Curriculum Vitae for
J. Scott Hawker
Software Engineering
B. Thomas Golisano College of
Computing and Information Sciences
Rochester Institute of Technology

Contact Information

Email:	hawker@mail.rit.edu
Phone:	585-475-2705
Office location:	GOL 1696

Education

Ph.D., Electrical Engineering, 1990, Lehigh University
Ph.D. Dissertation: "An Organization for Intelligent Robot Control"
Advisor: Roger N. Nagel

Graduate work in signal processing, applied algebra, Rutgers University, 1983-84

M.S.E.E. 1982, **B.S.E.E.** 1981, Texas Tech University
M.S. Thesis: "A Digital Signal Processing and Display System"
Advisor: John J. Murray

Academic Employment

a. September 2010 to Present. Associate Professor in Software Engineering, Rochester Institute of Technology
   a. Software Engineering Graduate Program Director
   b. Co-Director, Laboratory for Environmental Computing and Decision-Making
   c. Teaching: Model-Driven Software Development, Collaborative Software Engineering, Software Architecture, Model-Driven Development, Collaborative Software Engineering, Software Process Engineering, Software Requirements, Software Architecture, Software Subsystem Design, Software Design Principles and Patterns, Software Modeling, Software Evolution and Re-Engineering, Software Quality Engineering, Software Process and Project Management, Information System Design, Verification and Validation, Introduction to Software Engineering, Foundations of Software Engineering
   d. Research:
      i. Software Modeling and model-driven software development
      ii. Domain-Specific Languages for urban data science and decision making
      iii. Mining software repositories and document archives for software process discovery and conformance checking
      iv. Accessibility and usability of mobile application user interfaces

     v. Software modeling of freight transportation systems and their environmental and economic impact
    vi. Software process assessment and improvement, applied to developing science and engineering software (not currently active)
   vii. Learning and knowledge management systems (not currently active)
  viii. Cyberphysical systems for environmental monitoring, automated manufacturing, combat pilot situation awareness, and other application areas (not currently active)

b. September 2004 to September 2010. Assistant Professor in Software Engineering, Rochester Institute of Technology
c. September 1999 to September 2004. Assistant Professor, Department of Computer Science, College of Engineering, University of Alabama, Tuscaloosa, Alabama.
   a. Research:
      - Director, Software Engineering Lab
      - NASA Standards Advisor: applying semantic web, formal modeling (ontologies, UML, process metamodels), information retrieval (metadata-driven search), and other advanced information technology to better create, manage, find, deliver, and use standards, lessons learned, and engineering process documentation for aerospace hardware and software design and manufacture
      - Architecture and behavior of situated action and observation agents cooperating on large-scale analysis and control applications – application to traffic safety
      - Component-based software engineering processes and architectures
   b. Teaching: undergraduate and graduate Software Engineering, Software Architecture, Human-Computer Interaction, Introduction to C++
d. 1984-1988, Graduate Research Assistant, Lehigh University Institute for Robotics and Center for Design and Manufacturing Innovation
   a. R&D of knowledge-based control and agile manufacturing systems: conceived and developed an intelligent control system reference model focusing on the representation and coordinated use of world knowledge and goals in modular observation/action agent controllers
      - Applied reference model to manufacturing information and control systems, dual-armed assembly robots, and autonomous underwater surveillance robots
   b. Co-taught graduate course in robotics and intelligent machines
   c. Lectured on manufacturing systems engineering and computer communications networks in symposia and industry seminars

e. 1981-1982, Graduate Research Assistant, Electrical Engineering, Texas Tech University
    a. Developed signal processing and data visualization tools for information analysis in geophysical exploration
    b. Maintained and calibrated timing and sampling instrumentation for high-energy physics experiments

Non-Academic Employment
a. Summer 2004. Visiting Researcher, University/Space Research Association – NASA, Huntsville, Alabama
    a. Develop requirements and design for next-generation information system architecture for agency-wide technical standards search and delivery system
b. 1995-1999. Motorola Semiconductor Products Sector, Phoenix, Arizona and Austin, Texas
    a. 1997-1999, CIM System Architect, Worldwide CIM Solutions
        • Systems architect designing data collection, storage, and delivery systems and advanced process control platforms
    b. 1995-1997, Program Manager, Project Manager, CIM Standards and CIM Framework Development, on assignment to SeMaTech, Austin, Texas
        • Led definition, development, validation and adoption of the SeMaTech CIM Framework, an industry-consensus standard for an open, multi-supplier, plug-and-play application architecture for manufacturing execution systems in semiconductor fabrication. It won the 1996 Object World award for the best use of object-oriented technology for software reuse.
        • Primary author, SEMI Standard Domain Architecture for manufacturing execution systems (SEMI-STD-E81)
        • Championed and edited Manufacturing Information and Execution Systems section of SIA National Technology Roadmap for Semiconductors.
        • Project manager and program manager, responsible for budget ($1.8M/yr.), personnel (7 staff, plus 30 industry volunteers), program-level and project-level planning and management, supplier selection and performance, strategic planning, technology transfer, and industry coordination.
c. 1991-1995, System Architect, Honeywell Industrial Automation and Control, Phoenix, Arizona
    a. New product definition and opportunity assessment
        • Architecture for integration of manufacturing process control with production control for closed-loop control and reporting of product cost, quality, yield, and schedule

- Defined client-server architecture and led client implementation for field trial of portable, radio-linked computer for use by mobile workers in hazardous industrial sites
  b. Product Architect: Process Control Engineering Workstation
    - Led an international team to develop a process control engineering workstation
d. 1988-1991, Systems and Software Engineer, Flight and Mission Management Systems, Honeywell Defense Avionics Systems Division, Albuquerque, New Mexico
  a. Led design and prototype of a development facility for real-time, embedded expert systems
  b. Defined and prototyped knowledge-based system architecture to support and integrate flight management and mission management functions for military aircraft operations.
  c. Provided threat, terrain, and geographic data models for planning and decision support on covert missions
e. 1982-1988 (Educational Leave, 1984-1987) Signal Processing Software and Systems Engineer: Undersea Surveillance Systems, AT&T Bell Laboratories, Whippany, New Jersey
  a. Conceived and defined a functional architecture for autonomous, underwater surveillance vehicles, including functions for sonar sensor processing and fusion, covert motion planning and control, and covert communication
  b. Developed, improved, and led field trials of new signal processing and display algorithms to improve threat detection performance and operator productivity

Teaching
Curricular Development
a. Collaborative Software Development. Reworking previous graduate Process Engineering and Environments course to include collaboration among large, globally-distributed software development teams
b. Model-Driven Development. Reworking of previous graduate Software Modeling course to focus more on model transformation from requirements to design, construction, and test.
c. Foundations of Software Engineering (graduate level "Software Engineering 101" course). Significantly modified the flow, structure, and content of this course to reflect and extend parallel modifications in our undergraduate Introduction to Software Engineering course. Using flipped classroom, problem-based learning, research surveys, and other learning styles and teaching methods.
d. Software Requirements and Architecture. Integrated two previously separate courses (under a quarter-cycle schedule shift to semester-cycle). Significantly updated the course and coordinated its delivery by other

instructors. Disseminated course structure and experience through ASEE conference publication.

e. Software Process Engineering and Environments. Developed new graduate course. Disseminated course structure and experience through ASEE conference publication.

f. Principles of Information System Design. Significantly updated the course to include evolving technologies and design approaches, and coordinated its delivery by other instructors.

g. Software Architecture (Masters course at University of Alabama) Proposed and developed course, delivered it over three years.

Ph.D. Dissertation at RIT
a. *Advisor*
   i. Not completed. Mesh, E. Discovery and Application of Scientific Software Process Improvement Decision Factors.
   ii. Not completed. Jockel, J., Indicators and responses to process improvement opportunities.
   iii. Not completed. Li, B. Scenario Management System in Geospatial Intermodal Freight Transportation Analysis
   iv. Not completed. Pendelberry, S. Scenario Generation and Management for Environmental Computational Models

M.S. Capstones/Theses at RIT
a. *Capstone/Thesis Advisor*
   i. 2020 (in progress). Rawat, Prakhar, Accessibility in Software Engineering. RIT.
   ii. 2020 (in progress). Patil, Vivek, Empirical Analysis and Evaluation of Model-to-Model (M2M) and Model-to-Text (M2T) UML transformation tools. RIT.
   iii. 2020. Pulle, Raseshwari, Process Discovery & Conformance Analysis. RIT.
   iv. 2019. Bhattacharya, Sayantika, Understanding Gaps Between Theoretical Software Engineering Process Knowledge and its Actual Implementation. RIT.
   v. 2019. Pulle, Raseshwari, Process Discovery and Conformance Analysis (PDCA). RIT.
   vi. 2019. Kesari, Ashok, Evolving Agile to Create Pre-Sales Prototypes
   vii. 2019. Yerragunta, Sankarsh, Analysis of State of the Code Generated From UML-based Code Generation Tools
   viii. 2018. Honnakasturi, Priyanka, A comparison of unit-testing tools for Java based projects: JUnit, TestNG and Cactus. RIT.
   ix. 2018. Hattikal, Snehal, Augmenting Manual Testing with Automation Testing: A Software Quality Process Improvement Approach, RIT.
   x. 2017. Hua, Yue, Analysis on User Reviews in Mobile Application Development via Single Platform, RIT.

xi. 2017. Panaganti, Venkat, Comparative analysis on automated unit test case generation tools for Java. RIT.

xii. 2017. Alshaloub, Ahad, Usability Assessment for WebGIFT. RIT.

xiii. 2017. Elango, Vivekanand, Hand detection by color and hand geometry. RIT.

xiv. 2016. Dale, Abhishek, Exploring Genome Sequencing Software Applications and Deriving Reference Architecture. RIT.

xv. 2016. Vijayasekharan, Ajantha, Mobile User Experience Design for an Innovative Parking Solution, "Parkinator." RIT (With Bryan French, Information Sciences and Technologies, RIT).

xvi. 2016. McLean, Alex, The Impact of Software Engineering Principles and Best Practices on Senior Project. RIT.

xvii. 2016. Kubarycz, David, A Catalog of Architectural Tactics for Power-Aware Mobile Software. RIT.

xviii. 2016. Kerkar, R. An in Depth Architectural Analysis of ETL Tools to validate their performance. RIT.

xix. 2016. Bai, Z. The Quality Attribute Design Strategy for a Social Network Data Analysis System. RIT.

xx. 2015. Sagar, F.S., Software Process Improvement for a Scientific Lab. RIT.

xxi. 2013. Burns, G., Experience Report, Tailoring Requirements Elicitation for Humanitarian Software in Developing Countries. RIT

xxii. 2013. Alhamed, M., Experience Report, Process Oriented Programming. RIT

xxiii. 2013. Kulkarni, A., Experience Report, Introducing Big Data into Enterprise Applications, RIT

xxiv. 2013. Ruiz Garcia, A. The Impact of Green IT principles on the management of computer labs.

xxv. 2012. Mesh, E. Experience Report, Development of a Software Process Maturity Model for Scientific Research Projects. RIT.

xxvi. 2012. Joon, S. Experience Report. A Software Solution to Aid Environmental Policy Analysis. RIT.

xxvii. 2012. Mejia, A. Experience Report: nL System: A Web-based System to Improve Learning in Software Engineering. RIT.

xxviii. 2011. Pilco, H. Experience Report. UML Extension for Software Product Line Applying Feature Driven Development Approach to get high reusable components. RIT.

xxix. 2010. Fujiki, Y. Experience Report. Software Process Improvement for Industrial Projects. RIT.

xxx. 2010. Perez Cifuentes, D. Experience Report. Analysis of the Process for Selecting Software Development Life Cycle Models and Software Engineering Practices Appropriate for Different Types of Projects. RIT.

xxxi. 2010. D'Vileskis, S. Software Process Improvement Plan for Telog Engineering. RIT.

xxxii.   2009. Montero, E. Capstone Report. Print Jobs and Energy Consumption: Design and Initial Approach of a Print Energy Life-cycle Decision Tool. RIT.

xxxiii.   2009. Deshmukh, A. Experience Report. Software engineering practices for research and development laboratory projects. RIT.

xxxiv.   2009. Sharma, U. Capstone Report. WebGIFT Geospatial Intermodal Freight Transportation Model on the Web: Building Web-based Services Supporting Transportation Policy Analysis. RIT.

xxxv.   2008. Bhesania, Z. Experience Report. Software Process Improvement in Small Settings using IDEAL and MoProSoft Models

xxxvi.   2008. Daxini, A. Experience Report. Integrating Excel models into Vensim Dynamic Systems Integration for Transportation Fleet Life-Cycle Performance Analysis. RIT.

xxxvii.   2008. Walter, M. Capstone Report. WebGIFT: A Geospatial Intermodal Freight Transportation Model on the Web – Using ArcGIS Server and ArcSDE to Implement a System for Transportation Policy Analysis. RIT.

b. *Committee Member*

i.   2018. Van Munster, Katlijn, (Environmental Science MS), Modeling Health Effects of Particulate Matter Emissions from Heavy Duty Diesel Trucks Involved in High-Volume Hydraulic Fracturing with BENMAP-CE, RIT.

ii.   2017. Palak Sharma, Datasets Used in Fifteen Years of Automated Requirements Traceability Research (with Mehdi Mirikhorli)

iii.   2016. Menda, Dipti, Building Data Warehouse for Holding Enterprise Data with Sentiment Analysis Support. RIT (With Jai Kang, RIT Information Systems and Technology)

iv.   2016. da Silva Santos, Joanna. CAWE: A Catalog of Architectural Weakness. RIT. (thesis committee member)

v.   2016. Zoyhofski, Rachel, Estimates of Emissions from Heavy Duty Diesel Vehicles (HDDV) and Control Strategies Related to Transport Activities Supporting High Volume Hydraulic Fracturing Wells in the Marcellus Shale Formation. RIT. (Environmental Science thesis committee member)

vi.   2015. Waleed Zogaan, M. Thesis. Empirical Study of Training-Set Creation for Software Architecture Traceability Methods

vii.   2015. Wilson, M. Thesis. Examining the Conflict Between User Experience and Software Development in Industry. RIT

viii.   2014. Matthews, A. Thesis, Modeling Atmospheric Emissions and Calculating Mortality Rates Associated with HVHF Transportation

ix.   2011. Ghosh, A. Thesis. Freight Transportation and the Environment: Using Geographic Information Systems to Inform Goods Movement Policy. RIT.

x.   2010. Patchala, J. Capstone Report. Opinion Mining of Consumer Preferences in Automobiles. RIT.

xi. 2009. Stepp, M. Thesis. Limiting Transportation Sector Greenhouse Gas Emissions: The Role of System Interactions on Policy Portfolio Effectiveness. RIT.

xii. 2009. Comer, B. Thesis. Sustainable Intermodal Freight Transportation: Applying The Geospatial Intermodal Freight Transport Model. RIT.

xiii. 2008. Murphy, C. Thesis. Health Impacts from Diesel Freight Emissions: Development of a Geospatial Analytical Framework for Policy Evaluation with a Case Study of Sacramento, CA. RIT.

xiv. 2008. Hatta, K. Thesis. A Reusable Process Pattern for Agile Product Line Requirements Engineering. University of Texas, Dallas.

xv. 2008. Falzarano, A. Thesis. An Evaluation of Energy Consumption and Emissions from Intermodal Freight Operations on the Eastern Seaboard: A GIS Network Analysis Approach. RIT.

xvi. 2007. Claes, N. Thesis. Intersections of Analysis and Computing: Developing Taxonomy and Scenario Tools for Computer Aided Policy Analysis. RIT.

xvii. 2007. Ketha, S. Capstone Report. Multimodal Freight Transportation System. RIT.

Other
a. Supported numerous honors independent studies and honors contracts
b. Supervisor for four quarters of co-op students working in the Laboratory for Environmental Computing and Decision Making (2007-2009, 2012).
c. Mentor to two McNair Scholars: Virginia Allen (2008) and Gregory Owens (2009)
d. Mentored an NSF REU supplement to an existing NSF grant: Jen Loomis (2007)
e. Advisor to GCart team, the RIT team of students building an autonomous ground vehicle for competition in the DARPA Grand Challenge. (2005-2006)
f. Software Engineering Department Honors Advocate (2006)

Scholarship
Publications - Peer Reviewed

Ballantyne, Mar**s;** Jha, A.; Jacobsen, A; **Hawker**, J. S.; El-Glaly, Y. N.; "Study of Accessibility Guidelines of Mobile Applications," Mobile and Ubiquitous Multimedia (MUM) 2018, Cairo, Egypt.

Hawker, J.S., Kuehl, R.B., Mirakhorli, M., "A Merged Requirements and Architecture Course," Proceedings of the 2016 American Society of Engineering Educators, New Orleans, Louisiana, June 2016

Mesh, E.S., Tolar, D.M., **Hawker**, J.S., "Exploring Process Improvement Decisions to Support a Rapidly Evolving Developer Base," International Conference on Software Engineering, Austin, Texas, May 2016.

Korfmacher, K.F., **Hawker**, J.S., Winebrake, J.J., "Analysis of Environmental and Infrastructure Impacts of Transportation Activities Associated with High Volume Hydraulic Fracturing Operations in the Marcellus Shale Formation," *Transportation Research Record: Journal of the Transportation Research Board, No. 2503, Transportation Research Board, Washington, D.C., 2015, pp. 70–80.* DOI: 10.3141/2503-08.

Mesh, E.S., Burns, G., **Hawker**, J.S., "Integrating Scientific and Software Engineering Expertise to Support Scientific Software Process Improvement Decisions," *Computing in Science and Engineering*, v. 9, issue 3, 2014, pp. 28-34.

Hawker, J.S. Comer, B., Corbett, J.J. Ghosh, A. Korfmacher, K., Lee, E.E. Li, B., Prokop, C., Winebrake, "An Integrated Model to Study Environmental, Economic, and Energy Trade-Offs in Intermodal Freight Transportation," 2010 International Environmental Modelling and Software Society (iEMSs) 2010 International Congress, Ottawa, Canada, July, 2010.

Comer, B.S., Corbett, J.J., **Hawker**, J.S., Korfmacher, K., Lee, E.E., Prokop, C., Winebrake, J.J., "Marine Vessels as Substitutes for Heavy-Duty Trucks in Great Lakes Freight Transportation," *Journal of the Air & Waste Management Association,* 60 (7), July 2010, pp. 884-890.

Hawker, J.S., "A Software Process Engineering Course," Proceedings of the 2009 American Society for Engineering Education Annual Conference, Austin, TX, June 2009, Paper AC 2009-2001.

Stepp, M.D., Winebrake, J.J., **Hawker**, J.S., Skerlos, S.J., "Greenhouse Gas Mitigation Policies and the Transportation Sector: The Role of Feedback Effects on Policy Effectiveness," *Energy Policy*, 37, 2009, pp.2774-2787.

Hawker, J.S.; Weber, I; Starenko, M.; Parry-Hill, J.; "Preliminary Experience of Using a Learning and Knowledge Management System for an SE-1 Course," Proceedings of the 2008 American Society for Engineering Education Annual Conference and Exposition, Pittsburgh, PA, June 2008.

Winebrake, James J., James J. Corbett, Aaron Falzarano, J. Scott **Hawker**, Karl Korfmacher, Sai Ketha, and Steve Zilora, "Energy, Environmental, and Economic Tradeoffs in Freight Transportation Decision-Making," *Journal of the Air & Waste Management Association*, Volume 58, Number 8, August 2008.

Hawker, J.S., "The Collaborative eNotebook: a Collaborative Learning and Knowledge Management Testbed," Proceedings of the 2006 American Society for Engineering Education Annual Conference and Exposition, Chicago, IL, June 18-21, 2006.

Gupta, S., **Hawker**, J.S., and Smith, R.K., "Acquiring and Delivering Lessons Learned for NASA Scientists and Engineers: A Dynamic Approach," 2005 ACM Southeast Conference, Kennesaw, GA, March, 2005.

Yau, H.Y., and **Hawker**, J.S., "SA_MetaMatch: Document Discovery through Document Metadata and Indexing," 2004 ACM Southeast Conference, Huntsville, AL, March, 2004.

Hawker, J.S., Ma, H., and Smith, R.K., "Web-Based Process and Process Models to Find and Deliver Information to Improve the Quality of Flight Software," (Best Paper in Track) 2003 Digital Avionics Systems Conference, October, 2003.

Hawker, J.S., Hodges, R., et al., "Provisional Standard for CIM Framework Domain Architecture," Semiconductor Equipment and Materials International (SEMI) Standard #E81-0699, SEMI, Inc., Mountain View, CA, 1999. (An international industry standards document)

Hawker, J.S., "CIM Framework Architecture and Application Models," in Information Infrastructure Systems for Manufacturing II, J.J. Mills and F. Kimura, Editors, pp. 201-214, Kluwer Academic Publishers, Boston, 1999.

Publications - Partially Reviewed

El-Glaly, Yasmine N., Peruma Anthony, Krutz, Daniel E., and **Hawker**, J. Scott, "Apps for Everyone: Mobile Accessibility Learning Modules." ACM Inroads 2018 June, Vol. 9, No.2.

Mesh, E.S., **Hawker**, J.S., "Scientific Software Process Improvement Decisions: A Proposed Research Strategy" *Software Engineering for Computational Science and Engineering (SE-CSE), 2013 5th International Workshop on*, pp. 32-39, 18 May 2013

Burg, W.D., **Hawker**, J.S., et al., "Exploring a Comprehensive CBD Method: Use of CBD/e in Practice," Third International Workshop on Component-Based Software Engineering, International Conference on Software Engineering, Limerick, Ireland, May, 2000.

Hawker, J.S., Waskiewicz, F.W., "Agility enabled by the SEMATECH CIM Framework." Plug and Play Software for Agile Manufacturing in SPIE's Photonics East 1996 Conference, Boston Massachusetts, November 18, 1996.

Hawker, J.S. and Nagel, R.N., "World Models in Intelligent Control Systems," Proceedings of the 1987 IEEE International Symposium on Intelligent Control, pp. 482-488. Also published in International Trends in Advanced Manufacturing Technology: Autonomous Robots, IFS Publications, Bedford, England, 1989.

Hawker, J.S. and Nagel, R.N., "Integration of a Dual-Arm Control System," Proceedings of the 1986 SME Robotics Research Conference, MS86-776.

Publications - Not Peer Reviewed

Montero, E. **Hawker**, J.S., Esterman, M., Rothenberg, S., "Sustainable Printing Activities: Design and Initial Approach of a Print Energy Life-cycle Decision Tool" Research monograph PICRM-2010-03 of the Printing Industry Center at RIT, Rochester, NY, January 2010.

Hawker, J.S.., Falzarano, A.. M,, Ketha, S. Korfmacher, K. Winebrake, J.J., Zilora, S.. "Intermodal Transportation Network Custom Evaluators for Environmental Policy Analysis" 2007 ESRI International User Conference. San Diego, CA.

Falzarano, A., **Hawker**, J.S., Korfmacher, K., Winebrake, J.J., Zilora, S., Kettha, S.. "Development of an Intermodal Network for Freight Transportation Analysis" 2007 ESRI International User Conference. San Diego, CA.

Ludi, S., Lutz, M., **Hawker**. J.S., and Reichlmayr, T., "Orbscan Software Product Recovery, Phase I Project Report," Software Engineering Department, B. Thomas Golisano College of Computing and Information Sciences, Rochester Institute of Technology, October, 2005.

Hawker, J.S., "Concepts for a Lessons Learned Software System," in The 2003 NASA Faculty Fellowship Program Research Reports, NASA/CR—2004-213285, pp.XVI-1 – XVI-6 May, 2004.

Hawker, J.S., "Standards Advisor: Advanced Information Technology for Advanced Information Delivery," in The 2002 NASA Faculty Fellowship Program Research Reports, NASA/CR—2003-212397, pp.XX-1 – XX-5 May, 2003.

Hawker, J.S., Massey, K.E., and Davis, S.M., "Re-Architecting a Data Analysis System to Enable Pluggable Tools and Data," Computer Science Technical Report TR-2002-08, University of Alabama, October, 2002.

Hawker, J.S., "Integrating Process, Product, and People Models to Improve Software Engineering Capability," Computer Science Technical Report TR-2002-05, University of Alabama, September, 2002.

Hawker, J.S., "A Three-Way Stakeholder Structure for Software Engineering Course Projects," Computer Science Technical Report TR-2002-06, University of Alabama, September, 2002.

Hawker, J.S. and Massey, K.E., "Toward Distributed, Pluggable Tools and Data: Re-Engineering a Data Analysis Architecture," Computer Science Technical Report TR-2002-07, University of Alabama, September, 2002.

Hawker, J.S., Woolridge, R., "A Process for Gaining Competence in Component-Based Development," Computer Science Technical Report TR-2000-08, University of Alabama, September, 2000.

Hawker, J.S., SEMATECH CIM Framework Architecture Concepts, Principles and Guidelines. Technology Transfer #96123214A-ENG, SEMATECH, Austin, Texas, 1996.

Creative Works - Peer Reviewed
> None

Creative Works - Not Peer Reviewed
Software
> a. 2010-2015. WebGIFT, a web-based geospatial intermodal freight transportation model used for environmental policy analysis. Developed under federal grants, http://WebGIFT.rit.edu

b. 2010-2014. EmissionsCalc, a web-based tool using first principles to calculate energy and emissions for freight transportation vehicles. Developed under federal grants, http://EmissionsCalc.rit.edu
c. 2007-2012. GIFT, a geospatial intermodal freight transportation model. Developed and enhanced under federal grants and internal funding,
d. 2006. Knowdio, a Learning and Knowledge Management System for Software Engineering Students, funded by an RIT Online Learning Technology Exploration Grant
e. 2004. SA_MetaMatch, a tool to use semantic information to find standards and lessons learned relevant to a given document, funded by NASA Standards Program under grant.

Grants
a. 2018-2021. NSF, "REU Site: Serious Geographic Information Systems (GIS) Games for Disaster Resilience Spatial Thinking," $218,919 (Senior Personnel focusing on teaching basic software engineering concepts and tools)
b. 3/2017-1/2018. "Towards Inclusion and Empathy: Mobile Accessibility Modules for Computing Courses," RIT Golisano College of Computing and Information Sciences, Seed grant award, $11,200 (co-PI).
c. 1/2015-5/2015. "Assessment of Software Development Practices at United Technologies Business and Industrial Systems," UTC/BIS, $27.5k gift (member of assessment team)
d. 1/2013-12/2013. "Analysis of Environmental, Economic, and Infrastructure Impacts of Transportation Activities Associated with High Volume Horizontal Hydrologic Fracturing Operations in the Marcellus Shale Formation Using the Geospatial Intermodal Freight Transport (GIFT) Model," Region 2 University Transportation Research Center, $75,000 plus 100% RIT match (my portion ~$9000 plus 1/2 grad student) (co-PI)
e. 10/2010-08/2015 under 5-year Cooperative R&D Agreement. "Further Development and Delivery of the Geospatial Intermodal Freight Transportation (GIFT) Model" US Department of Transportation Maritime Administration $253,624 (my portion: $4150 plus 1 grad student stipend plus $100k for contractor), (Principal Investigator).
f. 10/2009-4/2011. "Development of a Web-Based Energy and Emissions Calculator for MARAD," US Department of Transportation Maritime Administration and University of Delaware, $61,046 (my portion: $4150 plus 1 grad student stipend), (Principal Investigator).
g. 10/2009-4-2010. "WebGIFT-GL: Expanding Access to the Great Lakes Geospatial Intermodal Freight Transportation (GL-GIFT) Model, Great Lakes Maritime Research Institute, $70,000 (my portion: $4,000 plus 1 grad student stipend and tuition), (Principal Investigator).
h. 3/2009-4/2010. "Development of a California Geospatial Intermodal Freight Transport Model with Cargo Flow Analysis," California Air Resources Board and the University of Delaware, $84,699 (my portion: $7,986 plus ½ grad student stipend), (Principal Investigator).

i. 10/2008-1/2010. "Infrastructure Performance Improvement and Congestion Relief for Freight Flows: Application of the GIFT Model for Bottlenecks Analysis," US Department of Transportation, $129,012 (my portion: $12,000 plus ½ grad student tuition and stipend), (Co-Principal Investigator).

j. 9/2008-8/2009. "Development of Geospatial Intermodal Freight Transport Model for DOT Planning and Decision Making," US Department of Transportation, $129,012 (my portion: $7,000), (Co-Principal Investigator).

k. 10/2007-9/2008. "Intermodal Freight Transport in the Great Lakes: Development and Application of a Great Lakes Geographic Intermodal Freight Transport Model," Great Lakes Maritime Research Institute, $88,491 (my portion: $8,000 plus grad student tuition and stipend), (Co-Principal Investigator).

l. 5/2007-3/2008. "Knowledge Studio," RIT Online Learning Emerging Technology Grant, ~$6,000 for graduate student plus in-kind support from Online Learning course designers and information technologists to develop and deploy a pilot learning and knowledge management system, (Principal Investigator).

m. 10/2006-9/2012. "Automotive Greenhouse Gas Policies and Material Flows," NSF Materials Use – Science, Engineering, and Society (MUSES) Grant, $1,899,997 (my portion: $21,819 plus ~$20,000 for grad student tuition and stipend plus $6,000 Research Experience for Undergraduates supplement). My focus is to develop integrating cyberinfrastructure and scenario generator, (Co-Principal Investigator).

n. 2006-2008. "Environmental Computing and Decision-Making Initiative," Seed funding from RIT First-In-Class, $32,500, (my portion: $5,712), 2006-2007 plus $18,000 (my portion ~$5000 including students) for 2007-2008.

o. 6/2005-7/2005. "Orbscan Software Product Recovery," Bausch & Lomb Corporation, $115,000 (my portion ~$20,000), (Co-Principal Investigator).

p. 5/2003-5/2004. "Standards Advisor: MetaMatch, 7120.5B Web Portal, and Integrating Training and Lessons Learned," NASA Marshall Space Flight Center and National Space Science Technology Consortium, $57,223, (Principal Investigator).

q. 5/2003-5/2004. "ED14 Interactive Software Process," NASA Marshall Space Flight Center and National Space Science Technology Consortium, $25,000, (Principal Investigator).

r. 5/2003-8/2003 NASA Faculty Fellow, $13,500.

s. 8/2002-5/2003. "Standards Advisor Web Portal," NASA Marshall Space Flight Center and University Space Research Association, $13,572, August 2002 – May 2003 (Principal Investigator).

t. 10/2001-9/2002. "Systems and Data Enrichment for Traffic Safety," North Carolina Department of Transportation, $105,420 (my portion ~$15,000), (Senior Personnel)

u. 5/2002-8/2002. NASA Faculty Fellow, $13,500.

v. 4/2000. "ERP 2000: The Supply Chain and the Internet," NSF Workshop, $10,000 (my portion ~$1,500). (Senior Personnel)

Other
　　Proposals in Review or Declined

a. 2015-2017. (Proposal Declined) "Software Engineering Process Improvement for Developing Earth System Science Software," NASA Proposal, $189,716 (PI with two graduate students)
b. 2015-2018. (Proposal declined, resubmitted, and awarded) "REU Site: Serious Geographic Information Systems (GIS) Games for Disaster Resilience Spatial Thinking," NSF Proposal, $218,919 (Senior Personnel focusing on teaching basic software engineering concepts and tools)
c. 2013-2015. (Proposal declined) "Preference Elicitation Using Virtual Games," NSF Proposal, $315,187 (Senior Personnel focusing on software and data management)
d. 2013-2014. (Proposal declined) "Software Engineering Capability Assessment and Improvement for Scientific Software Development," Google, Inc., $69,406
e. 2013-2018. (Proposal declined) "Center for Electrochemical Energy Science and Technology (CElEST)," NSF Proposal in collaboration with University of Delaware, RIT portion $331,000 (my portion $50,000).
f. 2012. (Proposal Declined) "Understanding Freight Flows in Region II: Data Characterization from a Sustainability Perspective," Proposal to Region 2 University Transportation Research Center. $71,500 plus 100% RIT match. (PI)
g. 2012. (Preproposal Declined) "Printing Industry Sustainability Transformation Initiative" Pre-proposal to ARPA-Energy $893k with U. Miami, U. Florida, Lehigh U., Energy Atlantic Group (co-PI)
h. 2011. (Proposal Declined) "Software Model of the Impact of Rural Community Infrastructure On Disaster Response Capabilities." Proposal to NSF. $497,000 over three years. (PI)
i. 2011. (Proposal Declined) CFIRE (National Center for Freight Infrastructure Research and Education) proposal, "Assessing the Impact of Freight Transportation on the Environment: An Application of the Geospatial Intermodal Freight Transportation (GIFT) Model," $79k, Richard Stewart (U Wisconsin-Superior, PI), Jim Corbett (U Delaware, co-PI), Scott Hawker, co-PI.
j. 2011-2012 (Preposal work) Working with American University at Kosovo and Purdue University to validate and build a user interface for a Purdue-developed model for regional power management in Macedonia, Montenegro, Albania, and Kosovo (MMAK); developing a proposal to create a Master's Program at Kosovo.
k. 2010. (Proposal Declined) "The Use of Information Technologies to Enable Sustainable Product Service Systems," Sandra Rothenberg, Marcos Esterman, Scott Hawker, Proposal to AT&T Corporation, December, 2010.
l. 2008 (Proposal Declined) "An Integrated Approach to Global Sustainability in the Print Services Industry," Hewlett-Packard, $200k, Senior Personnel

m. 2005 (Proposal Declined) "The Collaborative eNotebook: a Collaborative Learning and Knowledge Management Testbed," NSF CCLI proposal

n. 2004. (Proposal Declined) "CYPRESS: Cybertools for Policy Research in Environmental Science Systems." RIT GCCIS team proposal to the NSF Next-Generation Cybertools Program.

Service

RIT Service

a. 2019-2020. Member Software Engineering Tenure Track Search Committee
b. 2017 – present. Member, GCCIS Mid-Tenure Review Committee. Chair 2019-2020 academic year
c. 2016 – 2017. Member Software Engineering Tenure Track Search Committee
d. 2015 – 2016. Member, Software Engineering Lecturer Search committee
e. 5/2015 – 9/2015. Chair, Software Engineering Lecturer Search committee
f. 9/2014 – 2017. Member GCCIS Tenure and Promotion Committee
g. 9/2014 – 5/2015. Member, RIT Research Oversight Committee. Committee decommissioned as a result of Sponsored Research Services policy change.
h. 9/2013 – 9/2015. Member (AY 2013 Chair), GCCIS Governance Committee.
i. 9/2012 – 8/2014. Member, GCCIS PhD Curriculum and Assessment Committee.
j. 2012, 2014. Member, GCCIS Vision and Mission Strategic Plan Ad-Hoc Committee.
k. 2004-2006, 2012 – 2014. Member, GCCIS Faculty Enhancement and Development Committee
l. 2008 – present. Member (Chair, 7/2016 – present), Software Engineering Graduate Curriculum Committee
m. 2011-2012. Member, Steering Committee for RIT Service Innovation Workshop
n. 9/2011, 9/2012. Member, GCCIS Seed Funding Review Committee
o. 2011. Member, hiring search committee for Sr. Sustainability Advisor to the President
p. 2011-2012. Member, Cross-Disciplinary Curriculum Conversion Committee
q. 9/2010 – 2012. Chair (2011-2012) and Member (2010-2011), Software Engineering Tenure Track Search Committee.
r. 2008-2010. Member, GCCIS Curriculum Committee
s. 2008-2010. Member Software Engineering Undergraduate Curriculum Committee
t. 2008-2010. Member, RIT Campus Environment Committee
u. 2004. GCCIS Conference on Computing and Information Sciences. Member of steering committee, program committee, and publications committee

Professional Service

a. 2014-2019, Program Committee Member, "Twin Peaks of Software Requirements and Architecture Workshop"

b. 2006-Present, Reviewer and Session Chair (2006, 2008) for American Society of Engineering Education Annual Conference, Software Engineering Division
c. 2011-Present, Reviewer for ACM Special Interest Group on Computer Science Education annual conference

Other

Certifications and Registrations
None

Current Professional Memberships
a. IEEE (Computer Society, Software)
b. ACM
c. ASEE

Honors and Awards
None

Professional Development (last three years)
a. 2018 Attendance at Mobile Ubiquitous Multimedia (MUM) conference
b. 2017 RIT Early Intervention training
c. 2017 RIT Leave of Absence/University Withdrawal training
d. 2016, 2017, 2018 Academics and Allies and WiC gender inclusion workshops
e. 2016 – present, Workshops for graduate program directors (retreat, training, etc.)
f. 2016 – present. Technical Webinars (Internet of Things, graph databases, big data, transportation network modeling, smart vehicle/driver/infrastructure interfaces, DevOps, machine learning, etc.)
g. Attendance and presentation at 2016 International Conference on Software Engineering (ICSE)
h. Attendance and presentation at 2016 Conference of American Society of Engineering Educators (ASEE)