Curriculum vitae
James T. Dietrich

Cockrell School of Engineering, University of Texas at Austin

🏠 West Pickle Research Center, Austin, Texas

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🖥 http://www.github.com/geojames

Education | Experience | Certifications | Publications | Published Software | Research Grants
Awards | Teaching | Advising | Presentations | Service
Professional Organization Membership | Skills

EDUCATION

Ph.D.   University of Oregon, 2014
Geography, Dissertation: *Applications of Structure-from-Motion Photogrammetry to Fluvial Geomorphology.*

M.Sc.   Texas State University-San Marcos, 2008
Geography, Thesis: *Quantitative Assessment of Landscape Change Using Georeferenced Repeat Photography in Glacier National Park, Montana, USA.*

B.Sc.   University of Kansas, 2006
Physical Geography, Senior Research Project: *Beach Erosion and Storm Protection: Is Beach Nourishment the Answer for the Outer Banks of North Carolina.*

EXPERIENCE

Professional Appointments

2022   **University of Texas at Austin,** Cockrell School of Engineering, Center for Space Research
Associate Research Scientist (Nov 2022 – Present)

2017   **University of Northern Iowa,** Department of Geography
Assistant Professor (Fall 2017 – Fall 2022)
Director, Iowa Low-Altitude Remote Sensing Lab (I-LARS) (Fall 2017 – Present)

2014   **Dartmouth College,** William H. Neukom Institute for Computational Science
Neukom Postdoctoral Fellow (Fall 2014 – Summer 2017)

Other Academic Experience

2011   **University of Oregon,** Department of Geography
Doctoral Teaching/Research Fellow (Fall 2011 – Spring 2014)

2010   **Texas State University-San Marcos,** Department of Geography
Doctoral Teaching Assistant (Fall 2010 – Spring 2011)

2006   **Texas State University-San Marcos,** Department of Geography
Graduate Teaching Assistant (Fall 2006 – Spring 2008)

2005   **University of Kansas,** Department of Geography
Undergraduate Teaching Assistant (Summer 2005)

Professional Experience

2008   **Jeppesen Sanderson, Inc. – a Boeing Company**
Senior Remote Sensing Analyst / Technical Specialist (October 2009 - August 2010)
Cartographer (July 2008 – October 2009)
National Geospatial Intelligence Agency contracts for aeronautical charting and aviation obstacle mapping

2008   **The University of Texas at Austin,** Center for Space Research - Mid-American
Geospatial Information Center (MAGIC)
Remote Sensing Analyst (Summer 2008)

2003   **Kansas Geological Survey**
Technical Research Assistant (Fall 2003 – Spring 2006)

CERTIFICATIONS

Federal Aviation Administration (FAA) Licensed Remote Pilot
Remote Pilot Certificate with Small Unmanned Aircraft Rating
Issued September 2016 - Expires November 2023

PUBLICATIONS

Refereed Publications (* Student-led publications)

2021   Magilligan, F.J., K. Nislow, **J.T. Dietrich**, H. Boyle, B. Kynard. Transient versus sustained biophysical responses to dam removal. 2021. Geomorphology 398:107836.
DOI: 10.1016/j.geomorph.2021.107836 ([LINK](#))

2021   *Morgan, B.E., D.T. Bolger, J.W. Chipman, **J.T. Dietrich.** 2021. Multi-sensor fusion of unmanned aerial vehicle (UAV) and Landsat imagery for spatiotemporal analysis of vegetation cover change in a large ephemeral river. Remote Sensing 13(1), 51.
DOI: 10.3390/rs13010051 ([LINK](#))

2020   Carbonneau, P.E., S.J. Dugdale, T.P. Brackon, **J.T. Dietrich,** M.A. Fonstad, H. Miyamoto, A.S. Wooget. 2020. Adopting deep learning methods for airborne RGB fluvial scene classification. Remote Sensing of Environment 251:112107.
DOI: 10.1016/j.rse.2020.112107 ([LINK](#))

2020 *Morgan, B.E., D.T. Bolger, J.W. Chipman, **J.T. Dietrich**. 2020. Longitudinal and latitudinal distribution of riparian vegetation along an ephemeral river in Namibia using remote sensing techniques. Journal of Arid Environments 181:104220. DOI: 10.1016/j.jaridenv.2020.104220 ([LINK](#))

2019 Woodget, A.S., **J.T. Dietrich**, R.T Wilson. 2019. Quantifying Below-Water Fluvial Geomorphic Change: the Implications of Refraction Correction, Water Surface Elevations and Spatially Variable Error. Remote Sensing 11(20). DOI: 10.3390/rs11202415 ([LINK](#))

2019 Magilligan, F.J., A. James, S. Lecce, **J.T. Dietrich**, J. Kupfer. 2019. Geomorphic responses to extreme rainfall, catastrophic flooding, and dam failures across an urban to rural landscape. Annals of the American Association of Geographers 109 (3): 705–729. DOI: 10.1080/ 24694452.2018.1507814. ([LINK](#))

2018 *Heindel, R.C., J.W. Chipman, **J.T. Dietrich**, R.A. Virginia. 2018. Quantifying rates of soil deflation with Structure-from-Motion photogrammetry in west Greenland. Arctic, Antarctic, and Alpine Research 50(1). DOI: 10.1080/15230430.2017.1415852 ([LINK](#))

2017 **Dietrich, J.T.** 2017. Bathymetric Structure from Motion: Extracting stream bathymetry from multi-view stereo photogrammetry. Earth Surface Processes and Landforms 42(2): 355–364. DOI: 10.1002/esp.4060 ([LINK](#))

2017 Carbonneau, P.E., **J.T. Dietrich**. 2017. Cost-Effective Non-Metric Photogrammetry from Consumer-Grade sUAS: Implications for Direct Georeferencing of Structure from Motion Photogrammetry. Earth Surface Processes and Landforms 42(3): 473–486. DOI: 10.1002/esp.4012 ([LINK](#))

2016 Atha, J.B., **J.T. Dietrich.** 2016. Detecting Fluvial Wood in Forested Watersheds Using LiDAR Data: A Methodological Assessment. River Research and Applications 32(7): 1587–1596. DOI: 10.1002/rra.2989 ([LINK](#))

2016 **Dietrich, J.T.** 2016. Riverscape Mapping with Helicopter-Based Structure-from-Motion Photogrammetry. Geomorphology 252: 114–157. DOI: 10.1016/j.geomorph.2015.05.008 ([LINK](#))

2013 Fonstad, M.A., **J.T. Dietrich**, B.C. Courville, J.L. Jensen, P.E. Carbonneau. 2013. Topographic structure from motion: a new development in photogrammetric measurement. Earth Surface Processes and Landforms 38(4): 421–430. DOI: 10.1002/esp.3366 ([LINK](#))

Book Contributions

2016 **Dietrich, J.T.,** 2016. Instantaneous Structure-from-Motion (ISfM) for Dynamic Geomorphology. In Structure-from-Motion for the Geosciences. Eds. Carrivick, J., M. Smith, D. Quincy. Wiley-Blackwell.

In Review / Revision
Dietrich, J.T., A. Rackley-Reese, A. Gibbons, L.A. Magruder, and C.E. Parrish. In Review. Analysis of ICESat-2 Data Acquisition Algorithm Parameter Enhancements to Improve Worldwide Bathymetric Coverage. Earth and Space Science. Submitted 2023 Sept. 1.

In Preparation
Dietrich, J.T., L.A. Magruder. M Holwill. Monitoring Coastal Waves with ICESat-2

Non-Refereed Publications

2016   Shervais, K., **J.T. Dietrich**. 2016. Structure from Motion (SfM) Photogrammetry Data Exploration and Processing Manual. UNAVCO. ([LINK](#))

2014   **Dietrich, J.T.** 2014. Applications of Structure-from-Motion Photogrammetry to Fluvial Geomorphology. Ph.D. Dissertation, University of Oregon.

2013   McDowell, P.F., **J.T. Dietrich**. 2013. Willamette Sustainable River Project Phase 2: Development of a Monitoring Plan for Environmental Flow Recommendation on the Middle Fork Willamette River, Oregon. Report to the U. S. Army Corps of Engineers. Research Cooperative Agreement W912HZ-10-2-0044.

2008   **Dietrich, J.T.** 2008. Quantitative assessment of landscape change using georeferenced repeat photography in Glacier National Park, Montana, USA. MS Thesis, Texas State University-San Marcos.

Various Online Technical/Methods Tutorials
    http://adv-geo-research.blogspot.com
    YouTube - https://www.youtube.com/c/JamesDietrich_geo

PUBLISHED SOFTWARE

All software is available on GitHub: http://www.github.com/geojames

Dietrich, JT. 2019. pyBathySfM v4.0 (as developed on Github)
    DOI: 10.5281/zenodo.3377602
    Python code for performing an iterative, multi-camera refraction correction on Structure from Motion point clouds. (2017 ESPL & 2019 RSE articles above)

Dietrich, James T., Patrice Carbonneau. 2019. Hyperscale Rivers v1.0. (as developed on Github)
    DOI: 10.5281/zenodo.3382267
    Python code for creating hyperscale graphs for multi-spatial scale data comparisons

Carbonneau, P.E., S.J. Dugdale, T.P. Brackon, **J.T. Dietrich**, M.A. Fonstad, H. Miyamoto, A.S. Wooget. Self-Supervised-Classification v1.0 (as developed on Github)
    DOI: 10.5281/zenodo.3386590
    Python code for self-supervised classification of remotely sensed imagery - part of the Deep Riverscapes project. (2020 RSE Article)

py_streamNormalcoords - Python code for transforming x,y coordinates into a curvilinear coordinate system based on a stream centerline.

RESEARCH GRANTS

Funded (* Student-led)

2021   Modeling Solar Radiation Potential and Urban Heat Utilizing Mobile Sensors and Topographic Data. (Co-PI, $170,370). *Iowa Energy Center*.

2020   Low-cost stream gauges for early flood warnings. (PI, $6,732)
University of Northern Iowa, Research and Sponsored Programs – Capacity Building Grant

2019   Next-Generation Riverscape Mapping and Monitoring. (Co-PI, $300,000 – 2 years)
National Science Foundation – Geography and Spatial Science (GSS) EAGER Award #1934253

2019   Development of dynamic 360° imagery and video virtual resources for Prairie of Farms and Integrated Roadside Vegetation Management programs. (Co-PI – 2 years)
Iowa Department of Agriculture and Land Stewardship - State Soil Conservation & Water Quality Committee ($27,619)

2018   Developing an open-source, real-time kinematic GPS for UAS Applications (PI, $2,420)
University of Northern Iowa, Office of the Provost

2018   *Impacts on Student Learning and Understanding of Water Quality through International Citizen Science Opportunities (PI, $3,847)
University of Northern Iowa, Office of the Provost

2018   Acquisition of a Hyperspectral Field Spectroradiometer to Enable Interdisciplinary Research. (Co-PI, $77,601)
National Science Foundation – EAR Major Research Instrumentation Program Award #1828402.

2017   Drone boats for coupled geomorphic and ecologic monitoring of dam removals. (PI, $5,474)
University of Northern Iowa, Research and Sponsored Programs – Capacity Building Grant

2017   Accuracy Assessment of Directly Georeferenced sUAS Photogrammetry. (PI, $6,278)
University of Northern Iowa, College of Social and Behavioral Science – New Faculty Summer Research Grant

2015   Patterns of Fluvial Sedimentation and Geomorphic Change Following an Extreme Flood Event. (Key Personnel, $49,341)
National Science Foundation RAPID Award #1615154 (GSS & GLD)

2015   Smart Cameras Meet Smart Rocks: Quantifying Stream Channel Responses to Natural and Human-Induced Disturbances. (Co-PI, $49,341)
Dartmouth College – Office of the Provost: Seed Funding Program

2014   Neukom Postdoctoral Fellowship Research Funding. (PI, $8,000)
Dartmouth College

2014   Sub-meter Remote Sensing for Fluvial Monitoring with Helicopter-based Structure-from-Motion Photogrammetry. (PI, $5,500)
U.S. Bureau of Reclamation / Oregon Watershed Enhancement Board

2013   Low-cost Remote Monitoring Camera System for Granite Boulder Creek. ($250)
University of Oregon ASPRS Summer Research Grant

2013   Applications of Structure-from-Motion Photogrammetry to Fluvial Geomorphology. ($500)
University of Oregon Graduate School Research Award

2007   Landscape change detection using panoramic repeat photography, Glacier National Park, Montana. ($1,000)
The Explorers Club, Exploration Fund

2005   Beach Erosion and Storm Protection: Is Beach Nourishment the Answer for the Outer Banks of North Carolina. ($1,500)
University of Kansas Honors Program, Undergraduate Research Award

Submitted/In Review
Coastal Monitoring with UAS Bathymetric Lidar. U.S. Army Corps of Engineers – EDRC BAA. Submitted Aug. 2023.

In Preparation
None

Not Funded
2019   Longitudinal Connectivity of Riverine Habitats. Co-PI – NSF GSS and GLD ($678,256)

AWARDS

2019   College of Social and Behavioral Science, Tenure Track Faculty Award for Scholarship
University of Northern Iowa

2012   Outstanding Student Paper Award, Hydrology Section
American Geophysical Union, Fall Meeting

2007   Outstanding Graduate Student Service Award
Texas State University-San Marcos, Department of Geography

TEACHING

UG – Undergraduate, G – Graduate

University of Northern Iowa
Physical Geography + Lab – UG
Rivers – UG & G
Environmental Restoration – UG (Honors College Seminar)
Digital Cartographic Design – UG & G
GIS Applications: Digital Terrain Analysis – UG & G
Environmental Data Analysis (Python Programming) – UG & G
Unmanned Aerial Systems Certification – UG & G
Drones for Mapping and Communication – UG & G
Advanced UAS Mapping – UG & G
History of Geographic Thought – G
Research Deign – G

Dartmouth College
Python Programming for Geography and Earth Science – UG & G
Environmental Applications of GIS – UG & G

University of Oregon
Remote Sensing I (Instructor of record) – UG & G
Remote Sensing I (Lab) – UG & G
Remote Sensing II (Lab) – UG & G
Python Programming for GIS (Lab) – UG & G

Texas State University-San Marcos
Introduction to Physical Geography (Instructor of record) – UG
Introduction to Physical Geography (Lab) – UG
Physical Geography Field Methods (Lab) – UG & G

University of Kansas
Visualizing Spatial Data (Lab) – Visual Basic programming for GIS – UG & G

ADVISING

Master's Thesis Committees Chaired
2021   Ryan Lange (MA, 2021, UNI)
2021   Paula Carvalho De Castro (MA, 2021, UNI)
2017   Aaron Padilla (MA, 2018, UNI)

Undergraduate and Master's Thesis Committee Membership
2020   Katelyn Miner (MA, University of Northern Iowa)
2020   Nikolay Golosov (MA, University of Northern Iowa)
2019   Md. Atiqur Rahman (MA, University of Northern Iowa)
2019   Taylor Garton (MA, University of Northern Iowa)
2019   Daniel Murphy (MA, University of Northern Iowa)
2017   Bryn E. Morgan (Senior Honors Thesis, Dartmouth)

2017   Samuel J. Merrens (Senior Thesis, Dartmouth)
2016   Bradley J. Garczynski (Senior Thesis, Dartmouth)

Undergraduate Research Experiences Supervised
2020   Noah Kremer (UNI): Applications of Machine Learning in GIS.
2018   Blair Mirka (UNI): Spatial modeling of invasive Lion fish habitat.
2017   Jacob Sundholm (UNI): Scratch-built hexacopter for low-altitude remote sensing.

PRESENTATIONS

Invited Presentations

2022   Drones for River Monitoring
       Iowa State University Natural Resources Colloquium. Ames, Iowa. April 8, 2022.

2022   Plenary: Drones for River Monitoring: a 10-year perspective.
       COST-Harmonious, UAS for Environmental Monitoring General Assembly. Debrecen,
       Hungary. March 30, 2022.

2021   High-resolution change detection in fluvial environments.
       IAG - International Geomorphology Week (Online). March 4, 2021.

2020   Drones for River Monitoring
       University of Illinois Geography Colloquium (Online). October 20, 2020.

2018   Drones for River Assessment and Restoration Monitoring
       130th Annual Meeting, Iowa Academy of Sciences. Storm Lake, IA. April 20, 2018.

2018   Drones for River Assessment and Restoration Monitoring
       American Fisheries Society North Central Division, Rivers and Stream Technical
       Committee Annual Spring Meeting. Milan, IL. March 28, 2018

2017   Bathymetric Structure from Motion: Extracting stream bathymetry from multi-view stereo
       photogrammetry.
       20th annual conference of the Centre Interuniversitaire de Recherche sur le Saumon
       Atlantique (CIRSA). Université Laval, Quebec City, June 27, 2017

2017   Thinking outside the toolbox: New tools and hobby electronics for physical geography.
       University of Northern Iowa, Department of Geography Colloquium. Cedar Falls, IA,
       March 24, 2017.

2016   Structure-from-Motion for Habitat Restoration Monitoring.
       Washington Department of Fish and Wildlife Habitat Program. Olympia, WA, March
       25, 2016.

2015   Instantaneous Structure-from-Motion for Monitoring Dynamic Geomorphology
       Durham University Geography. Durham, UK, September 18, 2015

2015   Remote Sensing of Rivers: Crossover between Geomorphology and Lotic Ecology
        Dartmouth College, Ecology and Evolutionary Biology. Hanover, NH, January 13,
        2015

2014   Low-cost 3D Data Collection with Structure-from-Motion Photogrammetry
        Dartmouth College, Earth Science Geolunch. Hanover, NH, October 14, 2014.

2012   Structure-from-Motion Mapping for Geomorphology.
        Oregon State University Geomorphology Brown Bag. April 17, 2012.

2011   The Classroom as a Window on the World: Using Google Earth as a Lecture Tool
        University of Oregon ASPRS Student Chapter, Winter Lecture. February 14, 2012.

Conference Presentations

2023   **Dietrich, J.T**, A. Rackley-Reese, A. Gibbons, L.A. Magruder, and C.E. Parrish. ICESat-2
        Data Acquisition Algorithm Enhancements to Improve Worldwide Bathymetric Coverage
        (Poster) American Geophysical Union, Fall Meeting. December, 2023. San Francisco.

2023   **Dietrich, J.T**, L.A. Magruder. M Holwill. Measuring Coastal Waves with ICESat-2 (Poster)
        American Geophysical Union, Fall Meeting. December, 2023. San Francisco.

2022   **Dietrich, J.T.,** J. DeGroote. Multi-Function Mobile Temperature Sensors for Urban Heat
        Island Modeling (Poster - H52O-0650) American Geophysical Union, Fall Meeting.
        December, 2022. Chicago.

2021   **Dietrich, J.T.,** M.A. Fonstad. Small Area Stream Mapping with Directly Georeferenced
        Pole Aerial Photography (Poster - EP25B-1306) American Geophysical Union, Fall
        Meeting. December 14, 2021. New Orleans.

2021   **Dietrich, J.T.,** M.A. Fonstad. High-Precision 3D Fluvial Surveying Without Ground Control
        using Directly Georeferenced Pole Aerial Photography (Oral). American Association of
        Geographers Annual Meeting. April 8, 2020. Online.

2020   **Dietrich, J.T.,** M.A. Fonstad, A. Zettler-Mann. Open-source surface watercraft for
        Riverscape mapping (Poster - EGU2020-4291). European Geoscience Union General
        Assembly. May 4, 2020. Virtual Meeting (Vienna).

2019   **Dietrich, J.T.,** M.A. Fonstad, A. Zettler-Mann. Riverscape mapping with an open-source
        autonomous surface watercraft (Poster - H41L-1869). American Geophysical Union, Fall
        Meeting. December 12, 2019. San Francisco.

2019   **Dietrich, J.T.,** A.S. Woodget. Bathymetric Change Detection from the Air (Oral). American
        Association of Geographers Annual Meeting. April 6, 2019. Washington, D.C.

2018   **Dietrich, J.T.,** A.S. Woodget. Bathymetric SfM Change Detection on the Teme River, UK
        (Oral - G53A-04). American Geophysical Union, Fall Meeting. December 14, 2018.
        Washington, D.C.

2018   **Dietrich, J.T.,** A.S. Woodget. Bathymetric Structure-from-Motion: Change Detection and Technical Improvements (Poster). American Association of Geographers Annual Meeting April 12, 2017. New Orleans.

2017   **Dietrich, J.T.** Bathymetric Structure from Motion: Extracting stream bathymetry from multi-view stereo photogrammetry (Oral). American Association of Geographers Annual Meeting April 4, 2017. Boston.

2016   **Dietrich, J.T.** Bathymetric Structure from Motion: Extracting stream bathymetry from multi-view stereo photogrammetry (Oral - EP24C-04). American Geophysical Union, Fall Meeting. December 13, 2016. San Francisco.

2016   **Dietrich, J.T.,** J.B. Atha. Detecting Fluvial Wood in Forested Watersheds Using LiDAR Data (Oral). Association of American Geographers Annual Meeting. March 30, 2016. San Francisco.

2016   **Dietrich, J.T.,** P. McDowell, J. Duffin Ground and UAV-based Structure-from-Motion photogrammetry for river assessment and restoration monitoring (Oral – Presented by P. McDowell). River Restoration Northwest (RRNW) - 15th Annual River Restoration Symposium. February 2, 2016. Stevenson, Washington.

2015   **Dietrich, J.T.,** J. Duffin. High-Resolution 3D Bathymetric Mapping for Small Streams Using Low-Altitude Aerial Photography (Oral - EP54B-01). American Geophysical Union, Fall Meeting. December 18, 2015. San Francisco.

2015   **Dietrich, J.T.,** J. Duffin. High-resolution 3D topographic and bathymetric mapping for small streams using low-altitude aerial photography (Poster). Association of American Geographers Annual Meeting. April 23, 2015. Chicago.

2015   **Dietrich, J.T.,** J. Duffin. Extracting high-resolution shallow river bathymetry with Structure-from-Motion (Oral). 2nd Multibeam EchoSounder (MBES) in Rivers Workshop. March 25, 2015. Flagstaff, AZ.

2014   **Dietrich, J.T.** Mapping the Riverscape of the Middle Fork John Day River with Structure-from-Motion (Oral - H51S-06). American Geophysical Union, Fall Meeting. December 19, 2014. San Francisco.

2014   **Dietrich, J.T.** Sub-Meter Remote Sensing for Fluvial Monitoring with Off-the-shelf Components (Poster).   Association of American Geographers Annual Meeting. April 8, 2014. Tampa, FL. & 5th Annual Bretz Club Conference. April 11, 2014. Portland, OR.

2013   **Dietrich, J.T.** 4D Monitoring of a River Restoration Project with Structure-from-Motion (Poster - EP43C-0865). American Geophysical Union, Fall Meeting. December 12, 2013. San Francisco.

2013   **Dietrich, J.T.,** P. Lind. The Use of Structure-for-Motion for Repeat Topographic Surveys of Active Boulder Bars on a Hydrologically Dynamic Tropical River (Poster, Presented by P Lind). International Conference on Geomorphology. August 27-31, 2013. Paris.

2013   **Dietrich, J.T.** Three-Dimensional Field Mapping of the Granite Boulder Creek Restoration Project, Oregon - Update (Poster). 4th Annual Bretz Club Conference. April 26, 2013. Charleston, OR.

2012   **Dietrich, J.T.** Mapping Land and Water Surface Topography with Instantaneous Structure-from-Motion (Oral - EP43C-0865). American Geophysical Union, Fall Meeting. December 5, 2012. San Francisco.

2012   **Dietrich, J.T.** Three-Dimensional Field Mapping of the Granite Boulder Creek Restoration Project, Oregon (Poster). Binghamton Geomorphology Symposium. September 21-23, 2012. Jackson, WY.

2012   **Dietrich, J.T.** Low-Cost River Restoration Monitoring with Structure-from-Motion (Oral). Middle Fork John Day River Intensely Monitored Watershed Fall Meeting. September 19, 2012. John Day, OR.

2012   **Dietrich, J.T.** Measurement of Fluvial Wood Volumes Using Structure-from-Motion 3D Models (Oral). Association of American Geographers Annual Meeting. February 27, 2012. New York.

2011   **Dietrich, J.T.,** M.A. Fonstad, B.C. Courville, J.L. Jensen. High Resolution, Automated, Low-Cost Topographic Mapping with Microsoft Photosynth (Oral). Association of American Geographers Annual Meeting. April 12, 2011. Seattle.

2010   **Dietrich, J.T.** Visualizing Small-Scale Geomorphic Features Using 3D Models Derived from Microsoft Photosynth (Poster). Binghamton Geomorphology Symposium. October 16-17, 2010. Columbia, SC.

2008   **Dietrich, J.T.** A New Technique Combining Remote Sensing and GIS Tools to Analyze Repeat Photography from Glacier National Park, Montana (Poster). Association of American Geographers Annual Meeting. April 17, 2008, Boston.

2008   **Dietrich, J.T.** Quantitative Assessment of Landscape Change Using Georeferenced Repeat Photography in Glacier National Park, Montana, USA (Oral). Texas Geography Student Research Symposium. April 4, 2008. San Marcos, TX.

2007   **Dietrich, J.T.** Change Detection of Complex Patterns at Alpine Treeline in Glacier National Park: A Comparison of Methods Using Repeat Photography (Poster). Binghamton Geomorphology Symposium. October 6-7, 2007. Durham, NC.

2007   **Dietrich, J.T.,** D.R. Butler. 360° Panoramic Repeat Photography System for Landscape Change Detection in Glacier National Park, Montana (Poster). Association of American Geographers Annual Meeting. April 19, 2007. San Francisco.

2006   **Dietrich, J.T.** Beach Erosion and Storm Protection: Is Beach Nourishment the Answer for the Outer Banks of North Carolina (Poster). Association of American Geographers Annual Meeting. March 10, 2006. Chicago.

Co-authored Presentations

2023   Parrish, C.E., L.A. Magruder, **J.T Dietrich**, J. Markel, J. Jong. ICESat-2 Bathymetry: New Global Data Product for Coastal and Nearshore Science (Poster) American Geophysical Union, Fall Meeting. December, 2023. San Francisco.

2021   M.A. Fonstad, **J.T. Dietrich**, A. Zettler-Man. Riverseer: An open-source approach to high-resolution mapping and monitoring of river environments. (Oral - EP23A-04, presented by MA Fonstad) American Geophysical Union, Fall Meeting. December 14, 2021.

2021   M.A. Fonstad, **J.T. Dietrich**, A. Zettler-Man, D. Webster. Riverseer: An open-source approach to high-resolution mapping and monitoring of river environments. American Association of Geographers Annual Meeting. April 8, 2021. Online.

2020   A. Zettler-Mann, **J.T Dietrich**, M.A. Fonstad. Community Driven Riverscape Mapping (Poster, presented by A. Zettler-Mann). River Restoration Northwest, February 5, 2020. Stevenson, WA.

2019   Magilligan, F.J., K. Nislow, **J.T. Dietrich.** Transient versus sustained biophysical responses to dam removal (Oral, presented by FJ Magilligan). American Association of Geographers Annual Meeting. April 6, 2019. Washington, D.C.

2019   A.S. Woodget, **J.T. Dietrich**, R.T. Wilson. Bathymetric UAS-SfM change detection: The implications of refraction correction, water surface elevations and spatially variable error. (Poster - GM2.2-2297, presented by AS Woodget) European Geophysical Union General Assembly, April 9, 2019. Vienna.

2019   Carbonneau, P.E., T.P. Breckon, **J.T. Dietrich**, S.J. Dugdale, M.A. Fonstad, H. Miyamoto, A.S. Woodget. Generalized classification of hyperspatial resolution airborne imagery of fluvial scenes with deep convolutional neural networks. (Poster - ESSI2.10-1865, pres by PE Carbonneau) European Geophysical Union General Assembly, April 9, 2019. Vienna.

2018   Devlin-McLoughlin, V.E., **J.T. Dietrich.** Creation of Pixel and Point Based Suspended Sediment Hyperspectral Spectral Libraries (Poster - EP31C-2363, presented by VE Devlin-McLoughlin). American Geophysical Union, Fall Meeting. December 12, 2018. Washington, D.C.

2018   Woodget, A.S., **J.T. Dietrich**, and C.L. Fyffe. Quantifying Submerged Fluvial Topographic Change and Grain Size Change at Hyperspatial Resolutions Using UAS and SFM. 6th Small Unmanned Aerial Systems for Environmental Research (UAS4Enviro) (Poster, presented by AS Woodget). Split, Croatia. June 27-29, 2018

2018   Heindel, R.C., J.W. Chipman, L.E. Culler, **J.T. Dietrich**, F.C. Governali, A.M. Spickard, R.A. Virginia. New Perspectives on Aeolian Landscape Change in the Kangerlussuaq Region, West Greenland (Oral, presented by RC Heindel). 48th International Arctic Workshop 2018. April 5-6, 2018. Boulder, CO

2017   Fonstad, M.A., J.H. Major, J.E. O'Connor, **J.T. Dietrich.** Reconstructing the 1935 Columbia River Gorge: A Topographic and Orthophoto Experiment (Poster - EP34B-05, presented by MA Fonstad). American Geophysical Union, Fall Meeting. December 13, 2017. New Orleans.

2016   Carbonneau, P.E., **J.T. Dietrich.** Cost-Effective Non-Metric Photogrammetry from Consumer-Grade sUAS (Oral, presented by PE Carbonneau). Small Unmanned Aerial Systems for Environmental Research Conference. June 28, 2016. University of Worcester, Worcester, UK.

2015   Magilligan, F.J., K. Nislow, H. Doyle, B. Kynard, **J.T. Dietrich.** Long-term Monitoring of Ecological and Geomorphic Adjustments to Dam Removal in an Upland Mesic Catchment (Oral - EP32A-06, presented by FJ Magilligan). American Geophysical Union, Fall Meeting. December 16, 2015. San Francisco.

2014   Fonstad, M.A., **J.T. Dietrich.** Structure from Motion vs. the Kinect: Comparisons of River Field Measurements at the 10^{-2} to 10^2 meter Scales (Poster - H43H-1055, presented by MA Fonstad). American Geophysical Union, Fall Meeting. December 18, 2014. San Francisco.

2014   H.R. Dietterich, K.V. Cashman, A. Rust, E. Lev, and **J.T. Dietrich.** Lava Flow Interactions with Topographic Obstacles: Morphologic Analysis, Analogue Modeling, and Molten Basalt Experiments (Poster - V13C-4794, presented by HR Dietterich). American Geophysical Union, Fall Meeting. December 15, 2014. San Francisco.

2013   Beeson, H.W., **J.T. Dietrich.** Mapping and Predicting Landscape Morphology and Erosion Rates in Badlands: Painted Hills, Oregon, USA (Poster, presented by HW Beeson). Association of American Geographers Annual Meeting. April 12, 2013. Los Angeles.

2012   Fonstad, M.A., **J.T. Dietrich.** Utility of Close-Range Remote Sensing Techniques for Mapping Topography and Bathymetry in Small Streams (Poster - H31E-1171, presented by MA Fonstad). American Geophysical Union Fall Meeting. December 5, 2012. San Francisco.

2012   Fonstad, M.A., **J.T. Dietrich**. Geomorphology, Photography and Three-Dimensional Mapping using Structure-from-Motion (Poster, presented by MA Fonstad). Binghamton Geomorphology Symposium. September 21-23, 2012. Jackson, WY.

2011   Fonstad, M.A., **J.T. Dietrich**, B.C. Courville, J.L. Jensen, P.E. Carbonneau. Topographic Structure-from-Motion (Oral - H53O-05, presented by MA Fonstad). American Geophysical Union Fall Meeting. December 9, 2011, San Francisco.

2011   Fonstad, M.A., **J.T. Dietrich**, B.C. Courville, J.L. Jensen, P.E. Carbonneau. High Resolution, Low-Cost 3D Riverscape Mapping Using Field Photography (Oral, presented by MA Fonstad). American Fisheries Society 141st Annual Meeting. September 7, 2011, Seattle.

2010   Fonstad, M.A., **J.T. Dietrich**, B.C. Courville, J.L. Jensen. Lighter-Than-Air Blimps as Testbeds for River Remote Sensing Techniques (Poster - H43G-1336, presented by MA Fonstad). American Geophysical Union Fall Meeting. December 16, 2010. San Francisco.

SERVICE

Professional Service

Professional Organization Service
AAG-Geomorphology Specialty Group Awards Committee (2021 – Present)

Proposal Review
2023   Illinois-Indiana Sea Grant
2019   NSF Earth Sciences Division, Geoinformatics
2016   NSF Earth Sciences Division, Tectonics
2015   European Facility for Airborne Research (EUFAR)
2014   EAR Postdoctoral Fellowship Proposal Reviewer, National Science Foundation
2013   Book Proposal Reviewer, Wiley-Blackwell

Manuscript Review
2021   Journal of Environmental Management
       Earth Surface Processes and Landforms
       Annals of the American Association of Geographers
2020   International Journal of Remote Sensing
       Earth Surface Processes and Landforms
       Geomorphology
2019   International Journal of Remote Sensing
       River Research and Applications
       Ecological Informatics
       WIRES Water
2018   Earth Surface Processes and Landforms
       Remote Sensing
       Annals of the American Association of Geographers
       Remote Sensing of Environment
       Water Resources Research
2017   Geomorphology
       International Journal of Remote Sensing
       Annals of the American Association of Geographers
       Remote Sensing
       Progress in Physical Geography
2016   Earth Surface Processes and Landforms
       Journal of Geophysical Research (JGR)-Biosciences
       ISPRS International Journal of Geo-Information
2015   Progress in Physical Geography
       Earth Surface Processes and Landforms
       Geomorphology
       The Photogrammetric Record
2014   The Photogrammetric Record
       Earth Surface Processes and Landforms
2013   Applied Geography Conference

Conference Sessions Organized

2019	River Observations, Monitoring, and Management (co-organizer)
		Association of American Geographers Annual Meeting. April 2019. Washington, D.C.

2018	River Observations, Monitoring, and Management (co-organizer)
		Association of American Geographers Annual Meeting. April 2018. New Orleans.

2017	Remote Sensing of Rivers: Observations Across Scales (Lead organizer). Oral and Poster
			sessions, EP034-I & EP034-II.
		American Geophysical Union Fall Meeting. December 2017. New Orleans.

2017	a) Applications of high-resolution spatial data in geomorphology and
			biogeography, 4 sessions (organizer)
		b) Water Body Observations, Monitoring, and Management (co-organizer)
		Association of American Geographers Annual Meeting. April 2017. Boston.

2016	a) Water Body Observations, Monitoring, and Management (co-organizer)
		b) Applications of high-resolution spatial data in geomorphology and
			biogeography (co-organizer)
		Association of American Geographers Annual Meeting. March 2016. San Francisco.

2015	Remote Sensing of Rivers: Advancing Fluvial Science (H092, co-organizer). American
		Geophysical Union Fall Meeting. December 2015. San Francisco.

2012	Morphological Measurement using Close Range Photogrammetry and Laser Scanning, in
		Cooperation with ISPRS Working Group V/6 (organizer). Association of American
		Geographers Annual Meeting. February 2012. New York.

Other Professional Service
		Middle Fork John Day Intensely Monitored Watershed Working Group (2012 – 2014)

Department/University Service

University of Northern Iowa
		Geography Graduate Program Coordinator (2018 – Present)
		University Unmanned Aerial Systems Committee, **Chair** (2018 – Present)
		Iowa Low-altitude Remote Sensing Lab (I-LARS), **Director** (2017 – Present)
		Geography Curriculum Committee, **Chair** (2017 – Present)
		Geography Library Committee (2017 – Present)
		Geography Promotion/Recruitment/Website Committee (2017 – Present)
		College of Social and Behavioral Science Fulbright Committee (2017 – Present)
		College of Social and Behavioral Science SPARK (recruitment) (2017 – Present)
		Graduate College – Thesis/Dissertation Template Development (2017)

Dartmouth College
		Proposal Reviewer, Provost's Office Seed Funding Program (2015)

University of Oregon
> Graduate Representative, Geography Faculty Search Committee (2014)
> Graduate Representative to the Faculty, Department of Geography (2013 – 2014)
> Graduate Representative, Geography Colloquium Committee (2012 – 2014)

University of Kansas
> Undergraduate Representative, Dept. of Geography Advisory Board (2005 – 2006)
> Undergraduate Representative to the Faculty, Dept. of Geography (2004 – 2006)
> Undergraduate Representative, Geography Technology Committee (2004 – 2006)

Conference, Panels, and Workshops

2019   Career Paths in Physical Geography (Panelist)
> Association of American Geographers Early Career Webinar Series, October 15

2018   Thesis and Dissertation Formatting: Streamlining Your Writing Process.
(Organizer/Presenter)
> University of Northern Iowa - Graduate College Workshop, October 3

2017   Thesis and Dissertation Formatting and Reference Managers: Streamlining Your Writing
Process. (Organizer/Presenter)
> University of Northern Iowa - Graduate College Workshop, December 4

2017   EnviroDrones (Organizer)
> Dartmouth College, June 3-4, Hanover, NH.

2015   Structure-from-Motion for the Geosciences (Co-organizer)
> Durham University, September 17-18, Durham, UK.

2014   Developing your CV for Academic Jobs (Organizer)
> Geography Graduate Student Workshop, April 15, 2014, Eugene, OR.

2013   Preparing a Conference Poster Presentation (Organizer)
> Geography Graduate Student Workshop, March 8, 2013, Eugene, OR.

2012   Remote Sensing as a Research Tool in Geography (Organizer)
> University of Oregon Simulating Human-Environment Dynamics Laboratory Workshop,
> November 2, 2012. Eugene, OR.

2012   Optimizing your Curriculum Vitae (Panelist)
> Association of American Geographers Annual Meeting, February 27, 2012. New York.

2012   LiDAR Processing with Fusion (Organizer)
> University of Oregon River Research Group, January 18 & 25, 2011. Eugene, OR.

2011   Introduction to Structure-from-Motion Mapping Techniques (Organizer)
> University of Oregon River Research Group, October 21 & 28, 2011. Eugene, OR

Volunteer/Outreach Work

2020   Cedar Valley Makers, a community workshop and STEM outreach 501(c)(3) organization
- Vice-President (May 2018 – Jan 2019)
- Treasurer (Jan 2019 – Sept 2020)
- President (Sept 2020 – Oct 2022)

2017   Cedar Valley FIRST Lego League Jr. Advisor – 2017 Hydrodynamics Challenge

2016   Vermont Institute of Natural Science (Nature and Raptor Center) – Aerial imagery and videos for education and promotion

2015   Washington State, Department of Fish and Wildlife – Stream culvert monitoring with Structure-from-Motion

2014   City of Lebanon, New Hampshire – LiDAR acquisition requirements

2014   Take Our Daughters and Sons to Work Day presentation "Innovations in Mapping and Spatial Technology", University of Oregon (Apr. 2014)

2013   Scholars Recognition Day Geography Breakout
       Office of Admissions, University of Oregon (Jan. 2013)

2012   Geography Awareness Week Committee, University of Oregon (2012 – 2014)

Student Organization Leadership

University of Oregon
    President, ASPRS Student Chapter (2013 – 2014)
    Vice President, ASPRS Student Chapter (2012 – 2013)
    Coordinator, River Research Group (2012 – 2014)

Texas State University-San Marcos
    Masters Representative, Geography Graduate Student Forum (2007 – 2008)
    President, Society for Geographic Information Science (2007 – 2008)
    Vice President, Society for Geographic Information Science (2006 – 2007)

University of Kansas
    President; Geography Club Student Organization (2003 – 2006)

PROFESSIONAL ORGANIZATION MEMBERSHIP

Association of American Geographers (AAG)
    Specialty Groups: Geomorphology, Water Resources, GIScience, Remote Sensing
American Geophysical Union (AGU)
European Geosciences Union (EGU)
North American Cartographic Information Society (NACIS)

SKILLS

ArcGIS Pro
QGIS
Remote Sensing:
   - ENVI
   - ERDAS Imagine
   - FUSION Lidar
   - Agisoft Metashape
   - Pix4D
   - CloudCompare
RTK GPS/Total Station Surveying
Close-range Photogrammetry
Terrestrial Laser Scanning
Field Research Methods

Computer Programming:
   - Python
   - MATLAB
   - Arduino
Small UAS Piloting
   - Multi-rotor and fixed-wing
3D CAD – Fusion 360
3D Printing
Welding
Basic machining (Lathe and Mill)
3-axis CNC manufacturing
CO_2 Laser cutting and engraving
Basic electrical engineering
Printed circuit board design
Open-source electronics