Grit Denker, Ph.D.
SRI International
Senior Computer Scientist
Computer Science Laboratory

Specialized Professional Competence

Proven record of successfully leading and executing numerous government projects.

Expert in specification and verification of communication, security, and network policies in distributed systems; cognitive and policy-based systems (both wireless and wired devices); modeling and reasoning; policy languages, Semantic Web and ontologies.

Representative Assignments at SRI

Co-lead of SRI's bRIGHT program. bRIGHT is a new human-machine interaction paradigm. Leveraging state-of-the-art computing power and sensor systems, bRIGHT overcomes the bottleneck between a human and a machine -- "the last meter bandwidth." bRIGHT will increase efficiency and effectiveness for users that are cognitively loaded and heavily tasked. bRIGHT has the potential for reducing critical errors and learning curves associated with complex systems. We filed 12 patent applications for bRIGHT since its inception in third quarter of 2010.

Principal Investigator (PI) on DARPA's META program with subcontractors Honeywell Aerospace, TTTech Computertechnik and Vanderbilt University. Design and Implementation of probabilistic fault and performance analysis tool.

PI of subcontract to Lockheed Martin in DARPA's Behavioral Learning for Adaptive Electronic Warfare (BLADE) project to develop cognitive jammers to achieve superiority in electronic warfare (EW). At SRI we developed a knowledge-based system to reason about threats and countermeasures of cognitive radios.

PI of subcontract to Raytheon BBN Technologies in DARPA's F6 project which aimed at replacing large monolithic spacecraft that are maximally packed with resources with a cluster of smaller satellites each carrying a few resources and sharing these resources over a wireless network. At SRI we provided Verification and Validation (V&V) of safety-critical aspects of AETHER (Adaptive, Efficient, Trusted, Hardened, Environmentally Robust Network), an information architecture for MANET clusters in space applications designed by Raytheon BBN.

PI of DARPA's Next Generation (XG) Communication projects (2 projects: 1. XG Policy Control contract with DARPA and 2. subcontractor in Shared Spectrum Company's XG Phase III project). Design, implementation, and field demonstrations of XG Policy Language and Reasoner, a publicly available reasoner for dynamic spectrum access radios (see http://xg.csl.sri.com).

PI of NSF CYber Physical RESilliance and Sustainability (CYPRESS) project, which explores techniques for dependability, resilience and sustainability in cyberphysical spaces. The project derives its name from the Cypress tree that represents durability and sustainability (see http://www.ics.uci.edu/~dsm/cypress/index.html)

Co-Leader of ontology-based analyzer design in DUSD projects Open Netcentric Standards for Testing and Training (ONISTT), Analyzer for Netcentric Systems Test Confederations (ANSC), and Rule Authoring and Verification Environment (RAVE). Analyzer system to automatically generate system confederations that satisfy testing and training requirements for joint military events.

Co-PI of NSF project Formal Checklists for Remote Agent Dependability which was co-sponsored by NASA. Developed a formal approach to deep space mission goal net specifications and domain models.

Co-Developer of DARPA project Common Authorization Protocol Specification Language (CAPSL). Publicly available toolkit for cryptographic protocol analysis (http://www.csl.sri.com/users/millen/capsl).

Leader of web service security coalition of DARPA Agent Markup Language (DAML) project (see http://www.daml.org/services/owl-s/security/).

Patents

Patent holder of PKI system that can handle group- and role-based access control without needing revocation lists (collaboration with Japanese telecommunication institute KDDI). US Patent No. 7062654, entitled "SYSTEM FOR CONTROLLING CROSS-DOMAIN ACCESS", issued 13-Jun-2006.

Patent Applications

SRI #	Title	Inventors	US serial #	Date
5913-2	ADAPTABLE INPUT OUTPUT DEVICE	Senanayake, Rukman; Denker, Grit; Lincoln, Patrick D.; Kornbluh, Roy D.; Lincoln, Sierra J.; Heydt, Richard P.; Aukes, Daniel M.; van Dyk, Karl D.; Mangus, Geoffery A.; Eckerle, Joseph S.	13/158109	10-Jun-2011
6244-2	ADAPTABLE INPUT OUTPUT DEVICE	Senanayake, Rukman; Denker, Grit; Lincoln, Patrick D.; Kornbluh, Roy D.; Lincoln, Sierra J.; Heydt, Richard P.; Prahlad, Harsha; Aukes, Daniel M.; van Dyk, Karl D.; Mangus, Geoffery A.	13/158122	10-Jun-2011
6434-2	ADAPTABLE ACTUATED INPUT DEVICE WITH INTEGRATED PROXIMITY DETECTION	Senanayake, Rukman; Denker, Grit; Lincoln, Patrick D.; Murray, John; Weiner, Steven S.	13/399210	17-Feb-2012
6434-3	METHOD FOR ADAPTIVE INTERACTION WITH A LEGACY SOFTWARE APPLICATION	Senanayake, Rukman; Denker, Grit; Lincoln, Patrick D.; Murray, John; Weiner, Steven S.	13/399183	17-Feb-2012
6216-2	DEVICE, METHOD AND SYSTEM FOR MONITORING, PREDICTING AND ACCELERATING INTERACTIONS WITH A COMPUTING DEVICE	Senanayake, Rukman; Denker, Grit; Lincoln, Patrick D.; Myers, Karen L.; Gervasio, Melinda T.; Lee, Thomas J.	13/534155	27-Jun-2012
6613-2	METHOD, SYSTEM AND DEVICE FOR INFERRING A MOBILE USER'S CURRENT CONTEXT AND PROACTIVELY PROVIDING ASSISTANCE	Nitz, Kenneth C.; Lincoln, Patrick D.; Myers, Karen L.; Bui, Hung; Senanayake, Rukman; Denker, Grit; Mark, William S.; Winarsky, Norman D.; Weiner, Steven S.	13/585003	14-Aug-2012
6613-3	METHOD, SYSTEM AND DEVICE FOR INFERRING A MOBILE USER'S CURRENT CONTEXT AND PROACTIVELY PROVIDING ASSISTANCE	Nitz, Kenneth C.; Lincoln, Patrick D.; Myers, Karen L.; Bui, Hung; Senanayake, Rukman; Denker, Grit; Mark, William S.; Winarsky, Norman D.; Weiner, Steven S.	13/585008	14-Aug-2012
6252-2	METHOD APPARATUS AND SYSTEM FOR MODELING PASSIVE AND ACTIVE USER INTERATIONS WITH A COMPUTER SYSTEM	Denker, Grit; Senanayake, Rukman; Lincoln, Patrick D.; Murray, John	13/631292	28-Sep-2012
6252-3	METHOD APPARATUS AND SYSTEM FOR FACILITATING CROSS APPLICATION SEARCHING AND RETRIEVAL OF CONTENT	Denker, Grit; Senanayake, Rukman	13/631318	28-Sep-2012

	USING A CONTEXTUAL USER MODEL			
6252-4	METHOD APPARATUS AND SYSTEM FOR MODELING INTERACTIONS OF A GROUP OF USERS WITH A COMPUTING SYSTEM	Denker, Grit; Senanayake, Rukman	13/631349	28-Sep-2012
6252-5	METHOD APPARATUS AND SYSTEM FOR ADAPTING THE PRESENTATION OF USER INTERFACE ELEMENTS BASED ON A CONTEXTUAL USER MODEL	Denker, Grit; Senanayake, Rukman	13/631381	28-Sep-2012

Past Appointments

Computer Scientist, Computer Science Laboratory, SRI International, 1998-2005.

International Fellow, Computer Science Laboratory, SRI International, 1997-1998.

Assistant Professor, Computer Science Department, Database Group, Technical University of Braunschweig, Germany, 1995-1997.

Research and Teaching Assistant, Computer Science Department, Database Group, Technical University of Braunschweig, Germany, 1991-1995.

Academic Background

Ph.D. (1995) in computer science and Dipl-Math (1991) in mathematics, Technical University of Braunschweig, Germany

Selected Publications

Co-author of more than 70 papers in journals, conferences, and workshops (see http://www.csl.sri.com/users/denker and http://xg.csl.sri.com for lists of publications).

Ashish Gehani, David Hanz, John Rushby, Grit Denker, and Rance DeLong, On the (F)utility of Untrusted Data Sanitization, *30th IEEE Military Communications Conference (MILCOM),* 2011.

Linda Briesemeister, Grit Denker, Daniel Elenius, Ian Mason, Srivatsan Varadarajan, Devesh Bhatt, Brendan Hall, Gabor Madl, Wilfried Steiner. Quantitative Fault Propagation Analysis for Networked Cyber-Physical Systems. 2nd Analytic Virtual Integration of Cyber-Physical Systems (AVICPS) Workshop, Nov 29, Vienna, Austria, 2011.

Daniel Elenius, David Martin, Reginald Ford, and Grit Denker. Reasoning about Resources and Hierarchical Tasks using OWL and SWRL. In 8th International Semantic Web Conference (ISWC2009), October 2009.

Cognitive Radio Policy Language and Policy Engine. G. Denker, D. Elenius, D. Wilkins. In B. Fette (ed) Cognitive Radio Technologies, 2nd edition, Elsevier, 2009.

D. Elenius, G. Denker, and M.-O.Stehr. A Semantic Web Reasoner for Rules, Equations and Constraints. In 2nd Int. Conference on Web Reasoning and Rule Systems (RR2008), co-located with ISWC 2008, Springer, 2008.

Policy-Based Cognitive Radios. D. Wilkins, G. Denker, M.-O. Stehr, D. Elenius, R. Senanayake, C. Talcott. IEEE Wireless Communications, 2007.

CoRaL - Policy Language and Reasoning Techniques for Spectrum Policies. D. Elenius, G. Denker, M.-O. Stehr, R. Senanayake, C. Talcott, D. Wilkins. 2007 IEEE Workshop on Policies for Distributed Systems and Networks, 2007.

Purpose-Aware Reasoning about Interoperability of Heterogeneous Training Systems. D. Elenius, R. Ford, G. Denker, D. Martin, M. Johnson. 6th Int. Semantic Web Conf., 2007.

M. Wirsing, G. Denker, C. Talcott, A. Poggio, and L. Briesemeister. A Rewriting Logic Framework for Soft Constraints. 6th Intern. Workshop on Rewriting Logic and Its Applications. Electronic Notes in Theoretical Computer Science, Elsevier, 2006.

G. Denker and C.L. Talcott. A Formal Framework for Goal Net Analysis. In Workshop on Verification and Validation of Planning Systems, AAAI, 2005.

G.Denker and C.L. Talcott. Formal Checklists for Remote Agent Dependability. In Fifth International Workshop on Rewriting Logic and Its Applications (WRLA'2004), volume 117 of Electronic Notes in Theoretical Computer Science. Elsevier, 2004.

Security for DAML Web Services: Annotation and matchmaking. G. Denker, L. Kagal, T. Finin, M. Paolucci, and K. Sycara. In D. Fensel, K. Sycara, J. Mylopoulos. 2nd Int. Semantic Web Conference, 2003.

Denker, G., Meseguer, J., and Talcott, C. Rewriting Semantics of Meta-Objects and Composable Distributed Services. In Workshop on Rewriting Logic and its Applications, Kanazawa, Japan, September 18-20, 2000. In Volume 36 of Electronic Notes in Theoretical Computer Science, pp 407-427, Elsevier Science B.V., http://www.elsevier.nl/locate/entcs/volume36.html.

Security Clearance

None.