Dr. Abha Moitra (GE Research)

Dr. Abha Moitra is a Principal Scientist at GE Research in Niskayuna, NY. Her research interests are in Semantic Modeling, Reasoning, Cyber Physical Systems, Cyber Security, Knowledge Management, Open Source Intelligence, Social Network Analysis, Natural Language Processing and Optimization. She has over 31 years of experience working for GE Research during which she had led the development of numerous systems that are currently in use at several current and former GE businesses. Most recently, her work has focused on semantic models and reasoning to capture domain knowledge and deployment in decision support systems. She has developed semantic applications in a broad spectrum of domains, including cyber resiliency, requirements capture and analysis, manufacturability, electric grid semantic model built on NIST's Common Information Model, system for capturing and analyzing data provenance and trust in a multi-level secure environment. Dr. Moitra is current performer on Phase 3 of DARPA's Cyber Assured System Engineering (CASE), DARPA's Automated Rapid Certification of Software (ARCOS); and just finished work on AFRL's Teaming-Enabled Architectures for Manned-Unmanned Systems. She is active in the Semantic community.

Education

1977	Masters in Physics Birla Institute of Technology & Science, Pilani, India
1981	Ph.D. in Computer Science Tata Institute of Fundamental Research, Bombay, India

Positions and Employment

1982-1983	Research Associate, Tata Institute of Fundamental Research, Bombay, India.
1983-1988	Assistant Professor, Dept. of Computer Science, Cornell University, Ithaca, NY.
1988-1989	Computer Scientist, Odyssey Research Associates, Ithaca, NY.
1989-	Computer Scientist, General Electric Global Research Center, Niskayuna, NY.

Selected Publications

- Siu, K., Herencia-Zapana, H., Prince, D, Moitra, A. A Model-Based Framework for Analyzing the Security of System Architectures. 66th Annual Reliability and Maintainability Symposium, Jan 27-30, 2020.
- Siu, K., Moitra, A., Li, M., Durling, M., Tinelli, C., Chowdhury, O.H., Herencia-zapana, H., Prince, D., Larraz, D., Yahyazadeh, M., Meng, B., Interrante, J., Arif, M.: Architectural and Behavioral Analysis for Cyber Security. 38th Digital Avionics Systems Conference, San Diego, CA, September 8-12, 2019.
- Moitra, A., Siu, K., Crapo, A.W. et al. Automating requirements analysis and test case generation. Requirements Engineering, Sept 2019, vol 24, issue 3, pp 341-364.
- Kang, S., Patil, L., Rangarajan, A., Moitra, A., Robinson, D., Jia, T. and Dutta, D., 2019. Ontology-Based Ambiguity Resolution of Manufacturing Text for Formal Rule Extraction. Journal of Computing and Information Science in Engineering, 19(2).

- A. Moitra, R. Palla, A. Rangarajan. Automated Capture and Execution of Manufacturability Rules using Inductive Logic Programming. Innovative Applications of Artificial Intelligence (IAAI), Feb 12-17, 2016, Phoenix, Arizona.
- A. Crapo, A. Moitra. Toward a unified English-like representation of semantic models, data, and graph patterns for subject matter experts. International Journal of Semantic Computing, Vol. 7, No. 3, 2013, pp. 215-236.
- A. Rangarajan, P. Radhakrishnan, A. Moitra, A. Crapo, D. Robinson. Manufacturability Analysis and Design Feedback System Developed Using Semantic Framework. Proc. Of the ASME 2013 International Design Engineering Technical Conferences (IDETC) and Computers and Information in Engineering Conference (CIE), Aug 4-7, 2013, Portland, Oregon, USA.
- A. Crapo, K. Griffith, A. Khandelwal, J. Lizzi, A. Moitra, X. Wang. Overcoming Challenges Using the CIM as a Semantic Model for Energy Applications. Grid Interop Dec. 2010. http://www.smartgridnews.com/artman/uploads/1/crapo_gi10.pdf
- S. Gustafson, H. Ma, A. Moitra. A note on creating networks in social network data. Connections Vol. 29, Issue 2, 2009.
- A. Moitra, B. Barnett, A. Crapo and S.J. Dill. Data Provenance Architecture to Support Assurance in a Multi-Level Secure Environment. MILCOM2009, Oct 2009.
- H. Ma, S. Gustafson, A. Moitra, D. Bracewell. Sampling Ego Networks for Viral Marketing. INFORMS 2009, Oct 2009.
- H. Ma, S. Gustafson, A. Moitra, D. Bracewell, Ego-centric Network Sampling in Viral Marketing Applications, CSE, vol. 4, pp.777-782, 2009 International Conference on Computational Science and Engineering, 2009.
- A. Moitra, R.M. Mattheyses, V.A. Didomizio, L.J. Hoebel, R.J. Szczerba and B. Yamrom. Multivehicle Reconnaissance Route and Sensor Planning. IEEE Transactions on Aerospace and Electronic Systems, Vol. 39, No. 3, 2003, pp 799-812.

Selected Patents

- L.B. Ng Tari and A. Moitra. System and method for extracting ontological information from a body of text. Patent # 9,244,909. Jan. 26, 2016.
- A. Moitra, D.B. Bracewell, S.M. Gustafson, M.T. Baylor and T.H. Chau. Systems and methods for facilitating open source intelligence gathering. Patent # 8,620,849. Dec. 31, 2013.
- S.J. Dill, B. Barnett, A. Crapo, A. Moitra. Method and apparatus for generating a figure of merit for use in transmission of messages in a multi-level secure environment. Patent # 8,166,122. Apr. 24, 2012.
- A. Moitra, A.W. Crapo, M.A. Bodkin. System and method for automating the generation of an ontology from unstructured documents. Patent # 7,987,088. July 26, 2011.
- A. Moitra, R.M. Mattheyses, R.J. Szczerba, L.J. Hoebel, V.A. Didomizio and B. Yamrom. Architecture for automatic evaluation of team reconnaissance and surveillance plans. Patent # 6,687,606. Feb. 3, 2004.