

DOUGLAS E. GALARUS

Assistant Professor

Computer Science Department

Utah State University

Phone: 435-797-4136

Email: douglas.galarus@usu.edu

Office: Old Main 401D

4205 Old Main Hill

Logan, UT 84322-4205

<http://cs.usu.edu/people/DouglasGalarus>

EDUCATION, CERTIFICATION AND TRAINING

- **Doctor of Philosophy, Computer Science, 2017**, Montana State University, Bozeman, MT, GPA: 3.96. Dissertation: Anomaly Detection through Spatio-Temporal Data Mining, with Application to Real-Time Outlying Sensor Identification
- **Master of Science, Computer Science, 1995**, University of Montana, Missoula, MT, GPA: 4.0. Thesis: Modeling Stock Market Returns with Local Iterated Function Systems.
- **Master of Arts, Teacher of Mathematics, 1993**, University of Montana, Missoula, MT, GPA: 4.0
- **B.A. with high honors, Mathematics, 1989**, University of Montana, Missoula, MT, GPA: 3.93
- Microsoft Certified Professional (MCP)
- Sun Certified Programmer for the Java 2 Platform
- Completed Sun (Lead Faculty Java Authorization), iGeneration and New Horizons “Train the Trainer” Courses
- Completed Oracle Training / Oracle Certified Professional: “Introduction to Oracle: SQL and PL/SQL” and “Enterprise DBA Part 1a: Architecture and Administration.” Passed Exam #1 leading to Oracle Certified Professional (OCP) status
- Completed Consortium for ITS Training and Education (CITE) Introduction to System Engineering Course
- Completed: CITE Introduction to Telecommunications Technology Course
- Completed: CITE Advanced Telecommunications Technology Course
- Participated in FHWA Systems Engineering Workshop, ITS America, Palm Springs, California, June 3, 2007
- **State Certified (Montana) to teach Mathematics in Grades 5-12**
- **State Certified (Montana) to teach Computer Science in Grades 5-12**

EMPLOYMENT HISTORY

2017 – Present, Computer Science Department, College of Engineering, Utah State University

- **Assistant Professor** – Data Science. Taught CS 5665 - (Graduate) Introduction to Data Science at Utah State University, Fall 2017; CS 1400 – Introduction to Computer Science - CS 1; CS 4320 – Information Storage and Retrieval. Research interests include: Data Science and Systems, Data Quality, Spatio-Temporal Data and Intelligent Transportation Systems.

2003 – 2018, *Western Transportation Institute, College of Engineering, Montana State University, Bozeman, MT*

- ***Senior Research Scientist / Program Manager / Project Lead / Principal Investigator*** – Systems Engineering, Development and Integration Program. Managed numerous research staff, including student research assistants; multiple labs; projects; and a nationally-recognized, award-winning program. Focused on rural data communication and intelligent transportation systems. Conducted systems and software engineering. Developed for handheld/mobile devices, touch-screen kiosks, database-driven websites, and controller devices. Delivered and facilitated technical training and professional development opportunities for engineers and technicians.
- ***Adjunct Assistant Research Professor***, Computer Science Department, Montana State University –Appointment: September 1, 2006 – August 31, 2011.
- ***Affiliate***, Computer Science Department, Montana State University –Appointment: September 1, 2011 – 2017.

1996 – 2003, *Information Technology Office / Information Technology Resource Center, University of Montana, Missoula, MT.*

- ***Director of Applications Development / Lead Programmer.*** Project lead for database-driven web sites, web site design, desktop applications, kiosk development, and interactive CD-ROMs; implemented online training and testing programs; developed content-rich, interactive web sites and cross-platform interactive CD-ROMs; delivered continuing education/professional development courses as a Sun-Certified Instructor and housed a Sun Java Technologies for Academic Authorized Sun Education Center, and as a Oracle-Certified Instructor and housed a Oracle Workforce Development Program.
- ***Research Visiting Assistant Professor***, Department of Mathematical Sciences, University of Montana, Missoula, MT – Appointment: August 26, 1998 – May 15, 1999
- ***Faculty Affiliate***, Department of Mathematical Sciences, University of Montana, Missoula, MT – Appointment: November 11, 2000 – September 30, 2002

1997 – 1998, *Computer Science Department, University of Montana, Missoula, MT.*

- ***Visiting Assistant Professor / Instructor.*** Taught multiple sections per semester of introductory Computer Science courses (four sections of CS 171 – Communicating via Computer, approximately 50 students per section). Average Instructor Ratings from Standard Course Evaluation Forms by Section: 1.66, 1.28, 1.45, 1.54 (1=Excellent, 5=Very Poor). Conducted significant course development. Developed original materials and detailed course outlines. Made recommendations for future of the course including topics, text(s) and use of labs. Completed an initial study of a proposed Applications Minor in Computer Science at the request of the Dean of the College of Arts and Sciences. Submitted a report to the department and the Dean upon completion. Primary research involved contacting and surveying department chairs and college deans whose students would benefit from the program.

1996, SIMMS Project, Department of Mathematical Sciences, University of Montana, Missoula, MT.

- **Technical Editor.** Edited and revised four books (two grade levels) for content, grammar, and punctuation to meet publisher's deadline for an NSF funded high school mathematics project. Completed ten-week project in seven weeks.

1991 - 1996, STEM Project, Department of Mathematical Sciences, University of Montana, Missoula, MT.

- **Visiting Assistant Professor / Writer / Researcher.** Responsible for writing, (peer) editing, and revising text and teacher materials for an NSF-funded and nationally published middle school mathematics text ("MathThematics"). Lead developer of educational software for use with text and evaluator of third party hardware and software.
- **Visiting Assistant Professor / Instructor.** Taught two sections with approximately 30 students per section of Mathematics for Elementary Teachers in 1991.

1992 – 1993, TRIO Training Program, University of Washington, Seattle, WA.

- **Programmer / Analyst.** Prototyped a budgeting and record-keeping system.

1989 – 1991, Education Logistics / Logistic Systems, Inc., Missoula, MT.

- **Operations Research Analyst / Systems Analyst.** Designed, analyzed, and implemented optimization algorithms for various GIS applications including Vehicle Routing, Facility Location / Allocation, Apportionment, and Computational Geometry.

BRIEF BIOGRAPHY

Dr. Douglas Galarus is an Assistant Professor Computer Science Department at Utah State University. Doug has 29 years of experience in systems engineering, information technology development, testing, implementation, management and instruction. Doug has extensive experience as the project manager and lead for mobile data communications systems, database-driven web sites, web site design, desktop applications, kiosk development, PDA, SmartPhone and Tablet PC –based development, and interactive CD-ROMs. At the Western Transportation Institute, Doug applied technical expertise to the development of specific applications for transportation safety, including improved tools for road weather management, incident management, traveler information and data communications. Doug grew a nationally-recognized, award winning program, and supervised numerous students, staff and multiple labs. Doug delivered and facilitated multiple technical training and professional development opportunities for engineers and technicians. As an Assistant Professor at Utah State University, Doug is carrying forward with similar research and development, with a focus on Data Science, Data Quality and Spatio-Temporal Data. Doug has taught introductory, upper-division and graduate-level courses. Dr. Galarus holds master's degrees in Computer Science and Mathematics Education from the University of Montana and a PhD in Computer Science from Montana State University.

- Successful Leader and Manager
- Award-Winning Researcher
- Accomplished Educator
- Extensive Computer Skills
- Writing and Technical Editing Experience
- Proven Research Skills and Leadership
- Team-Oriented
- Cost and Budget Conscious
- Teaching, Tutoring, Training and Train the Trainer Experience
- Extensive Experience with Programming Languages, Applications, Systems, Internet Technologies, Communication Systems and Mobile Applications
- Proven Proficiency in Design, Analysis, Implementation and Optimization
- Software Engineer
- Systems Engineer

PROFESSIONAL AFFILIATIONS

- IEEE (Senior Member) and IEEE Computer Society
 - PACE Chair, R6 NE Area of the IEEE (2007)
 - PACE Chair, Montana Section of the IEEE (2006, 2007)
 - Chair, Montana Section of the IEEE (2006)
 - Chair-elect, Montana Section of the IEEE (2005)
- Association for Computing Machinery (ACM) (Senior Member)

PAST PROFESSIONAL AFFILIATIONS

- Operations Research Society of America (ORSA)
- American Mathematical Society
- Mathematical Association of America
- Montana Academy of Sciences
- Golden Key Honor Society
- Pi Mu Epsilon
- Sigma Xi - The Scientific Research Society
- Montana Education Association and National Education Association
- Montana Council of Teachers of Mathematics
- National Council of Teachers of Mathematics
- APCO International (Association of Public Safety and Communications Officials)

HONORS/AWARDS

- 2018 Association of State Highway and Transportation Officials (AASHTO) Research Advisory Committee (RAC) Value of Research Task Force “High Value Research” (HVR) Project – Research Impacts, Better- Faster - Cheaper: From AWOS/RWIS to Caltrans Aviation Weather Information (AWI).
- 2018 Utah State University Proposal Writing Institute. Nominated and sponsored by the Utah State University College of Engineering to participate. May – June 2018.

- 2018 Utah State University RGS (Research and Graduate Studies) DC Faculty Fellow. Nominated by the Utah State University College of Engineering to participate in meetings with funding agencies in Washington, DC, December 2-5, 2017.
- 2015 Association of State Highway and Transportation Officials (AASHTO) Research Advisory Committee (RAC) Value of Research Task Force “High Value Research” (HVR) Project – Research Impacts, Better- Faster - Cheaper: One Stop Shop for Traveler Information.
- Winner: Best of Intelligent Transportation Systems (ITS) Award in the category of Best New Innovative Practice - Research Design and Innovation for work on One-Stop Shop for Traveler Information, ITS America 2014.
- Finalist: Best of Intelligent Transportation Systems (ITS) Award in the category of Best New Innovative Practice - Rural ITS Project for its work on Automated Safety Warning System Controller, ITS America / National Rural Intelligent Transportation Systems (NRITS) 2014.
- Finalist: 24th Annual (2013) Caltrans Transportation Foundation Transportation Awards, Operations Efficiency Program of the Year, One Stop Shop Traveler Information
- Winner: Best of Rural ITS Award for Best New Innovative Product, Service or Application – Western States Rural Transportation Technology Implementers Forum, National Rural Intelligent Transportation Systems conference (NRITS) 2012
- Winner: Best of Rural ITS Award for Best New Innovative Product, Service or Application – Redding Responder Project, National Rural Intelligent Transportation Systems conference (NRITS) 2010
- Finalist: 20th Annual (2009) Caltrans Transportation Foundation Transportation Awards, Traffic Operations/ITS Program of the Year - Redding Responder
- Finalist: ITS America 2007 “Best New Product, Service or Application” – Redding Responder Project
- Senior Member, ACM, 2011-present
- Senior Member, IEEE, 2005-present
- Bertha Morton Scholarship, Received while a Master’s Student in Computer Science at the University of Montana
- Joseph Hashisaki Memorial Scholarship, Department of Mathematical Sciences, Received while an Upper-Division Undergraduate Student at University of Montana

RESEARCH INTERESTS

Data Science & Systems

Data Quality

Spatio-Temporal Data

Intelligent Transportation Systems

My research spans the very applied, with development of mission-critical, production intelligent transportation systems, and theoretical, with the investigation and development of methods to solve challenges such as spatio-temporal data quality.

Recently I have been investigating spatio-temporal data quality, which is based on a challenge my teams have faced on our Intelligent Transportation Systems projects for years. There are many aspects and dimensions for spatio-temporal data quality including but not limited to accuracy, timeliness, reliability, precision, completeness and coverage. In my research, I have provided practical definitions for these dimensions, and demonstrated the relative challenges of measurement and optimization of processes. I have developed robust methodologies for assessing the quality of individual weather observations as well as overall quality of site-based sensors. I have demonstrated that my methods provide a comprehensive approach to spatio-temporal data quality assessment and outperform other popular methods. My research has brought increased attention to a topic that has been neglected. There certainly is more work that I intend to do in researching spatio-temporal data quality. For instance, I would like to assess the impact of the various dimensions of spatio-temporal data quality on processes such as interpolation. I have overcome the challenges of lack of ground-truth data by developing representative, artificial datasets that could be treated as ground-truth and perturbed to introduce errors. This method enables me to explore such challenges and conduct controlled experiments. While my research to date has focused on atmospheric weather observations, there is great opportunity to investigate other types of data including image data.

SERVICE

Paper Reviewer:

- ITS America 2018
- ITS World Congress, 2007
- Joint 50th IEEE Int'l Midwest Symposium on Circuits & Systems/5th IEEE International Northeast Workshop on Circuits & Systems, 2007

Abstract/Presentation Reviewer:

- NRITS 2018: Rural ITS
- NRITS 2016: Data Collection and Management
- NRITS 2015: Data Collection
- NRITS 2014: Operations and Maintenance
- NRITS 2012: Operations and Maintenance
- NRITS 2012: Communications in Rural Areas
- NRITS 2011: Communications in Rural Areas
- NRITS 2010: Road and Weather Information Systems (RWIS)
- NRITS 2009: Communications

Moderator/Session Chair:

- Future of Information and Communications Conference (FICC), March 14-15, San Francisco, California. Session 10 – Data Science, Session 16 – Data Science.
- National Rural ITS Conference, August 23-27, 2009, Seaside, Oregon, Session A3: Wireless Network Solutions - Moving Beyond Fiber

Panel Member:

- Expert Panel GEOProcessing / ALLSENSORS 2019, February 24-28, 2019, Athens, Greece

Steering Committee Member:

- Western States Forum (2008-2018). Members selected venue, reviewed presentations, determined program, co-emcee/host/facilitate meetings, conduct evaluation, etc.
- Caltrans Professional Capacity Building for Communication Systems (2008-2017). Members determine curriculum scope and sequence, assess needs, identify courses and venues, select training providers, facilitate and evaluate courses, etc.

Search Committee Member:

- Member: USU Search – Assistant Professor, Computer Science 2018-2019
- Member: WTI ITS/Safety Search 2005-09
- Member: WTI Corrosion 2005-09
- Member: WTI Systems Administrator 2006-10
- Chair: WTI Research Associate / Systems Engineer 2007-04
- Chair: WTI Senior Systems / ITS Research Professional 2008-11
- Chair: WTI Net/Comp Systems Administrator II Search Committee Orientation Meeting 2009-11

- Chair: WTI Research Associate 2 Software Engineer 2012-06
- Chair: WTI Research Associate 2 Software Engineer 2012-09
- Collaborator Meetings: Various prospective faculty interviews for Electrical Engineering and Computer Science at MSU.

Strategic Planning / Policy Development / Program Development/ Lab Development:

- WTI Strategic Planning: Technical Lead, Project Progress Tracking 2003-2004
- Strategic Planning for WTI Systems Engineering, Development and Integration Program
- Development of WTI IT and Purchasing Policy
- Development of Systems Engineering Lab, Systems IT Lab
- Supervision of Technical Staff who were Responsible for TRAIL Lab and Driving Simulator Labs.
- Supervision of WTI IT Support Staff

Engineering Outreach Activities and Funding:

- IEEE Professional Activities: M-PAC (Member Professional Awareness Conferences): “Stuff You Don’t Learn in Engineering School” – Soft Skills for Engineers, 2006. \$500 award from IEEE M-PAC and \$500 award from IEEE PACE. Additional funds provided by Montana Section and WTI.
- IEEE Professional Activities: Montana Section Pre-College Outreach Planning and Coordination. Purchased Lego MindStorms kits and teamed IEEE Life-Members with Student Branches for pre-college engineering outreach. \$500 award. Additional funds provided by Montana Section.

Science Fair Judge:

- Montana State Science Fair, University of Montana. Numerous times from 1985-2003.
- Anderson Elementary School Science Fair, Bozeman, MT: 2014, 2015

Undergraduate Research Service:

- Utah State University College of Engineering Undergraduate Research Program (EURP) Committee Member. October 2018 – present.
- Utah State University Undergraduate Research & Creative Opportunities (URCO) Grant Proposal Reviewer: 2018
- Utah State University College of Engineering Undergraduate Research Program (EURP) Committee Member: 2018

**AWARDED RESEARCH FUNDING AT UTAH STATE UNIVERSITY
(2018-PRESENT)**

Project	Role	Sponsor	Budget	Start	End
Automated Safety Warning System Controller, Phase 3	PI	CALTRANS / WSDOT (WSRTC)	\$249,995	Start: September 2018	Two Year Duration
One-Stop-Shop Phase 4	PI	CALTRANS / WSDOT (WSRTC)	\$150,000	Start: September 2018	Two Year Duration

**AWARDED RESEARCH FUNDING AT MONTANA STATE UNIVERSITY
(2003-2017)**

Project	Role	Sponsor	Budget	Start	End
WSRTC Meeting Coordination, Task Order 10	PI		\$60,000	3/1/2017	2/28/2018
Integration of AWOS with RWIS, Phase 3	PI	CALTRANS	\$150,000	2/16/2017	3/31/2020
COATS Phase 7	PI	CALTRANS	\$249,995	1/14/2017	1/31/2019
Professional Capacity Building for Communications Systems, Phase 4	PI	CALTRANS	\$150,000	12/1/2016	11/30/2018
Rural Traveler Information (One-Stop-Shop) Phase 3	PI	CALTRANS / WSDOT (WSRTC)	\$300,000	3/1/2016	3/31/2018
WeatherShare Phase 4	PI	CALTRANS / WSDOT (WSRTC)	\$100,000	3/1/2016	12/31/2017
WSRTC Meeting Coordination, Task Order 8	PI	CALTRANS / WSDOT (WSRTC)	\$60,000	3/1/2016	2/28/2017
WSRTC Meeting Coordination, Task Order 5	PI	WSDOT (WSRTC)	\$91,000	9/1/2014	6/30/2016
California and Oregon Advanced Transportation Systems (COATS) Phase 6	co-PI	CALTRANS	\$200,000	6/30/2014	6/29/2016
Caltrans Road Weather for QuickMaps	PI	CALTRANS	\$175,000	4/8/2014	6/30/2017
Professional Capacity Building for Communications Systems, Phase 3	PI	CALTRANS	\$125,000	2/1/2014	1/30/2016
WSRTC Meeting Coordination, Task Order 4	PI	WSDOT (WSRTC)	\$80,000	5/1/2013	10/31/2014
Integration of AWOS with RWIS, Phase 2	PI	CALTRANS	\$300,000	7/3/2012	6/29/2014
WeatherShare, Phase 3	PI	CALTRANS	\$249,995	7/3/2012	6/29/2014
UTC WeatherShare Phase 3	PI	USDOT FHWA	\$50,000	7/1/2012	6/30/2013
Professional Capacity Building for Communications Systems, Phase 2	PI	CALTRANS	\$125,000	6/29/2012	9/31/2012
WSRTC Meeting Coordination, Task Order 3	PI	WSDOT (WSRTC)	\$77,000	4/1/2012	4/30/2013
Rural Vehicle to Infrastructure Communication Evaluation (Lewistown)	PI	USDOT FHWA	\$40,000	1/3/2012	9/30/2012

AWARDED RESEARCH FUNDING AT MSU – CONTINUED

Project	Role	Sponsor	Budget	Start	End
Rural Traveler Information (One-Stop-Shop) Phase 2	PI	WSDOT (WSRTC)	\$150,000	10/1/2011	9/30/2013
UTC ROCS Phase 4	PI	USDOT FHWA	\$24,825	7/26/2011	9/30/2012
WSRTC Meeting Coordination and Website Maintenance	PI	WSDOT (WSRTC)	\$55,000	6/1/2011	3/31/2012
UTC Professional Capacity Building Phase 2	PI	USDOT FHWA	\$31,250	1/11/2011	9/30/2012
California and Oregon Advanced Transportation Systems (COATS) Phase 5	co-PI	CALTRANS	\$200,000	1/1/2011	9/30/2012
UTC Integration of AWOS with RWIS, Phase 2	PI	USDOT FHWA	\$75,000	1/1/2011	9/30/2012
UTC COATS Phase 5	co-PI	USDOT FHWA	\$80,000	1/1/2011	9/30/2013
UTC Western States Forum	PI	USDOT FHWA	\$19,903	1/1/2011	3/31/2012
UTC Rural Traveler Info (One Stop Shop) Ph. 2	PI	USDOT FHWA	\$50,000	1/1/2011	9/30/2012
Western States One-Stop Shop for Rural Traveler Information	PI	US FHWA	\$79,995	9/24/2010	9/23/2011
Automated Safety Warning System Controller, Phase II	PI	CALTRANS	\$225,000	4/8/2010	3/14/2012
UTC EMS System for Rural Areas	PI	USDOT FHWA	\$46,926	3/1/2010	3/31/2012
UTC Automated Safety Warning System Controller Phase 2	PI	USDOT FHWA	\$75,000	1/1/2010	9/30/2013
UTC Responder Phase 3, Deployment Assistance	PI	USDOT FHWA	\$75,000	1/1/2010	9/20/2013
UTC - COATS Phase IV	co-PI	USDOT FHWA	\$90,990	9/1/2008	6/30/2011
Rural Traveler Information (One Stop Shop) Phase 1	co-PI	CALTRANS	\$55,000	9/1/2008	12/31/2010
COATS Phase 4	co-PI	CALTRANS	\$214,990	9/1/2008	6/20/2011
Professional Capacity Building for Communication Systems	PI	CALTRANS	\$99,999	9/1/2008	8/31/2009
UTC Roadkill Observation Collection, Phase III	co-PI	USDOT FHWA	\$30,020	4/1/2008	12/31/2010
UTC Portable TMC-TMS Comm. Demonstration	PI	USDOT FHWA	\$39,652	3/1/2008	6/30/2009
Integration of Aviation Automated Weather Observation Systems (AWOS) with Roadside Weather Information Systems (RWIS)	PI	CALTRANS	\$150,000	2/1/2008	6/30/2010
UTC-Sys. Eng. & Integration Transportation Tech SEITTP Feasibility Study, Phase 2	PI	USDOT FHWA	\$15,005	11/1/2007	1/31/2010
PDA Data Collection Package	PI	US DOT FHWA	\$34,934	9/17/2007	3/31/2011
Integrated PDA/GPS System to Collect Standardized Road-Kill Date	co-PI	Central Federal Lands	\$30,000	9/6/2007	3/31/2011
American Wildlands Road Watch	PI	American Wildlands	\$5,000	9/1/2007	10/31/2007
UTC Integration of AWOS/RWIS	PI	USDOT FHWA	\$50,053	8/1/2007	9/30/2010
UTC Mobile Communication Briefcase	PI	USDOT FHWA	\$74,809	7/1/2007	6/30/2011

AWARDED RESEARCH FUNDING AT MSU – CONTINUED

Project	Role	Sponsor	Budget	Start	End
UTC Ant Colony Optimization	PI	USDOT FHWA	\$22,574	6/1/2007	3/31/2012
Systems Engineering Development & Integration Lab Phase 2	PI	USDOT FHWA	\$187,408	5/1/2007	9/30/2012
UTC Western States RTTIF	PI	USDOT FHWA	\$47,847	4/1/2007	3/31/2009
MANETs for Rural Public Safety	PI	US DHS	\$315,326	3/1/2007	2/29/2008
UTC-Trailer Configuration & Deployment	co-PI	USDOT FHWA	\$34,650	10/1/2006	9/30/2007
UTC Sys Engineering Program Dev	PI	USDOT FHWA	\$292,709	10/1/2006	9/30/2013
An Integrated PDA/GPS System to Collect Standardized Road-Kill Data	co-PI	Virginia DOT	\$30,000	8/1/2006	7/30/2007
Advanced CMS	PI	Caltrans	\$137,926	7/27/2006	12/31/2009
UTC Integrated PDA/GPS	PI	USDOT FHWA	\$30,584	7/15/2006	3/31/2008
Automated Safety Warning System Controller	PI	CALTRANS	\$300,000	7/6/2006	9/30/2008
Weathershare - Phase 2	PI	CALTRANS	\$306,939	6/15/2006	6/30/2008
Redding Responder - Phase 2	PI	CALTRANS	\$339,280	6/15/2006	6/30/2008
An Integrated PDA/GPS System to Collect Standardized Road-Kill Data	co-PI	WSDOT	\$30,000	5/11/2006	5/21/2007
Improve Communications Between TMC & TMS Elements in a Rural Environment Through a System That is Deployable Statewide	PI	CALTRANS	\$364,915	5/10/2006	6/30/2008
UTC Responder Field Test	PI	USDOT FHWA	\$15,088	1/23/2006	12/30/2006
UTC Sys Engine Develop. & Integration Lab Phase I	PI	USDOT FHWA	\$93,679	9/15/2005	9/30/2007
Traveler Information Database Requirements Analysis	co-PI	MDT	\$40,000	12/1/2004	6/30/2005
511 In Yellowstone National Park	co-PI	YNP	\$91,820	10/1/2004	9/30/2008
UTC Integration Center	PI	USDOT FHWA	\$31,019	3/1/2004	3/31/2008
UTC PDA/GPS Roadkill Data	co-PI	USDOT FHWA	\$15,197	2/1/2004	9/30/2005
Redding District Incident Management Responder Study	PI	CALTRANS	\$150,000	5/1/2003	12/31/2005
UTC Blackfeet Automated Accident Reporting	PI	USDOT FHWA	\$91,644	1/1/2002	12/31/2004

OTHER PROJECT WORK AT MSU (2003-2016)

Project	Role
Toolkit for Federal Lands Managers	Technical Advisor
Evaluating Accuracy of RWIS Sensors	Technical Advisor
Systems Change	Technical Advisor
MDT/Liaison - Travelers Requirements	Systems Engineer
TRAIL Lab	Technical Advisor
Lewistown Rural Research-Rural Vehicle and Testbed	Technical Advisor
RWIS Training Course 10K	Instructor
Blaine County State Hwy 75	Technical Lead
Washington I-90 Wildlife Watch	Technical Lead
Colorado I-70 Wildlife Watch Golden - Glenwood Springs	Technical Lead
UTC Special Event Congestion in Small Communities	Technical Advisor
Deploying Portable Traveler Info Systems	Technical Lead
UTC NW Passage Rural Vehicle Infrastructure	Technical Advisor
Mendenhall Spur Road	Technical Advisor / Systems Engineer
National Technical Assistance Center	TRIPTAC IT Manager
UTC EMS System for Rural Areas	Technical Advisor
Lab Resource Database & Website	Technical Lead
aSE: Reduce speed-related crashes on Rural Roads	Technical Lead
UTC Road Dust Institute & Website	Technical Lead
Nat'l Technical Assistance Center - Year 2	TRIPTAC IT Manager
Federal --- NWP OTIIS, FHWA	Technical Lead
Central Federal Lands Transportation Assistance	TRIPTAC IT Manager
BZN Area Recreational Alternative Transport Study	Technical Advisor

PROJECTS AT THE UNIVERSITY OF MONTANA (1996-2003)

Project	Role
University of Montana Admissions Department Recruitment CD-ROM	Technical Lead
America's Wars in Asia Digital Teaching Library	Lead Programmer
Greater Yellowstone Rural Intelligent Transportation Systems Corridor Kiosk Project	Lead Programmer
Lewis and Clark Intelligent Kiosk ITS System	PI, Lead Programmer
Montana Fish, Wildlife and Parks' Advanced and Remedial Hunter Education Website	PI
Montana Fish, Wildlife and Parks' Bear Identification Program Website	PI
Montana Fish, Wildlife and Parks' Bull Trout Identification Program Website	PI
Montana Fish, Wildlife and Parks' Fish of Montana CD-ROM	PI
MyUMT Website for University of Montana Admissions Department	Lead Programmer
NxLeveL for Entrepreneurs, e-Learning Website	Lead Programmer
UM Non-Enrolled Survey for University of Montana Admissions Department	Lead Programmer
Travel Montana Website Development	Programmer

STUDENTS AT USU

My Role	Student	Years	Degree Program
Committee Chair	Honey Varghese	2019-	PhD., Computer Science
PI/Supervisor	Benjamin Taylor	2019-	B.S., Computer Science
PI/Supervisor	Michael Harrop	2019-	B.S., Computer Science
PI/Supervisor	Andrew Mortenson	2018-	B.S., Computer Science
PI/Supervisor	Bradley Hoffman	2018-	B.S., Electrical and Computer Engineering
PI/Supervisor	Brock Francom	2018-	B.S., Computer Science
PI/Supervisor	Tanner Kvarfordt	2018-	B.S., Computer Science
Committee Member	Meng Xu	2018-	PhD., Computer Science
Instructor CS 4320	Bredyn McCombs (Teaching Assistant)	2018-2019	M.S., Computer Science
Instructor Independent Study	Manish Meshram	2018	M.S., Computer Science
Instructor Independent Study	Deepesh Parate	2018	M.S., Computer Science
Instructor CS 1400	Amar Farzaneh (Teaching Assistant)	2018	PhD., Computer Science
Instructor CS 1400	Shimin Li (Teaching Assistant)	2018	PhD., Computer Science
Advisor –Committee Chair	Wasim Kahn	2018	PhD., Computer Science
Committee Chair	Abinav Pandey	2017-	M.S., Computer Science
Committee Chair	Manish Meshram	2017-	M.S., Computer Science
Committee Member	Kamilia Ahamadi	2017-	PhD., Computer Science
Committee Member	Seyed M-H Mansourbeigi	2017-2018	PhD., Computer Science
Instructor - CS 5665	Bhagyashree Mandora (Teaching Assistant)	2017-	M.S., Computer Science
Committee Member	Bhagyashree Mandora	2017-	M.S., Computer Science
Committee Member	Venkatesh Kadali	2017-2018	M.S., Computer Science
Committee Chair	Sahiti Katragadda	2017-2018	M.S., Computer Science

STAFF AT MSU

Staff	Years	Degrees
Bateman, Kelvin	2008-2012	B.S., Computer Science, MSU 2009
Graham, Sean	2003-2007	M.S., Computer Science, MSU; B.S., Recreation and Parks Management; WTI Fellowship Winner
Green, Jo Marie	2008	B.S., Computer Science, MSU
Hayden, Larry	2006-2015	M.S. Electrical Engineering, MSU; B.S., Mechanical Engineering
Jameson, Bill	2006-2012	Ph.D., Applied Mathematics; M.A., Physics; B.A., Mathematics, UM
Johnson, Nicholas	2010-2013	B.S., Business Management / Management Information Technology, MSU
Koon, Leann	2005-2015	M.S., Agricultural Education, MSU; B.S., Agricultural Education, MSU
Krohn, Justin J	2005-2009	B.S., Electrical and Computer Engineering, MSU
Lassacher, Suzanne	2003-2012	M.S., Computer Science, MSU; B.A. Italian
Miller, Frank E	2006-2009	M.E., General Science, MSU Northern; B.S., Interdisciplinary Studies, MSU Northern
Richardson, Hugh	2006-2007	Ph.D., Economics; M.S., Computer Science, MSU; B.Ec., Economics and Chinese
Richter, Daniell	2007-2015	B.S., Computer Science
Schoep, Gary	2006-2009	B.S., Computer Engineering, MSU
Smith, Killian	2012-2015	B.S., Computer Science, MSU
Summers, John	2009-2012	Computer Science Undergraduate
Wang, Shaowei	2003-2010	M.S., Industrial and Management Engineering, MSU; B.S., Industrial

		Engineering
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STUDENT RESEARCH ASSISTANTS AT MSU

Student	Years	Degrees
Akbar, Monika	2007	M.S., Computer Science, MSU; B.S., Computer Science
Alkanlar, Mehmet	2007-2008	B.S., Computer Science, MSU
Allison, John	2006-2008	B.S., Electrical Engineering, MSU
Bateman, Kelvin	2008-2012	B.S., Computer Science, MSU 2009
Behrens, Samuel	2016-2017	B.S., Computer Science, MSU
Bharata, Anish	2012-2013	M.S., Computer Science, MSU; B.T., Computer Science
Bohannan, Chad	2007-2008	M.S., Computer Science, MSU; B.S., Computer Science, MSU; WTI Fellowship Winner; Member – Master’s Committee
Bones, Alex	2012-2014	B.S., Industrial Engineering, MSU
Cohan, Brendan	2010-2011	Computer Science Undergraduate
Edwards, Andrew	2006	B.S., Electrical and Computer Engineering, MSU
El Ferradi, Nabil	2005-2008	E.E. Undergraduate
Garcia-Puigcerver, Aitor	2009	M.S. Telecommunications Engineering; B.S. Telecommunications Engineering; Exchange Student at MSU
Graham, Sean	2003-2007	M.S., Computer Science, MSU; B.S., Recreation and Parks Management; WTI Fellowship Winner
Gurdasani, Neeraj	2007-2008	M.S., Computer Science, MSU; B.T., Electronics and Communication
Hadella, Justin	2007	B.S., Computer Engineering, MSU
Hufford, Joseph	2008	B.S. Computer Engineering, MSU
Kim, Kyoung Won	2006-2007	M.S., Electrical and Computer Engineering, MSU
Koon, Leann	2005-2017	M.S., Agricultural Education, MSU; B.S., Agricultural Education, MSU
Krohn, Justin J	2005-2009	B.S., Electrical and Computer Engineering, MSU
Langemeier, Jeffrey	2011-2012	B.S., Electrical and Computer Engineering, MSU
Laufmann, Andrew	2009	B.S. Computer Engineering, MSU
Liang, Yujie	2006-2007	M.S., Electrical and Computer Engineering, MSU; Member, Master’s Committee Use of Wireless Multi-hop and Ad-hoc Routing for Communications Between Highway Traffic Sensors in Rural Areas
Lingley, Andy	2006	B.S., Electrical and Computer Engineering MSU
Livingston, Justin	2011-2015	B.S., Computer Science, MSU
McCabe, Christopher	2015-2016	B.S., Computer Science, MSU
Nelson, Gordon	2008-2009	B.S., Electrical Engineering MSU
Nikalandawatte, Nishadhi	2009-2012	B.S., Computer Science, MSU
Paine, Tyler	2010-2011	B.S., Mechanical Engineering, MSU
Parker, Robert	2009-2011	B.S., Computer Science, MSU (in progress)
Petrick, Chris	2007-2009	B.S., Computer Science, MSU
Schoep, Gary	2006-2009	B.S., Computer Engineering, MSU
Sharkey, Jeff	2006-2008	M.S., Computer Science, MSU; B.S., Computer Science; WTI Fellowship Winner; Member, Master’s Committee Automated Radio Network Design Using Ant Colony Optimization
Smith, Killian	2012-2015	B.S., Computer Science, MSU
Taylor, Koby	2015	B.S., Mechanical Engineering
Vollmer, Fredric	2015	M.S., Computer Science, B.S., Economics
Willich, James	2011-2013	B.S., Mechanical Engineering, MSU; B.S., Social Science
Zhang, Li	2008	M.S., Computer Science, MSU

STUDENT RESEARCH ASSISTANTS AT UM

Student	Years	Degrees
Jamey Maxwell	1998-2002	(B.A., Computer Science)
Nick Dolezal	1998-2002	(B.S., Management Information Systems)
Ryan Grinsteiner	1998-2002	(B.A., Computer Science)
Spencer Wolny	2000	(B.A., Computer Science)
Michael Cassens	1998	(M.S., Computer Science)
Larisa Brigida	1998	(Computer Science Undergraduate)
Yuriy Brigida	1998	(Computer Science Undergraduate)

PROFESSIONAL STAFF AT UM

Staff	Years	Degrees
Dale Ward	1998-2003	Computer Science Undergraduate
Ryan Grinsteiner	2002	B.A., Computer Science

PRESENTATIONS/PUBLICATIONS

Textbook Series

Billstein, R., Williamson, J., Montoya, P., Lowery, J., Williams, D., Buck, M., Burkett, C., Churchill, L., Clouse, C., Denny, R., Derrick, W., Dolezal, S., **Galarus, D.**, Kennedy, P., Lamphere, P., Merrill, N., Morse, S., Petit, M., Runkel, P., Sanders-Garrett, T., T. Seitz, R., Spence, B., Sowders, B., Tuckerman, C., Wenger, K., Wilkie, J., Wilson, C., Winston, B. Middle grades MATH thematics. Evanston: McDougal Littell. 1999. (Three volumes of student materials with three volumes of teacher materials.)

Book Chapter

Huijser, M., **D. Galarus** & A.V. Kociolek. 2010. Ch. 16. Current and Developing Technologies and their Potential Application in Highway-wildlife Mitigation. In Safe Passages, Beckmann, J., A.P. Clevenger, M.P. Huijser and J.A. Hilty (eds.) Island Press.

Journal Articles

Galarus, Douglas E., and Rafal A. Angryk. "Beyond Accuracy - A SMART Approach to Site-Based Spatio-Temporal Data Quality Assessment". Intelligent Data Analysis, vol. 22, no. 1. (January 2018). IOS Press.

Galarus, Douglas E., and Rafal A. Angryk. "Spatio-temporal quality control: implications and applications for data consumers and aggregators." Open Geospatial Data, Software and Standards 1.1 (2016): 1., Springer.

Magazine Articles and Newsletters

Campbell, Sean, and **Galarus, Douglas**. "Research Pays Off – The One-Stop-Shop – Traveler Information Tool for Multistate Road Trips." TR News 312 (December 2017)

Huijser, M. & **D. Galarus**. 2004. Software for Pocket PC to collect road-kill data. TRB A1F02 Newsletter, Environmental Analysis in Transportation, November 2004, p. 9.

Conference Papers

Galarus, D.E., Turnbull, I., Campbell, S., Pearce, J., Koon, L., Angryk, R., *Accurate, Timely, Reliable - A High Standard and Elusive Goal for Traveler Information Data Quality*. Proceedings of the Future of Information and Communications Conference (FICC) 2019 in Lecture Notes in Networks and Systems, San Francisco, CA, March 14-15, 2019. Springer.

Galarus, D.E., Angryk, R., *Challenges in Evaluating Methods for Detecting Spatio-Temporal Data Quality Issues in Weather Sensor Data*. GEOProcessing 2019, The Eleventh International Conference on Advanced Geographic Information Systems, Applications, and Services, Athens, Greece, February 24-28, 2019.

Galarus, D.E., Turnbull, I., Campbell, S., Pearce, J., Koon, L., *Accurate, Timely, Reliable - A High Standard and Elusive Goal for Traveler Information Data Quality*. ITS America Annual Meeting & Expo, Detroit, MI, June 4-7, 2018.

Galarus, D.E., Angryk, R. *The SMART Approach to Comprehensive Quality Assessment of Site-Based Spatio-Temporal Data*. 1st IEEE International Workshop on Big Spatial Data in conjunction with the 2016 IEEE International Conference on Big Data, Washington, D.C., December 5-8, 2016.

Galarus, D.E., Angryk, R. *A SMART Approach to Quality Assessment of Site-Based Spatio-Temporal Data*. 24th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL 2016), Burlingame, California, October 31 - November 3, 2016.

Galarus, D.E., Angryk, R. *Quality Control from the Perspective of the Real-Time, Spatio-Temporal Data Aggregator and (re)Distributor*. 22nd ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL 2014), Dallas, Texas, November 4-7, 2014.

Galarus, D.E., Angryk, R. *Mining robust neighborhoods for quality control of sensor data*. 4th ACM SIGSPATIAL International Workshop on GeoStreaming (IWGS) 2013, Orlando, Florida, November 5, 2013.

Galarus, D. E., Angryk, R., and J. W. Sheppard *Automated Weather Sensor Quality Control* Proceedings of the twenty-fifth international Florida Artificial Intelligence Research Society conference (FLAIRS-25), San Marco Island, Florida, May 23-25, 2012.

Alfelor, R. M., Pisano, P. A., **Galarus, D. E.**, Yohanan, D. *Using Clarus Data for Disseminating Winter and Other Weather-Related Alerts* Proceedings of the 2012 International Conference on Winter Maintenance and Surface Transportation Weather, April 30 - May 3, 2012, Coralville, Iowa.

Galarus, D. E., Wang, S., Wei, W., Moreland, C. *Integration of Aviation Weather Information Systems with Roadside Weather Information Systems (RWIS)*. Presented as a poster session at the Transportation Research Board 90th Annual Meeting, Washington, D.C. January 24, 2011.

Kociolek, A.V., M.P. Huijser, **D. Galarus**, D. W. Taylor and J. Kintsch. September 13, 2009. *Motorists as citizen scientists: The benefits of a wildlife reporting website* (Oral presentation). International Conference on Ecology and Transportation. Duluth, MN.

C. Bohannan, L. Zhang, J. Tang, R. S. Wolff, S. Wan, N. Gurdasani and **D. Galarus**, *QoS enhancement and performance evaluation of ad-hoc routing protocols for rural public safety*, IEEE ICC'2009.

Galarus, D., Hayden, L., Schoep, G., Krohn, J., Hufford, J., Sharkey, J. *MeshBox: Mesh Network Communication System for Intelligent Transportation Research Using Open Source Software*. 15th World Congress on Intelligent Transport Systems, New York, New York, November 16 - 20, 2008.

Sharkey, J., **Galarus, D.** *Radio Network Design for Rural Intelligent Transportation Systems Using Artificial Intelligence*. Presented as a poster session at the Transportation Research Board 87th Annual Meeting, Washington, D.C. January, 2008.

Galarus, D. E. Redding Responder Project: Computing and Communication in the Middle of Nowhere. Presented as a poster session at the Transportation Research Board 86th Annual Meeting, Washington, D.C. January 22, 2007.

Huijser, M.P., **D.E. Galarus** & A. Hardy. 2006. Software for Pocket PC to Collect Road-Kill Data. Page: 640 in: C.L. Irwin, P. Garrett and K.P. McDermott (eds.). Proceedings of the 2005 International Conference on Ecology and Transportation. Center for Transportation and the Environment, North Carolina State University, Raleigh, NC, USA.

Graham, S.C., Oudshorn, M.J., **Galarus, D.E.**, 2005. Designing Primary Responder Applications with Web Services in a Hostile Environment. Presented by M.J. Oudshorn at the IASTED International Conference on Parallel and Distributed Computing and Networks ~PDCN 2005~ as part of the 23rd IASTED International Multi-Conference on APPLIED INFORMATICS CONFERENCE PROGRAM Innsbruck, Austria February 15 - 17, 2005.

Conference Presentations

Galarus, D. E., Kantar, D., Clark, M., Caltrans Aviation Weather Information (AWI) from Surface Transportation and Concept to Aviation and Implementation. Presented at the National Rural ITS (NRITS) Conference 2018, Fort McDowell, Arizona, October 21-24, 2018.

Galarus, D. E., Kantar, D., Clark, M. *From AWOS/RWIS to Caltrans Aviation Weather Information (AWI)*. Presented at the Thirteenth Annual Western States Rural Transportation Technology Implementers Forum, Yreka, California, June 19- 21, 2018.

Galarus, D. E. *WeatherShare Phase 4*. Presented at the Twelfth Annual Western States Rural Transportation Technology Implementers Forum, Yreka, California, June 22- 24, 2017.

Galarus, D. E., Richter, D., Campbell, C., Turnbull, I., Expansion of the Western States One Stop Shop for Rural Traveler Information. Presented at the National Rural ITS (NRITS) Conference 2015, Snowbird, Utah, August 9-12, 2015.

Galarus, D. E., Koon, L. Campbell, C., Turnbull, I., Data Quality Aggregation and Dissemination of DOT Traveler Information: Best Practices. Presented at the National Rural ITS (NRITS) Conference 2015, Snowbird, Utah, August 9-12, 2015.

Galarus, D. E., Koon, L. Campbell, C., Turnbull, I., Professional Capacity Building for Communications. Presented at the National Rural ITS (NRITS) Conference 2014, Branson, Missouri, August 24-27, 2014.

Galarus, D. E., Richter, D., Campbell, S., Turnbull, I., *Field Element Data Quality Control from the Perspective of Data Redistribution*. Presented at the National Rural ITS (NRITS) Conference 2013, St. Cloud, Minnesota, August 25-28, 2013.

Galarus, D. E., Richter, D., Campbell, S., Turnbull, I., *Field Element Data Quality Control from the Perspective of Data Redistribution*. Presented at the Eighth Annual Western States Rural Transportation Technology Implementers Forum, Yreka, California, June 18- 20, 2013.

Galarus, D.E., Hayden, L., Ward, N., *Augmented Speed Enforcement (aSE) Smart Drums (sDrums) from a Technical Perspective, Part 2 - Deployment*. Presented at the National Rural ITS (NRITS) Conference 2012, Biloxi, Mississippi, September 17-19, 2012.

Veneziano, D., Koon, L., **Galarus, D.**, Turnbull, I., Campbell, S., Bailey, T., McGill, G. The WSRTC – An Implementers Pooled-Fund to Tackle the Challenges of Rural ITS. Presented at the National Rural ITS (NRITS) Conference 2012, Biloxi, Mississippi, September 17-19, 2012

Galarus, D. E., Richter, D., et al, *Technical Development of the Western States One Stop Shop for Rural Traveler Information*. Presented at the Seventh Annual Western States Rural Transportation Technology Implementers Forum, Yreka, California, June 12- 14, 2012.

Galarus, D., Veneziano, D., Turnbull, I., Campbell, S., Bailey, T., McGill, G. The Western States Rural Transportation Consortium – a Partnership to Advance Rural ITS. Presented at the 2012 Northwest Transportation Conference, Corvallis, Oregon, February 7 – 9, 2012.

Galarus, D. E., Veneziano, D., Campbell, S., Turnbull, I. Western States Clarus One-Stop Shop for Rural Traveler Information. Presented at the National Winter Maintenance Peer Exchange, Albuquerque, New Mexico, September 21, 2011.

Galarus, D. E., Hayden, L., Ward, N., Ye, J. Augmented Speed Enforcement (aSE) Smart Cones (sCones) form a Technical Perspective. Presented at the National Rural ITS (NRITS) Conference 2011, Coeur d’Alene, Idaho, August 28 – 31, 2011.

Galarus, D. E., Wei, W., Chu, M., Barrie, T. L. Integration of Aviation Weather Information Systems with Roadside Weather Information Systems for Rural Air Fields and Heliports. Presented at the National Rural ITS (NRITS) Conference 2011, Coeur d’Alene, Idaho, August 28 – 31, 2011.

Galarus, D. E., Wang, S., Richter, D. Veneziano, D., Campbell, C., Turnbull, I., Development of a One Stop Shop for Rural Transportation. Presented at the National Rural ITS (NRITS) Conference 2010, Huntington, West Virginia, August 1-4, 2010.

Galarus, D. E., Campbell, C., Turnbull, I., Automated Safety Warning Controller (ASWC) Phase I – Proof of Concept. Presented at the National Rural ITS (NRITS) Conference 2010, Huntington, West Virginia, August 1-4, 2010.

Veneziano, David, **Doug Galarus,** Sean Campbell and Ian Turnbull. COATS: A Decade of Rural ITS. Presented at the 2009 National Rural ITS (NRITS) Conference, Seaside, Oregon. August 23-27, 2009.

Galarus, D., Turnbull, I., Wang, S., Chu, M., Richter, D. COATS: Caltrans WeatherShare Phase II System: An Application of Systems and Software Engineering Process to Project Development. Presented at the 2009 National Rural ITS (NRITS) Conference, Seaside, Oregon. August 23-27, 2009.

Kumar, M., **Galarus, D. E.** Development of A Prototype Traveler Information System for Rural Work Zones - Part 1. Presented at the 15th World Congress on Intelligent Transport Systems, New York, New York, November 16 - 20, 2008.

Kumar, M., **Galarus, D. E.** Development of A Prototype Traveler Information System for Rural Work Zones - Part 2. Presented at the 15th World Congress on Intelligent Transport Systems, New York, New York, November 16 - 20, 2008.

Kumar, M., **Galarus, D. E.** Development of A Prototype Traveler Information System for Rural Work Zones - Part 3. Presented at the 15th World Congress on Intelligent Transport Systems, New York, New York, November 16 - 20, 2008.

Galarus, D. E., Lassacher S., Jameson, W.J., Hayden, L. Rural TMC-TMS Communications – An Evaluation of Alternatives. Presented at the 15th World Congress on Intelligent Transport Systems, New York, New York, November 16 - 20, 2008.

Galarus, D. E., Strong, C., Haukom, T., Nguyen, H., Schoep, G. Development of A Dynamic Message Sign Specification for Caltrans. Presented at the 15th World Congress on Intelligent Transport Systems, New York, New York, November 16 - 20, 2008.

Galarus, D. E., Lassacher S., Jameson, W.J., Hayden, L. Rural TMC-TMS Communications – An Evaluation of Alternatives. Presented at the National Rural ITS (NRITS) Conference 2008, Anchorage, Alaska, September 2 - 5, 2008.

Galarus, D. E., Jameson, B., Lassacher, S., Wolff, R., Hayden, L., Schoep, G., Veneziano, D., Sharkey, J., Krohn, J., TMC-TMS Communications: Overview and Demonstration. Presented at the Third Annual Western States Rural Transportation Technology Implementers Forum, Mount Shasta, California, June 3 - 5, 2008.

Huijser, M., Kociolek, A. **Galarus, D.** Wildlife use of Two Existing Bridges and Citizen Documentation of Wildlife Sightings Along State Highway 75, Blaine County, ID. Presented by M. Huijser at the 2008 Annual Meeting of the Montana Chapter of The Wildlife Society, February 25th – 29th, 2008.

Galarus, D. E. The WeatherShare Project: Aggregation and Dissemination of Weather Information for Public Safety. Presented at the 2007 ITS America Annual Meeting & Expo, Palm Springs, CA. June 4-6, 2007.

Galarus, D. E. Redding Responder Project: Computing and Communication in the Middle of Nowhere. Presented as a poster session at the 2007 ITS America Annual Meeting & Expo, Palm Springs, CA. June 4-6, 2007.

Galarus, D. E. Redding Responder Project: Computing and Communication in the Middle of Nowhere. Presented at the 2007 ITS America Annual Meeting & Expo, Palm Springs, CA. June 4-6, 2007.

Galarus, D. E. The Redding Responder Project: Computing and Communication in the Middle of Nowhere. Presented at the National Rural ITS (NRITS) Conference 2006, Big Sky, Montana, August 13 – 16, 2006.

Galarus, D. E., Turnbull, I., Wang, S. The WeatherShare Project: Aggregation and Dissemination of Weather Information for Public Safety. Presented at the National Rural ITS (NRITS) Conference 2006, Big Sky, Montana, August 13 – 16, 2006.

Galarus, D. E. Jameson, W.J., The Redding Responder Project: Mobile Data Communication Challenges in Solutions Remote Rural Areas. Presented at the National Rural ITS (NRITS) Conference 2006, Big Sky, Montana, August 13 – 16, 2006.

Galarus, D. E., Wang, S. The Application of Systems and Software Engineering Process Models for Development on Small to Moderate-Sized ITS Projects: WeatherShare and the Redding Responder Projects. Presented at the National Rural ITS (NRITS) Conference 2006, Big Sky, Montana, August 13 – 16, 2006.

Kumar, M., **Galarus, D.E.**, Graham, S., Krohn, J. A Smart Work Zone Delay Estimation System for Rural Highway Operations. Presented at the National Rural ITS (NRITS) Conference 2006, Big Sky, Montana, August 13 – 16, 2006.

Galarus, D. E. The Redding Responder Project: Mobile Data Communication Challenges and Solutions Remote Rural Areas. Presented at the First Annual Western States Rural Transportation Technology Implementers Forum, Mount Shasta California, June 6-7, 2006.

Galarus, D. Interactive CD-ROM and Database-Driven Websites – Wildlife Education for the Masses using Multimedia and the Internet. Oral presentation at the Biennial Conference of the Aquatic Resources Education Association, September 28 – October 2, 2002, Chico Hot Springs Resort, Pray, Montana.

Technical Reports

Galarus, D. (October 2018) Integration of Aviation Automated Weather Observing Systems (AWOS) with Roadside Weather Information System (RWIS) Phase 3 System Documentation. Prepared for the Caltrans Division of Research & Innovation and the California Division of Aviation, Sacramento, CA.

Galarus, D. (March 30, 2018) Rural Traveler Information (One-Stop-Shop) Phase 3 Prototype System Final Report. Prepared for the Western States Rural Transportation Consortium and the Caltrans Division of Research & Innovation and the California Division of Aviation, Sacramento, CA.

Galarus, D. (March 30, 2018) Rural Traveler Information (One-Stop Shop) Phase 3 Prototype System Requirements Specification. Prepared for the Western States Rural Transportation Consortium and the Caltrans Division of Research & Innovation and the California Division of Aviation, Sacramento, CA.

Galarus, D. (March 30, 2018) Rural Traveler Information (One-Stop Shop) Phase 3 Prototype System Concept. Prepared for the Western States Rural Transportation Consortium and the Caltrans Division of Research & Innovation and the California Division of Aviation, Sacramento, CA.

Galarus, D. (December 29, 2017) WeatherShare Phase IV Final Report. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA.

Galarus, D. (December 8, 2017) WeatherShare Phase IV Estimated Data and System Software Requirements. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA.

Galarus, D., Richter, D. (September 22, 2016) Rural Traveler Information (One-Stop Shop) Phase 2 Prototype System Final Report. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA.

Koon, L., **Galarus, D.,** Veneziano, D. (August 18, 2016) California and Oregon Advanced Transportation Systems (COATS) Phase 6: Final Report. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA.

Koon, L., **Galarus, D.** (August 17, 2016) Data Quality for Aggregation and Dissemination of DOT Traveler Information: An Analysis of Existing System Best Practices. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the COATS Phase VI project and the Western States Rural Transportation Consortium. June 17, 2016

Galarus, D., McCabe, C. (June 30, 2016) Rural Traveler Information (One-Stop Shop) Phase 2 Summary of Best Practices and Technologies. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA.

Richter, D., **Galarus, D.** (May 31, 2016) Rural Traveler Information (One-Stop Shop) Phase 2 Prototype System Requirements Specification. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA.

Galarus, D., Richter, D. (May 31, 2016) Rural Traveler Information (One-Stop Shop) Phase 2 Prototype System Concept. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA.

Richter, D., **Galarus, D.** (March 2, 2016) Rural Traveler Information (One-Stop Shop) Phase 2 Prototype System Requirements Specification. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA.

Galarus, D., Richter, D. (December 23, 2015) WeatherShare Phase 3 Prototype System Design. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA.

Galarus, D., Richter, D. (December 23, 2015) WeatherShare Phase 3 Final Report. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA.

Koon, L., **Galarus, D.** (December 21, 2015) Final Report: Professional Capacity Building for Communications Phase 3. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA.

Galarus, D., Richter, D. (December 9, 2015) Integration of Aviation Automated Weather Observation Systems with Roadside Weather Information Systems Phase II Final Report. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA.

Galarus, D., Richter, D. (December 9, 2015) Integration of Aviation Automated Weather Observation Systems with Roadside Weather Information Systems Phase II Final Report. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA.

Galarus, D., Richter, D. (July 10, 2015) Integration of Aviation Automated Weather Observation Systems with Roadside Weather Information Systems Phase II Gap Analysis. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA.

Galarus, D., Richter, D. (July 10, 2015) Integration of Aviation Automated Weather Observation Systems with Roadside Weather Information Systems Phase II Gap Analysis. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA.

Richter, D., **Galarus, D.** (April 27, 2015) Integration of Aviation Automated Weather Observation Systems (AWOS) with Roadside Weather Information Systems (RWIS) Phase II Data Sources Summary. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA.

Richter, D., **Galarus, D.** (April 27, 2015) Integration of Aviation Automated Weather Observation Systems (AWOS) with Roadside Weather Information Systems (RWIS) Phase II Data Sources Summary. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA.

Koon, L., Vollmer, F., **Galarus, D.** (April 13, 2015) Telco Wireless Fundamentals and Usage Course Summary and Evaluation Report, Professional Capacity Building for Communications (Phase 3). Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA.

Hayden, L., **Galarus, D.** (February 9, 2015) Chain-up Delay Tracking with Bluetooth Prospective Deployment Recommendations and Sources for Bluetooth Readers. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the California Department of Transportation and the Western States Rural Transportation Consortium.

Veneziano, D., **Galarus, D.,** Koon, L. (December 9, 2014) California and Oregon Advanced Transportation Systems (COATS) Phase 5: Final Report. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the California Department of Transportation, Sacramento, CA and the US Department of Transportation Research and Innovative Technology Administration, Washington, D.C.

Galarus, D., Koon, L. (October 3, 2014) Data Quality for Aggregation and Dissemination of DOT Traveler Information: An Analysis of Existing System Best Practices - Work Plan. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the California Department of Transportation and the Western States Rural Transportation Consortium.

Richter, D., **Galarus, D.** (August 13, 2014) Integration of Aviation Automated Weather Observation Systems (AWOS) with Roadside Weather Information Systems (RWIS) Phase II Detailed Prototype System Requirements Specification. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA.

Hayden, L., **Galarus, D.** (November 27, 2013) Chain-up Delay Tracking with Bluetooth Work Plan. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the California Department of Transportation and the Western States Rural Transportation Consortium.

Koon, L., **Galarus, D.** (October 28, 2013) Final Report: Professional Capacity Building for Communications Phase 2. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the California Department of Transportation, Sacramento, CA and the US Department of Transportation Research and Innovative Technology Administration, Washington, D.C.

Koon, L., Bones, A., Galarus, D. (October 28, 2013) IP Networking Fundamentals and Usage Course Summary and Evaluation Report Professional Capacity Building for Communications (Phase 2). Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA.

Koon, L., Langemeier, J., Bones, A., **Galarus, D.** (October 28, 2013) Optical Fiber Course Summary and Evaluation Report - Professional Capacity Building for Communications (Phase 2). Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA.

Koon, L., Jameson, W., **Galarus, D.** (July 26, 2013) Professional Capacity Building for Communications Curriculum Scope and Sequence (Revised for Project Phase 2) Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA.

Hayden, L., **Galarus, D.**, Ward, N., Ye, Z. (June 6, 2013) Executive Summary for the Western Transportation Institute's augmented Speed Enforcement Project (Report No. CA13-2062C) Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the US Department of Transportation Research and Innovative Technology Administration, Washington, D.C. and the California Department of Transportation, Sacramento, CA. (Contract No. LT20000C319)

Hayden, L., **Galarus, D.**, Ward, N., Ye, Z. (June 6, 2013) Final Report for the Western Transportation Institute's augmented Speed Enforcement Project (Report No. CA13-2062B) Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the US Department of Transportation Research and Innovative Technology Administration, Washington, D.C. and the California Department of Transportation, Sacramento, CA. (Contract No. LT20000C319)

Galarus, D., Hayden, L. (May 29, 2013) aSE Speed Data Evaluation for the Western Transportation Institute System (Report No. CA13-2062D) Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the US Department of Transportation Research and Innovative Technology Administration, Washington, D.C. and the California Department of Transportation, Sacramento, CA. (Contract No. LT20000C319)

Richter, D., Bateman, K., **Galarus, D.** (March 22, 2013) Automated Safety Warning Controller Management and Maintenance Guide. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA.

Richter, D., Bateman, K., **Galarus, D.** (March 22, 2013) Automated Safety Warning Controller–Controller Message Protocol Definition Document. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA.

Richter, D., Bateman, K., **Galarus, D.** (March 22, 2013) Automated Safety Warning Controller - System Testing Plan and Summary and System Evaluation Plan and Summary. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA.

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Graham, S., Eidswick, J., & **Galarus, D.** (2006). MDT Traveler Information Reporting System Product Evaluation. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Montana Department of Transportation, Helena, MT.

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Galarus, D. (February 8, 2006) Automated Safety Warning System Controller Project Plan Version 1.0 – Baseline. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA and Caltrans District 2, Redding, CA.

Galarus, D. (December 19, 2005) Redding Responder Phase I Final Report. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA and Caltrans District 2, Redding, CA.

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SOFTWARE AND APPLICATIONS

- Cellular and Satellite “Monitor/Logger”, to monitor and log cellular and satellite modem signal strength for Redding Responder project. (Windows Application), 2004
- Blackfeet Automated Accident Reporting System (Windows Application, Tablet-based), 2004
- Redding Responder Incident Report System (Windows Application, Tablet-based), 2003-2013
- Satellite Coverage Simulator for Redding Responder Project. (Windows Application), 2005
- Roadkill Observation Collection System (ROCS) (Windows Mobile Application, PDA-based), 2004-2013
- WeatherShare (Web-based application), 2003-2018
- Automated Safety Warning System Controller (Linux Controller), 2006-2018
- MANETS Meshbox, Tablet-based Incident Reporting for Public Safety Mesh Network Demonstration (Windows Application, Tablet-based), 2007-2011
- Aviation WeatherShare, Integration of Aviation AWOS with RWIS (Web-based application), 2008-2018
- One-Stop-Shop for Rural Traveler Information (Web-based application) <http://oss.weathershare.org/> , 2008-2018
- Mobile One-Stop-Shop for Rural Traveler Information (Web-based application, mobile) <http://oss.weathershare.org/m/> , 2016-2018
- American Wildlands Roadwatch, I-90 Bozeman Pass Citizen Science Wildlife Reporting (Web-based application), 2007
- Washington I-90 Wildlife Watch, Citizen Science Wildlife Reporting on Snoqualmie Pass, Washington (Web-based application), 2010-2012
- Colorado I-70 Wildlife Watch Golden - Glenwood Springs, Citizen Science Wildlife Reporting (Web-based application), 2009-2017
- Ketchum on the Road: Wildlife Sightings, Citizen Science Wildlife Reporting on Idaho State Highway 75 in Blaine County, Idaho (Web-based application) , 2006-2008
- WTI Time and Effort Reporting System (Web-based application), 2003-2018
- Smart Work Zone Delay Estimation System for Rural Highway Operations, 2006
- Caltrans Road Weather for QuickMap Weather Data Feeds (Web service, KML data feeds), 2014-2017
- Augmented Speed Enforcement (aSE) control and data collection software: Reduce speed-related crashes on Rural Roads. (Linux Controller, Distributed System on Mesh Network), 2010-2013
- America’s Wars in Asia Digital Teaching Library (Web-based application) , 1999-2001
- Greater Yellowstone Rural Intelligent Transportation Systems Corridor Kiosk Project, 1998-2003
- Lewis and Clark Intelligent Kiosk ITS System, 2000-2003
- Montana Fish, Wildlife and Parks’ Advanced and Remedial Hunter Education Website 2000-2003
- Montana Fish, Wildlife and Parks’ Bear Identification Program Website, 1999-2003
- Montana Fish, Wildlife and Parks’ Bull Trout Identification Program Website, 2000-2003

- MyUMT Recruitment Website for the University of Montana Admissions Department, 2000-2003
- UM Non-Enrolled Survey for the University of Montana Admissions Department, 2001-2002
- Travel Montana Website Development – Interactive Applets for the kids’ version of the Montana Department of Commerce’s Travel and Tourism website, 1997-2015

MULTIMEDIA

- University of Montana Admissions Recruitment Interactive CD-ROM, 2000-2002
- Montana Fish, Wildlife and Parks’ Fish of Montana Interactive CD-ROM, 1999-2003
- NxLevel for Entrepreneurs e-Learning Website and Interactive CD-ROM, 2000

WEB SITES

- Western States Forum (<http://www.westernstatesforum.org/>) , 2006-2018
- Western States Rural Transportation Consortium (WSRTC) (<http://www.westernstates.org>), 2010-2018
- The Paul S. Sarbanes Transit in Parks Technical Assistance Center (TRIPTAC) Website, 2009-2012
- Federal Lands Transportation Institute (FLTI) Website, 2012-2017
- University Transportation Centers Lab Resource Database / Website, 2010-2012
- Road Dust Institute Website, 2009-2011

TEACHING

Teaching at Utah State University

- CS 5665 Introduction to Data Science, Fall 2017, Spring 2019
- CS 1400 Introduction to Computer Science, Spring 2018
- Independent Study – Data Science, Manish Meshram, Spring 2018
- Independent Study – Data Science, Deepesh Parate, Spring 2018
- CS 4320 Information Storage and Retrieval Fall 2018

Teaching at the University of Montana

- CS 171 – Communicating via Computer, Two Sections Fall 1997, Two Sections Spring 1997. Computer Science Department.
- Math for Elementary Teachers, Two Sections, 1991. Department of Mathematical Sciences.

(Student) Teaching at Hellgate High School

- Taught Statistics, Algebra 2. Spring 1985.

Teaching Certification

- State Certified (Montana) to teach Mathematics in Grades 5-12
- State Certified (Montana) to teach Computer Science in Grades 5-12

Professional Development Instruction

- Completed Sun (Lead Faculty Java Authorization), iGeneration and New Horizons "Train the Trainer" Courses.
- Completed Oracle Training courses for "training the trainer".
- Delivered continuing education/professional development courses as a Sun-Certified Instructor and housed a Sun Java Technologies for Academic Authorized Sun Education Center, and as an Oracle-Certified Instructor and housed an Oracle Workforce Development Program at the University of Montana between 1999 and 2002.