DOUGLAS E. GALARUS

Associate Professor
Department of Computer Science
Montana Tech
Phone: 406-496-4858
Email: dgalarus@mtech.edu
Office: Museum 202
1300 West Park Street
Butte, MT 59701
https://cs.mtech.edu/
http://www.westernstates.org
http://westernstatesforum.org
http://oss.weathershare.org

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

2020 – present, Department of Computer Science, Montana Technological University University

- *Associate Professor* – Taught: CSCI 102 Computational Thinking with Lab, Fall 2020, Fall 2021; CSCI 135 Fundamentals of Computer Science I, Fall 2022, Fall 2023; CSCI 136 Fundamentals of Computer Science II, Spring 2023; CSCI 194 Freshman Seminar, Fall 2020, Fall 2021; CSCI 246 Discrete Structures, Fall 2024, Fall 2025; CSCI 347 Data Mining, Spring 2021, Spring 2022, Fall 2023, Fall 2024, Fall 2025; CSCI 443 User Interface Design, Fall 2020, Fall 2021, Fall 2022, Fall 2023, Fall 2024, Fall 2025; CSCI 444 Data Visualization, Spring 2022, Spring 2024; CSCI 447 Machine Learning, Spring 2021, Spring 2022, Spring 2023, Spring 2024, Spring 2025, Spring 2026; CSCI 470 Web Science, Spring 2021, Spring 2022, Spring 2023, Spring 2024, Spring 2025, Spring 2026; CSCI 486 Senior Project, Spring 2024, Fall 2024, Spring 2025, Fall 2025, Spring 2026; CSCI 499W Capstone: Data Science, Fall 2022, Spring 2023, Fall 2023, Spring 2024, Spring 2025, Fall 2025, Spring 2026; ESOF 486 Software Design Project I, Fall 2020; Fall 2022, Fall 2024, Fall 2025; ESOF 487 Software Design Project II, Spring 2021, Spring 2023, Spring 2025, Spring 2026; LS 490 Undergraduate Research, Fall 2023. Research interests include: Data Science, Data Quality, Spatio-Temporal Data, Systems, Intelligent Transportation Systems, User Interface and Experience Design, Web.

2017 – 2020, Computer Science Department, College of Engineering, Utah State University

- *Assistant Professor* – Data Science. Taught CS 5665 - Introduction to Data Science at Utah State University, Fall 2017, Spring 2019, Fall 2019; CS 1400 – Introduction to Computer Science - CS 1, Spring 2018; CS 4320 – Information Storage and Retrieval, Fall 2018, Fall 2019. Research interests include: Data Science and Systems, Data Quality, Spatio-Temporal Data and Intelligent Transportation Systems.

2003 – 2019, *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, traveler information, safety systems 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). 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 Associate Professor in the Department of Computer Science at Montana Technological University. Doug has 36 years of experience in systems and software engineering, information technology development, testing, implementation, management and instruction. Doug has extensive experience as the project manager, principal investigator 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 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 carried forward with similar research and development, with a focus on Data Science, Data Quality, Spatio-Temporal Data, Intelligent Transportation Systems and Applications of Data Science to Intelligent Transportation Systems. Now, as an Associate Professor at Montana Tech, Doug continues forward in applying his experience to instruction and research in Computer Science, Data Science, and Software Engineering to students in his home state of Montana. Doug has taught introductory, upper-division and graduate-level courses. Dr. Galarus holds a PhD in Computer Science from Montana State University and master's degrees in Computer Science and Mathematics Education from the University of Montana.

- 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
- Conference Organization, Professional Capacity Building and Professional Education
- Extensive Experience with Programming Languages, Applications, Systems, Internet Technologies, Communication Systems and Mobile Applications
- Proven Proficiency in Design, Analysis, Implementation and Optimization
- Systems and Software Engineer
- User Interface and User Experience Designer
- Data Scientist

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 AND AWARDS

- Charlie Oredigger Champion of Character Award, Faculty Winner chosen by Students, May 2025
- GEOProcessing 2019 "Best Paper" Award, *Challenges in Evaluating Methods for Detecting Spatio-Temporal Data Quality Issues in Weather Sensor Data*, GEOProcessing 2019 Conference, Athens Greece, February 24, 2019 to February 28, 2019. https://www.iaria.org/conferences2019/AwardsGEOProcessing19.html
- 2018-19 Computer Science Faculty Researcher of the Year Award in the Computer Science Department at Utah State University.
- 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

TEACHING

I integrate theory, research and practice into my teaching. It is important that students have a solid foundation and understanding behind the methods they use (theory), that they investigate those methods thoroughly (research), and that they apply those methods to real problems (practice). This should be accomplished at all levels while accounting for student background and capability.

Teaching at Montana Tech

- CSCI 102 Computational Thinking with Lab, Fall 2020, Fall 2021;
- CSCI 135 Fundamentals of Computer Science I, Fall 2022, Fall 2023;
- CSCI 136 Fundamentals of Computer Science II, Spring 2023;
- CSCI 194 Freshman Seminar, Fall 2020, Fall 2021;
- CSCI 246 Discrete Structures, Fall 2024, Fall 2025;
- CSCI 347 Data Mining, Spring 2021, Spring 2022, Fall 2023, Fall 2024, Fall 2025;
- CSCI 443 User Interface Design, Fall 2020, Fall 2021, Fall 2022, Fall 2023, Fall 2024, Fall 2025;
- CSCI 444 Data Visualization, Spring 2022, Spring 2024;
- CSCI 447 Machine Learning, Spring 2021, Spring 2022, Spring 2023, Spring 2024, Spring 2025, Spring 2026;
- CSCI 470 Web Science, Spring 2021, Spring 2022, Spring 2023, Spring 2024, Spring 2025, Spring 2026;
- CSCI 486 Senior Project, Spring 2024, Fall 2024, Spring 2025, Fall 2025, Spring 2026;
- CSCI 499W Capstone: Data Science, Fall 2022, Spring 2023, Fall 2023, Spring 2024, Spring 2025, Fall 2025, Spring 2026;
- ESOF 486 Software Design Project I, Fall 2020; Fall 2022, Fall 2024, Fall 2025;
- ESOF 487 Software Design Project II, Spring 2021, Spring 2023, Spring 2025, Spring 2026;
- LS 490 Undergraduate Research, Fall 2023.

Teaching at Utah State University

- CS 5665 Introduction to Data Science, Fall 2017, Spring 2019, Fall 2019
- Independent Study – CS 6950, Abhinav Pandey, Spring 2019
- Independent Study – CS 5950 Tanner Kvarfordt Spring 2019
- CS 1400 Introduction to Computer Science, Spring 2018
- Independent Study – CS 6950, Manish Meshram, Spring 2018
- Independent Study – CS 6950, Deepesh Parate, Spring 2018
- CS 4320 Information Storage and Retrieval Fall 2018, Fall 2019

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 Missoula Hellgate High School

- Taught Statistics, Algebra 2. Spring 1985.

Teaching Certification

- SEID 54128, Class 2: Standard Teaching
- 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.

RESEARCH INTERESTS

Data Science & Systems
Data Quality
Spatio-Temporal Data
Intelligent Transportation Systems
Applications of Data Science to 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 data science methods to solve challenges such as spatio-temporal data quality. My labs have conducted research in systems and software engineering to develop cutting-edge applications, applied data science and developed algorithms and methodologies to address challenges faced by the practitioners who use our many applications. We have also investigated the application of data science methods to estimate long-distance travel times during winter, the development of measures to evaluate dimension reduction techniques relative to data science tasks such as the classification of roadside camera images, and the estimation of delay due to chain-up during winter weather.

Emerging Research Topics

Applications of Data Science to Intelligent Transportation Systems

Spatio-Temporal Data Quality

Data-Driven User Experience

Applications of Sensor Data to Rural Transportation Challenges

Data Science Education

Keywords

Rural ITS, Intelligent Transportation Systems, User Experience, Data Science, Data Quality

AWARDED RESEARCH FUNDING AT MONTANA TECHNOLOGICAL UNIVERSITY (2021-PRESENT)

Project	Role	Sponsor	Budget	Start	End
ASWSC / OSS / WeatherShare Maintenance	PI	CALTRANS / WSDOT (WSRTC)	$71,450		Start: July 2021 End: March 2023
NSF-SSTEM (w/ MSU) – planning grant on which I am listed as Senior Personnel	Senior Personnel	NSF	$99,836 (total to MSU), $3000 for personnel travel		Start: 7/1/2022 End: 12/31/2024
Chain-up Delay Estimation via Fusion of Bluetooth, WiFi and ITS Data	PI	CALTRANS / WSDOT (WSRTC)	$125,000 (Phase 1)		Start: June 2023 End: August 2026
WeatherShare Maintenance	PI	CALTRANS / WSDOT (WSRTC)	$100,000		Start: May 2024 End: January 2027
Chain-up Delay Estimation via Fusion of Bluetooth, WiFi and ITS Data Phase II	PI	CALTRANS / WSDOT (WSRTC)	$125,000 (Phase 2)		(PENDING) Start: August 2026
One-Stop-Shop Maintenance	PI	CALTRANS / WSDOT (WSRTC)	TBD		(ANTICIPATED) Start: January 2027

OTHER PROJECT WORK AT MONTANA TECH (2020-PRESENT)

Project	Role	Sponsor	Budget	Start	End
Saint Patricks Cemetery Locator	PI	Butte Archives, Ancient Order of Hibernians	$1500 (loaned equipment)		Start: 2021 Ongoing
Impact of Weather and Travel Time Estimation for Winter Travel	PI	Independent Research	none		Start: 2020 Ongoing

AWARDED RESEARCH FUNDING AT UTAH STATE UNIVERSITY (2018-2021)

Project	Role	Sponsor	Budget	Start	End
Automated Safety Warning System Controller, Phase 3	PI	CALTRANS / WSDOT (WSRTC)	$249,995		Start: September 2018 End: August 2020
One-Stop-Shop Phase 4	PI	CALTRANS / WSDOT (WSRTC)	$150,000		Start: September 2018 End: August 2020
WeatherShare Phase 5	PI	CALTRANS	$242,795		Start: June 30, 2019 End: June 2021

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	6/30/2019
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

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

STUDENT SUPERVISION AT MONTANA TECH

My Role	Student	Years	Degree Program
Instructor Independent Study	Joe Opitz	2026	B.S. Data Science
Instructor Senior Project	Dylan Williams	2026	B.S., Computer Science
Instructor Senior Project	Rider Willis	2025-6	B.S., Computer Science
Instructor Senior Project	Miller DeMark	2025-6	B.S., Computer Science
Instructor Senior Project	Donald Summers	2025-6	B.S., Computer Science
PI/Supervisor, Project Mentor, Instructor Senior Design	Quinn Cox	2025-6	B.S., Software Engineering
PI/Supervisor, Project Mentor, Instructor Senior Design	Nicholas Steilman	2025-6	B.S., Software Engineering
PI/Supervisor, Project Mentor, Instructor Senior Design	Hayden Pride	2025-6	B.S., Software Engineering
Instructor Senior Project	Parker Weber	2025-6	B.S., Computer Science
Instructor Senior Project	Avrey Coombe	2025-6	B.S., Computer Science
Instructor Senior Project	James Brady	2025-6	B.S., Computer Science
Instructor Senior Project	Brady Schiff	2025	B.S., Computer Science
Instructor Senior Project	Alex Thompson	2025	B.S., Computer Science
Instructor Senior Project	Jason Decker	2025-6	B.S., Computer Science
PI/Supervisor, Project Mentor, Instructor Data Science Capstone	Emily Martin	2025-6	B.S. Data Science
Professor CSCI 246, 347	Dylan McDonough (Teaching Assistant)	2025	B.S., Computer Science
Professor CSCI 246, 347	Donald Summers (Teaching Assistant)	2025	B.S., Computer Science
PI/Supervisor, Project Mentor, Instructor Data Science Capstone	Jacob Sriraman	2025	B.S. Data Science
PI/Supervisor, Project Mentor, Instructor Data Science Capstone	Reese Lester	2025	B.S. Data Science
PI/Supervisor, Project Mentor, Instructor Senior Project / Capstone	Maverick Owens	2024-5	B.S., Computer Science
PI/Supervisor, Project Mentor, Instructor Senior Design	Seth Guttierez	2024-5	B.S., Software Engineering
PI/Supervisor, Project Mentor, Instructor Senior Design	Sequoia Pflug	2024-5	B.S., Computer Science, B.S., Software Engineering
PI/Supervisor, Project Mentor, Instructor Senior Design	Dylan Good	2024-5	B.S., Computer Science, B.S., Software Engineering
Professor CSCI 246	Dylan Good (Teaching Assistant)	2024	B.S., Computer Science, B.S., Software Engineering
PI/Supervisor	Jacob Sriraman	2024	B.S. Data Science
Instructor Capstone	River Sheppard	2024	B.S. Data Science
Instructor Senior Project	Hunter Valdez	2024	B.S. Computer Science
Professor CSCI 135	Will Augustine (Teaching Assistant)	2023	B.S., Computer Science

Professor CSCI 135	Ethan Schlepp (Teaching Assistant)	2023	B.S., Computer Science
Professor CSCI 135	Sequoia Pflug (Teaching Assistant)	2023	B.S., Computer Science, B.S., Software Engineering
Instructor Capstone	Reese Lester	2023	B.S. Data Science
Instructor Liberal Studies Undergraduate Research	Logan Bento	2023	B.S. Interdisciplinary Art Sci
Professor CSCI 136	Brandon Mitchell (Teaching Assistant)	2023	B.S., Software Engineering
Professor CSCI 136	Will Augustine (Teaching Assistant)	2023	B.S., Computer Science, B.S., Software Engineering
Instructor Capstone	Tyler Bodden	2023	B.S. Data Science
Instructor Capstone	Alyssa Hoffman	2023	B.S. Computer Science, B.S. Data Science
Instructor Capstone	Sawyer Gibson	2023	B.S. Computer Science, B.S. Data Science
PI/Supervisor, Project Mentor, Instructor Senior Design	Brandon Mitchell	2022-3	B.S., Software Engineering
PI/Supervisor, Project Mentor, Instructor Senior Design	Nathan Blankenship	2022-3	B.S., Software Engineering
PI/Supervisor, Project Mentor, Instructor Senior Design	Matthew Gallagher	2022-3	B.S., Software Engineering
PI/Supervisor, Project Mentor, Instructor Senior Design	John Nelson	2022-3	B.S., Software Engineering
Professor CSCI 135	Brandon Mitchell (Teaching Assistant)	2022	B.S., Software Engineering
Professor CSCI 135	Noah Harbor (Teaching Assistant)	2022	B.S. Computer Science
Professor CSCI 135	Sarah Wiseman (Teaching Assistant)	2022	B.S. Mathematics, B.S. Data Science
Professor CSCI 135	Xaavan Dolence (Teaching Assistant)	2022	B.S. Computer Science, B.S. Mathematics, B.S. Data Science, B.S. Statistics
Instructor Capstone	Xaavan Dolence	2022	B.S. Computer Science, B.S. Mathematics, B.S. Data Science, B.S. Statistics
PI/Supervisor	Timothy Foreman	2022-3	B.S., Computer Science
PI/Supervisor	Will Augustine	2022	B.S., Computer Science, B.S., Software Engineering
PI/Supervisor	Chase Farrar	2022	B.S., Computer Science,
PI/Supervisor	Tucker Kane	2021-2022	B.S., Software Engineering
PI/Supervisor	Ethan Schlepp	2021-2023	B.S., Computer Science
Professor CSCI 102	Tyler Bodden (Teaching Assistant)	2021-2022	
Instructor Independent Study	Hunter Boles	2021-2022	B.S. Computer Science, B.S. Mathematics, B.S. Data Science

PI/Supervisor, Project Mentor Senior Design	Andrey Zuev	2021	B.S., Software Engineering

STUDENT SUPERVISION AT USU

My Role	Student	Years	Degree Program
Professor CS 5665	Manish Meshram (Teaching Assistant)	2019	M.S., Computer Science
Professor CS 4320	Manish Meshram (Teaching Assistant)	2019	M.S., Computer Science
PI/Supervisor	Andrew Chamberlin	2019-	B.S., Electrical and Computer Engineering
PI/Supervisor	Haixuan Guo	2019-	M.S., Data Science
PI/Supervisor	Jordan Knudsen	2019-	B.S., Computer Science
PI/Supervisor	Brianna King	2019	B.S., Computer Science
PI/Supervisor	Max Susman	2019	B.S., Computer Engineering
Instructor Independent Study	Abinav Pandy	2019	M.S., Computer Science
Instructor Independent Study	Tanner Kvarfordt	2019	B.S., Computer Science
Committee Member	Shaju Saha	2019-	M.S., Computer Science
Committee Chair	Honey Varghese	2019-	M.S., Computer Science
Professor CS 5665	Chelsi Gupta (Teaching Assistant)	2019	M.S., 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
Professor 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
Professor CS 1400	Amar Farzaneh (Teaching Assistant)	2018	PhD., Computer Science
Professor CS 1400	Shimin Li (Teaching Assistant)	2018	PhD., Computer Science
Advisor –Committee Chair	Wasim Kahn	2018	PhD., Computer Science
Committee Chair	Abinav Pandy	2017-2019	M.S., Computer Science
Committee Chair	Manish Meshram	2017-2019	M.S., Computer Science
Predicting the Impact of Weather on Rural Travel Times using Now-Cast Weather Forecast Data			
Committee Member	Kamilia Ahamadi	2017-	PhD., Computer Science
Committee Member	Seyed M-H Mansourbeigi	2017-2018	PhD., Computer Science
Professor - 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

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
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

Galarus, D., I. Turnbull, S. Campbell, J. Pearce and L. Koon Spatio-Temporal Data Quality in Handbook of Big Geospatial Data, Werner, M. and Chiang, Y. Springer. 2021.

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

(In Progress) Galarus, Douglas E., Pearce, J., Chavez, A., Martin, E., Decker, J. Sensor Data Wrangling at Highway Speed. Sensors (ISSN 1424-8220) TBD

Galarus, Douglas E., and Rafal A. Angryk. "*Detecting Spatio-Temporal Data Quality Issues in Weather Sensor Data, Including Identification of Mis-located Sites*". International Journal on Advances in Systems and Measurements, v 12 n 3&4 2019. IARIA Publications. December 2019.

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. Winner of "Best Paper" Award.

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 Spatial-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, Spatial-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., Chain-Up Delay Tracking and Estimation, (to be) Presented at the Twenty-First Annual Western States Rural Transportation Technology Implementers Forum, Grass Valley, California, June 16-18, 2026.

Galarus, D. E., Pearce, J., Sriraman, J., Lester, R. Chain-Up Delay Tracking and Estimation – Progress to Date, presented at the Institute of Transportation Engineers (ITE) Annual Meeting / National Rural ITS (NRITS) Conference, Orlando, Florida, August 10-13, 2025.

Galarus, D. E., Pearce, J. Western States Rural Transportation Implementers Forum - Going on 20 Years of Technical Content, Transparency and Trust, presented during the Rural ITS Town Hall at the Institute of Transportation Engineers (ITE) Annual Meeting / National Rural ITS (NRITS) Conference, Philadelphia, Pennsylvania, Tuesday, July 23, 2024.

Galarus, D. E., OSS by the Numbers - Analytics and their use on the One-Stop-Shop for Rural Traveler Information, Presented at the Nineteenth Annual Western States Rural Transportation Technology Implementers Forum, Yreka, California, June 18-20, 2024.

Galarus, D. E., Campbell, S., Pearce, J., One-Stop-Shop for Rural Traveler Information Usage Analytics Conditions and Corridors, presented during the ITE/NRITS Live Webinar Presenter Invite: Things We Do: Moving Our Rural Programs Forward with Transportation Technology, Online, June 4, 2024.

Galarus, D. E., Campbell, S., Pearce, J., Analytics and the One-Stop Shop for Rural Traveler Information – Measuring Use Across Corridors and Between Communities During Winter Weather Events, Presented at the Institute of Transportation Engineers (ITE) Mountain District Conference, Helena, Montana, November 1-3, 2023.

Galarus, D. E., Pearce, J., Campbell, S., Automated Safety Warning System Controller. Presented at the Institute of Transportation Engineers (ITE) Annual Meeting / National Rural ITS (NRITS) Conference, Portland, Oregon, August 13-16, 2023.

Pearce, J., Worthington, J., **Galarus, D. E.**, ASWSC Phase 3: Migration of the Automated Safety Warning System Controller to the Caltrans Advanced Transportation Controller Platform. Presented at the Sixteenth Annual Western States Rural Transportation Technology Implementers Forum, Yreka, California, October 5-7, 2021.

Galarus, D. E., Campbell, C., The One-Stop-Shop for Rural Traveler Information – Serving Real-Time Traveler Information Across the Western States. Presented (Online) at the National Rural ITS (NRITS) Conference 2020, New Orleans, Louisiana, August 9-12, 2020.

Koeppen, K., Campbell, C., Pearce, J., **Galarus, D. E.**, Accurate, Timely, Reliable…A Look at the Current State of Traveler Information, Data Quality and Performance Objectives in Rural Areas Within California. Presented (Online) at the National Rural ITS (NRITS) Conference 2020, New Orleans, Louisiana, August 9-12, 2020.

Campbell, S., Pearce, J., **Galarus, D**., The One-Stop-Shop for Traveler Information. Presented at CalGIS 2019, Fresno, California, April 9-10, 2019.

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.

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Cox, Q., Pride, H., Steilman, N., **Galarus, D.** Prototype Road Weather Alert System, to be presented at Techxpo, Montana Tech Student Research Conference, April 23, 2026, Montana Tech, Butte, MT.

Coombe, A., Weber., P., Williams., D., **Galarus, D.** Bluetooth Sensing and Logging to Estimate Vehicle Speeds on Rural Highways – Software Development and Field Evaluation, to be presented at Techxpo, Montana Tech Student Research Conference, April 23, 2026, Montana Tech, Butte, MT.

Martin, E., Decker, J., Opitz, J., **Galarus, D.** Chain-up Delay Estimation for Interstate 5 in Northern California – Ground Truth Data Processing and Evaluation, to be presented at Techxpo, Montana Tech Student Research Conference, April 23, 2026, Montana Tech, Butte, MT.

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Brady, J., Schiff, B., Thompson, A., **Galarus, D.** Leaflet Mapping Prototype Implementation and Evaluation for the One Stop Shop for Rural Traveler Information, to be presented at Techxpo, Montana Tech Student Research Conference, April 23, 2026, Montana Tech, Butte, MT.

Owens, M., **Galarus, D.** Development of Software Routines to Read, (Pre-) Process, and Store MDT RWIS Data, presented at Techxpo, Montana Tech Student Research Conference, April 24, 2025, Montana Tech, Butte, MT. 2nd Place Winner – Two-Semester Project.

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Mitchell, B., Nelson, J., Gallagher, M., Blankenship, N., **Galarus, D.** Saint Patrick's Locator App, Techxpo, Montana Tech Student Research Conference, April 27, 2023, Montana Tech, Butte, MT. Best in Software Engineering/Computer Science award.

Augustine, W., Farrar, C., **Galarus, D.** Saint Patrick's Locator App, Techxpo, Montana Tech Student Research Conference, April 27, 2022, Montana Tech, Butte, MT.

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Galarus, D., Wang, S., Schoep, G, Richardson, H., Graham, S., Lassacher, S., Richter, D., Bateman, K. (December 3, 2009) Automated Safety Warning Controller High Level Design Specification Version 1.0 – Baseline. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA.

Richter, D., Bateman, K., **Galarus, D.** (December 3, 2009) Automated Safety Warning Controller Testing and Development Lab Summary and System Development Summary. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA.

Wang, S., Richter, D., Nikalandawatte, N., **Galarus, D.**, Wei, W., Moreland, C. (October 21, 2009) Integration of Aviation Automated Weather Observation Systems (AWOS) with Roadside Weather Information Systems (RWIS) Preliminary, High-Level Requirements Analysis System Concept. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA.

Nikalandawatte, N., Koon, L., Wang, S., Richter, D., **Galarus, D.**, Wei, W., Moreland, C. (October 21, 2009) Integration of Aviation Automated Weather Observation Systems (AWOS) with Roadside Weather Information Systems (RWIS) Literature Review and Initial Acquisition, Maintenance & Related Cost Summary for AWOS/ASOS and RWIS. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA.

Veneziano, D., **Galarus, D.**, Koon, L. (September 30, 2009) California and Oregon Advanced Transportation Systems Phase 3: Final Report Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the State of California, Department of Transportation, Division of Research and Innovation and the State of Oregon, Department of Transportation, Traffic Management Section and the U.S. Department of Transportation, Research and Innovative Technology Administration.

Jameson, W., Schoep, G. Puigcerver, A., Koon, L., **Galarus, D.** (September 17, 2009) Literature Review Summary - Professional Capacity Building for Communications Systems. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA.

Galarus, D., Leader, S. (September 15, 2009) WTI Systems Engineering and Integration of Transportation Technology Program (SEITTP) Concept Document. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the US Department of Transportation Research and Innovative Technology Administration, Washington, D.C.

Veneziano, D., **Galarus, D.**, Niedrist, S. (March 31, 2009) Rural Traveler Information Phase 1: Rural Traveler Information Needs Assessment and Pilot Study, One Stop Shop Website Concept of Operations. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA.

Veneziano, D., **Galarus, D.**, Wang, S., Richter, D., Niedrist, S. (March 31, 2009) Rural Traveler Information Phase 1: Rural Traveler Information Needs Assessment and Pilot Study, One Stop Shop Website Requirements. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA.

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Sharkey, J., **Galarus, D.** (February 11, 2009) Ant Colony Optimization for Transportation Optimization Problems. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the US Department of Transportation Research and Innovative Technology Administration, Washington, D.C.

Veneziano, D., Strong, C., **Galarus, D.**, Wang, S. (February 4, 2009) California and Oregon Advanced Transportation Systems (COATS) Phase 3 Rural Integrated Corridor Management Integrated Corridor Management Clearinghouse Requirements. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA.

Jameson, W., Lassacher, S., **Galarus, D.** (December 17, 2008) Handbook for Evaluating TMS to TMC Communication Options for the project entitled: Improve communications between TMC and TMS elements in a rural environment through a system that is deployable statewide (2004MOB.10) - #TS-507. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA and Caltrans District 1, Eureka, CA.

Galarus, D., Schoep, G. (December 17, 2008) Final Report for the project entitled: Advanced CMS (CFS# 2056DRI, Problem Statement No. TS-510) Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA.

Wolff, R., Tang, J., **Galarus, D**., Larson, D. (November 14, 2008) Ad Hoc Routing for Rural Public Safety Final Report SAFECOM Program (DHS-06-ST-086-006). Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the U.S. Department of Homeland Security Science and Technology Directorate Office for Interoperability and Compatibility

Jameson, W., Lassacher, S., Hayden, L., **Galarus, D.**, Wolff, R. (October 28, 2008) Research Analysis of Preferred Technologies and Site Evaluations for the project entitled: Improve communications between TMC and TMS elements in a rural environment through a system that is deployable statewide (2004MOB.10) – #TS-507. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA and Caltrans District 1, Eureka, CA.

Galarus, D., Jameson, W., Lassacher, S. (October 15, 2008) Improve communications between TMC and TMS elements in a rural environment through a system that is deployable statewide (2004MOB.10) – #TS-507 Final Report. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA and Caltrans District 1, Eureka, CA.

Huijser, M. P., Kociolek, A. V., Oechsli, L., & **Galarus, D. E.** (2008). Wildlife Data Collection and Potential Highway Mitigation along State Highway 75, Blaine County, Idaho (No. 4W1403B).

Galarus, D., Wolff, R., Tang, J., Larson, D. (March 20, 2007) Ad Hoc Routing for Rural Public Safety (2007-ST-086-00000) Project Plan. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the U.S. Department of Homeland Security Science and Technology Directorate Office for Interoperability and Compatibility

Galarus, D., Wang, S., Schoep, G., Graham, S., Richardson, H., Lassacher, S. (September 11, 2007) Automated Safety Warning Controller System Concept and Requirements Specification. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA.

Ament, R., **Galarus, D.**, Richardson, H., Hardy, A. (August 2, 2007) Roadkill Observation Collection System (ROCS) - Development of an Integrated Personal Digital Assistant (PDA) with a Global Positioning System (GPS) to Gather Standardized Digital Information. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Virginia Transportation Research Council and the Washington State Department of Transportation.

Lassacher, S., Schoep, G., Hayden, L., **Galarus, D.**, Jameson, W., Wolff, R. (February 13, 2007) Literature Review of Communications Methods Used to Connect Rural Field Elements to a TMC and Related Remote-Sensing Communications Techniques. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA and Caltrans District 1, Eureka, CA.

Kumar, M., **Galarus, D.**, Graham, S., Strong, C. (May 30, 2006) Evaluation of ITS Technologies in Rural Work Zones: Showcase Evaluation #12 Final Technical Report. 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.

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.

Graham, S., Galarus, D., & Eidswick, J. (2007). MDT Traveler Information Reporting System Requirements Analysis. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Montana Department of Transportation, Helena, MT.

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.

Albert, S., **Galarus, D.** (December 14, 2005) WeatherShare Evaluation: Phase I Proof-of-Concept. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA and Caltrans District 2, Redding, CA.

Wang, S., **Galarus, D.**, Lassacher, S. (October 3, 2005) WeatherShare System Documentation. 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., Wang, S. (July 11, 2005) WeatherShare User Guide Version 1.0. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA.

Shi, X., **Galarus, D.** (April 25, 2005) Baseline User Requirements for the WeatherShare System. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the Caltrans Division of Research & Innovation, Sacramento, CA.

Galarus, D. (December 2004) Tablet-Based Electronic Reporting Form Proof of Concept. Western Transportation Institute / Montana State University.

Galarus, D., Leader, S. (August 2004) WTI Systems Engineering and Integration of Transportation Technology Program (SEITTP) Concept Document. Bozeman, Montana: Western Transportation Institute / Montana State University. Prepared for the US Department of Transportation Research and Innovative Technology Administration, Washington, D.C.

Media

NBC Montana, One-Stop-Shop traveler information tool expands to 17 states ahead of holiday travel. December 17, 2025. https://nbcmontana.com/news/local/one-stop-shop-traveler-information-tool-expands-to-17-states-ahead-of-holiday-travel

Montana Tech Press Release, One-Stop-Shop traveler information web application expands to cover 17 states ahead of holiday travel, December 16, 2025. https://mtech.edu/news/2025/12/one-stop-shop-traveler-information-web-application-expands-to-cover-17-states-ahead-of-holiday-travel.html

(Front Page) Article in the Montana Standard, Butte Archives partners with Tech software engineering class to help locate gravesites, May 5, 2023. https://mtstandard.com/news/butte-archives-partners-with-tech-software-engineering-class-to-help-locate-gravesites/article_d0420f60-ead5-11ed-b5de-eb88bcf73214.html

Interview with KXLF (CBS), Montana Tech professor operating travel website to help motorists find safest route. December 22, 2021. https://www.kxlf.com/montana-tech-professor-operating-travel-website-to-help-motorists-find-safest-route

Interview with KTVM (NBC), One Stop Shop for Rural Traveler Information. December 23, 2021.

Interview with ABC/Fox Montana, 'One-Stop-Shop' provides winter weather info for travelers. December 29, 2021. https://www.montanarightnow.com/butte/one-stop-shop-provides-winter-weather-info-for-travelers/article_910d5526-68f8-11ec-8892-574612f43758.html

Montana Tech Press Release, Montana Tech Professor Encourages Use of Weather Tracking Application, December 20, 2021. https://mtech.edu/news//2021/12/montana-tech-professor-encourages-use-of-weather-tracking-application.html

Interview at Future of Information and Communication Conference 2019, Accurate, Timely, Reliable: A High Standard and Elusive Goal for Traveler Information Data Quality. San Francisco, CA. March 15, 2019. https://www.youtube.com/watch?v=Nrold1U44Ns

Interview with ABC/Fox Montana. One Stop Shop for Traveler Information. November 14th, 2014.

http://www.westernstates.org/Projects/OSS/Updates/2015-04-06.html

Interview with KTVM (NBC Montana). One Stop Shop for Traveler Information. November 17th, 2014. http://www.westernstates.org/Projects/OSS/Updates/2015-04-06.html

SOFTWARE AND APPLICATIONS

- One-Stop-Shop for Rural Traveler Information (Web-based application) http://oss.weathershare.org/ , 2008-present
- WeatherShare (Web-based application), 2003- present
- Automated Safety Warning System Controller (Linux Controller), 2006-2023
- WTI Time and Effort Reporting System (Web-based application), 2003-2023
- Mobile One-Stop-Shop for Rural Traveler Information (Web-based application, mobile) http://oss.weathershare.org/m/ , 2016-2019
- Aviation WeatherShare, Integration of Aviation AWOS with RWIS (Web-based application), 2008-2019
- Caltrans Road Weather for QuickMap Weather Data Feeds (Web service, KML data feeds), 2014-2017
- Redding Responder Incident Report System (Windows Application, Tablet-based), 2003-2013
- Roadkill Observation Collection System (ROCS) (Windows Mobile Application, PDA-based), 2004-2013
- 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
- American Wildlands Roadwatch, I-90 Bozeman Pass Citizen Science Wildlife Reporting (Web-based application), 2007
- Cellular and Satellite "Monitor/Logger", to monitor and log cellular and satellite modem signal strength for Redding Responder project. (Windows Application), 2004
- 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
- MANETS Meshbox, Tablet-based Incident Reporting for Public Safety Mesh Network Demonstration (Windows Application, Tablet-based), 2007-2011
- Smart Work Zone Delay Estimation System for Rural Highway Operations, 2006
- Satellite Coverage Simulator for Redding Responder Project. (Windows Application), 2005
- Blackfeet Automated Accident Reporting System (Windows Application, Tablet-based), 2004
- 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
- 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

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

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

SERVICE

Paper Reviewer:
- Joint Intermountain Junior Science and Humanities Symposium (IJSHS), March 2-3, 2023
- Joint Intermountain Junior Science and Humanities Symposium (IJSHS) and California-Southern Junior Science and Humanities Symposium (CA-S JSHS), March 3-4, 2022
- GEOProcessing 2021, Nice, France, July 18 – 22, 2021.
- Joint Intermountain Junior Science and Humanities Symposium (IJSHS) and California-Southern Junior Science and Humanities Symposium (CA-S JSHS), March 3-4, 2021
- I-ETC Conference, Computing Conference Track, May 4-5, 2020
- 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

Proposal Review Panel Member:
- NSF Proposal Review Panel, Washington, DC, May 9-10, 2019.

Program Committee Member
- GEOProcessing 2021, Nice, France, July 18 – 22, 2021.
- GEOProcessing 2020, Barcelona, Spain, March 22 - 26, 2020.

Steering Committee Member:

- Montana Tech Data Science Steering Committee (2023-present). Members oversee major, minor and related efforts.
- Western States Rural Transportation Consortium (2009-present). Members oversee projects and other activities.
- Western States Forum (2008- present). 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: Montana Tech Search – Instructor, Cybersecurity and Network Administration, 2022
- Member: Montana Tech Search – Assistant Professor, Computer Science, 2022
- Member: Montana Tech Search – Assistant Professor, Software Engineering, 2022
- Chair: Montana Tech Search – Professor and Department Head, Computer Science, 2022
- Chair: Montana Tech Search – Assistant Professor, Computer Science, 2022
- Chair: Montana Tech Search – Instructor, Computer Science, 2022
- Chair: Montana Tech Search – Instructor / Assistant Professor, Cybersecurity and Network Administration, 2022
- Member: Montana Tech Search – Instructor, Cybersecurity and Network Administration, 2021
- Member: USU Search – Assistant Professor, Computer Science 2019-2020
- 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

Outreach Activities and Funding:

- Data Science Outreach to prospective students and high school teachers. March 24th, 2026.
- Computer Science Outreach to prospective students, Montana Tech "Tech Day", Outreach Presentation, "From Games to Autonomous Vehicles". March 6th, 2026.
- Computer Science Outreach to prospective students, Montana Tech "Tech Day", Outreach Presentation, "From Games to Autonomous Vehicles". November 14th, 2025.
- Data Science Outreach to prospective students and high school teachers. October 28th, 2025.
- Data Science Outreach to prospective students, Montana Tech "Tech Day", Academic Fair. March 7th, 2025.
- Computer Science Outreach to prospective students, Montana Tech "Tech Day", Outreach Presentation, "From Games to Autonomous Vehicles". March 7th, 2025.
- Data Science Outreach to prospective students, Montana Tech "Tech Day", Academic Fair. November 22nd, 2024.
- Computer Science Outreach to prospective students, Montana Tech "Tech Day", Outreach Presentation, "From Games to Autonomous Vehicles". November 22nd, 2024.
- Data Science Outreach to prospective students, Montana Tech "Tech Day", Academic Fair. November 15th, 2024.
- Computer Science Outreach to prospective students, Montana Tech "Tech Day", Outreach Presentation, "From Games to Autonomous Vehicles". November 15th, 2024.
- Computer Science Outreach to prospective students, Montana Tech "Tech Day", Outreach Presentation, "From Games to Autonomous Vehicles". March 8th, 2024.
- Computer Science Outreach to prospective students, Montana Tech "Tech Day", Outreach Presentation, "From Games to Autonomous Vehicles". November 17th, 2023.
- Computer Science Outreach to Montana Tech Engineering Freshmen, EGEN 194 Freshman Engineering Class, Guest Lecture, "Computer Science, Software Engineering, Data Science". September 26th, 2023.
- Computer Science Outreach to prospective students, Montana Tech "Tech Day", Outreach Presentation, "From Games to Autonomous Vehicles". March 24th, 2023.
- Computer Science Outreach to Montana Tech Engineering Freshmen, EGEN 194 Freshman Engineering Class, Guest Lecture, "Computer Science, Software Engineering, Data Science". February 21st, 2023.
- Computer Science Outreach to prospective students, Montana Tech "Tech Day", Outreach Presentation, "From Games to Autonomous Vehicles". November 18th, 2022.
- Computer Science Outreach to Montana Tech Engineering Freshmen, EGEN 194 Freshman Engineering Class, Guest Lecture, "Computer Science, Software Engineering, Data Science". October 4th, 2022.
- Ethics Presentation for Engineering Senior Design Students, Guest Lecture, September 29th, 2022.
- Computer Science Outreach to prospective students, Butte Sciences Day, Outreach Presentation, "From Games to Autonomous Vehicles". April 29th, 2022.
- Computer Science Outreach to Montana Tech Engineering Freshmen, EGEN 194 Freshman Engineering Class, Guest Lecture, "Computer Science, Software Engineering, Data Science". January 25th, 2022.

- Computer Science Outreach to prospective students, Montana Tech "Tech Day", Outreach Presentation, "From Games to Autonomous Vehicles". October 22nd, 2021.
- Computer Science Outreach to Montana Tech Engineering Freshmen, EGEN 194 Freshman Engineering Class, Guest Lecture, "Computer Science, Software Engineering, Data Science". October 6th, 2021.
- Computer Science Outreach to prospective students, Montana Tech "Tech Day", Outreach Presentation, "Computer Science, Software Engineering, Data Science". April 9th, 2021.
- Computer Science Outreach to Montana Tech Engineering Freshmen, EGEN 194 Freshman Engineering Class, Guest Lecture, "Computer Science, Software Engineering, Data Science". January 19th, 2021.
- Computer Science Outreach to prospective students, Montana Tech "Tech Day", Outreach Presentation, "Computer Science, Software Engineering, Data Science". October 23rd, 2020.
- Computer Science Outreach to Montana Tech Engineering Freshmen, EGEN 194 Freshman Engineering Class, Guest Lecture, "Computer Science, Software Engineering, Data Science". October 6th, 2020.
- 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

Speech and Debate Judge:
- Butte High School Richest Hill on Earth Speech and Debate Meet at Butte High School, January 17-18, 2025.
- Butte High School Richest Hill on Earth Icebreaker Speech and Debate Meet at Butte High School, November 9, 2024.

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

Faculty Senate:
- Montana Tech Faculty Senate – Computer Science Representative, 2021-present (three terms)

Committees
- Montana Tech Accessibility Committee, 2024-present.