chain Agility," *IFIP WG 8.6 Working Conference on Business Agility and IT Diffusion*.

## **EXTERNAL GRANTS**

- 2018 NSF Secure & Trustworthy Cyberspace for proposal entitled, "The Blurring of Non-essential Notifications and Critical Security Warnings: Examining the Problem of Generalization in the Brain" (CNS-1814721). Awarded \$151,823 with Drs. Bonnie Anderson and Brock Kirwan.
- 2016 NSF award to supplement grant, "The Force of Habit: Using fMRI to Explain Users' Habituation" (CNS-1422831). Awarded \$58,185 with Drs. Bonnie Anderson and Brock Kirwan.



- 2016 Google Faculty Research Award for proposal entitled "Improving Adherence to Security Messages through Intelligent Timing: A Neurosecurity Study." Awarded \$34,200 with Drs. Bonnie Anderson and Brock Kirwan.
- 2015 Google Faculty Research Award for proposal entitled, "Has Your Warning Turned into Wallpaper? Using Neuroscience to Design Habituation-Resistant Security Messages." Awarded \$35,503 with Drs. Bonnie Anderson and Brock Kirwan.
- 2014 NSF Secure & Trustworthy Cyberspace for proposal entitled, "The Force of Habit: Using fMRI to Explain Users' Habituation to Security Warnings" (CNS-1422831). Awarded \$294,341 with Drs. Bonnie Anderson and Brock Kirwan.

## **UNIVERSITY GRANTS AND STUDENT MENTORING**

- 2015 Extension of Magnetic Resonance Imaging Research Facility Initiation Grant, "Understanding the Efficacy of Video-Based Software Privacy Policies." Awarded \$5,000 with Drs. Mark Keith and Bonnie Anderson, Brigham Young University.
- 2014 Mentoring Environment Grant for proposal entitled "Your Memory is Working Against You: Using fMRI to Explain How Memory Affects Susceptibility to Phishing." Awarded \$19,527 to fund mentored research with MISM graduate students, Brigham Young University.
- 2014 Magnetic Resonance Imaging Research Facility Initiation Grant, "Understanding the Efficacy of Video-Based Software Privacy Policies." Awarded \$5,000 with Drs. Mark Keith and Bonnie Anderson, Brigham Young University.
- 2014 ORCA grant for proposal entitled "Look Sharp! How Eye Tracking and Memory Explain Susceptibility to Phishing." Mentored BSIS students Ian Jones, Thomas Kelly, and Jeff Penovich for a \$1,500 grant, Brigham Young University.
- 2012 Mentoring Environment Grant for proposal entitled "Accountability through Justification: A New Approach to the Problem of Unauthorized Access of Information Systems." Awarded \$19,704 to fund mentored research with MISM graduate students, Brigham Young University.
- 2012 Global Management Center Grant for International Business Research, for "Deterrence without Borders: How National Culture Affects Information Security Policy Violations." Awarded \$1,000, Brigham Young University.

- 2011 ORCA grant for proposal entitled "Making Systems Users Accountable through User Interface Design Features." Mentored BSIS student Lee Wood for his \$1,500 grant, Brigham Young University.
- 2011 ORCA grant for proposal entitled "Enhancing Password Security through Interactive Fear Appeals." Mentored BSIS student Kirk Ouimet for his \$1,500 grant, Brigham Young University.

## **EXTERNAL SERVICE**

- Associate editor, *MIS Quarterly*, 2016-2020
- Editorial board member and guest senior editor for *Journal of the Association for Information Systems*, 2015-present.
- Editor, IFIP Working Group 8.11/11.13, "Information Systems Security Research."
- Minitrack chair, "Innovative Behavioral IS Security and Privacy Research," HICSS.
- USENIX Enigma 2020 Program committee member.
- AMICS 2020 Doctoral Consortium co-chair.
- Program Committee member of the NeuroIS Retreat, 2015-2019, Vienna, Austria.
- AE for *European Journal of Information Systems*, special issue on "Security and Privacy in 21st Century Organisations."
- AE for *Decision Support Systems*, special issue on "A Comprehensive Perspective on Information Systems Security: Technical Advances and Behavioral Issues."
- AE for *International Conference on Information Systems (ICIS)*, 2011-2017, "Security and Privacy of Information and IS" track.
- AE for ECIS 2015, "IS Privacy and Security" track, Münster, Germany.
- AE for ECIS 2014, "Information Security and Privacy" track, Tel-Aviv, Israel.
- Session chair for ICIS 2013, "Security and Privacy" track, Milan, Italy.
- Program committee member, Workshop on Information Security & Privacy (WISP), AIS SIGSEC and IFIP TC11.1, Milan, Italy, 2013.
- AE for PACIS 2013, Information Security, Jeju, Korea.
- General chair, Dewald Roode Workshop on Information Systems Security Research, IFIP Working Group 8.11/11.13, 2012, Provo, UT.
- AE for ECIS 2012, "Information Security and Privacy" track, Barcelona, Spain.
- Program committee member, European Security Conference, 2012, Örebro, Sweden.

- Track chair for ECIS 2011, "Information Security and Privacy" track, Helsinki, Finland.
- Program committee member, Privacy Enhanced Technology and Security Engineering 2011, Busan, Korea.
- Program chair, Dewald Roode Workshop on Information Systems Security Research, IFIP Working Group 8.11/11.13, 2010, Waltham, MA.

### **DISSERTATION COMMITTEE SERVICE**

- Dissertation committee member, Daniel Bjornn, Department of Psychology and Neuroscience Center, Brigham Young University, 2018.
- Dissertation committee member, David Eargle, Information Systems and Technology Management, University of Pittsburgh, 2017.
- Dissertation committee member, Sumantra Sarkar, Computer Information Systems Department, Georgia State University, 2014.
- Dissertation opponent for Ella Kolkowska, Örebro University, Sweden, 2013.

### **UNIVERSITY SERVICE**

- Director of the Center for Cybersecurity, Fox School of Business, Temple University, 2018–present.
- Fox School Promotion and Tenure Committee, 2019–present.
- Hiring committee member, Temple University, 2018–present.
- Information Security and Privacy Committee member, BYU, 2014–2017.
- PhD-Preparation coordinator, Marriott School, BYU, 2016–2017.
- Behavioral Lab Steering Committee member, Marriott School, BYU, 2010–2017.
- Faculty recruiting committee member, BYU, 2010–2017.
- Information Security & Digital Forensics track director, Masters of Information Systems Management, BYU, 2012–2017.
- PhD Preparation track director, Masters of Information Systems Management program, BYU, 2011–2016.
- Alumni Relations Committee Chair, BYU, 2014–2016.

### **SPECIAL RECOGNITIONS/AWARDS**

- Elmer R. Deaver Research Fellow, Temple University, 2018–present.
- Lieu Distinguished Professor of MIS, University of Hawai'i at Mānoa, 2017–2018.
- Selvoy J. Boyer Fellowship, Marriott School of Management, 2012–2018.

- Kavli Fellow, U.S. National Academy of Sciences.
- "Best Published Paper Award," *Information Systems Research* for papers published in 2016, for article, "More Harm than Good? How Messages that Interrupt Can Make Us Vulnerable," 27 (4), pp. 880-896.
- Outstanding Research, 2014 Marriott School of Management.
- Nominated for best paper, "Reducing Unauthorized Access by Insiders through End-User Design: Making Users Accountable," **Vance, A.**, Molyneux, B., and Lowry, P.B., *Hawaii International Conference on Systems Sciences*, 2012.
- Dissertation awarded grade "excellent" (5/5) by the University of Oulu, Finland, 2010.
- Nominated for best paper, "New Insights for an Old Problem: Explaining Software Piracy through Neutralization Theory," Siponen, M., **Vance, A.**, and Willison, R., *Hawaii International Conference on Systems Sciences*, 2010.
- Best Case Award, Borthick, A. F., Schneider, G. P., and **Vance, A.** "Using Graphical Representations of Business Processes in Evaluating Internal Control", American Accounting Association Annual Midyear Meeting, 2010.
- Outstanding Education Paper Award, Borthick, A. F., Schneider, G. P., and **Vance, A.** "Preparing Graphical Representations of Business Processes and Making Inferences from Them", American Accounting Association Annual Midyear Meeting, 2009.
- J. Mack Robinson College of Business GTA Teaching Excellence Award, Georgia State University, 2008.
- Nominated for best reviewer, 6th Annual Workshop on HCI in MIS, Montreal, 2007.

## **PROFESSIONAL AFFILIATIONS**

- Founding member, IFIP Working Group 8.11/11.13, "Information Systems Security Research"
- Special Interest Group on Security (SIGSEC), Association for Information Systems

## **FOREIGN LANGUAGE**

- German