

Ning Wang

Professional Title and Affiliation

ORISE Research Fellow,
National Center for Science and
Engineering Statistics (NCSES)

Institutional Address

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Professional History

- 2022-present **Postdoc Fellowship, ORISE Research Fellow**
- National Center for Science and Statistics, Alexandria, VA.
- 2022-2025 **Principal Research Consultant, Board Member**
- HomeWorld Educational Resources, Frisco, TX.
- 2023-2025 **Adjunct Professor (Uncompensated)**
- The University of Texas at Dallas, Richardson, TX.

Education

- Ph.D. 2017-2022 **Sustainable Earth Systems Science**
- The University of Texas at Dallas, Richardson, TX.
- M.A. 2021-2022 **Science Education**
- The University of Texas at Dallas, Richardson, TX.
- M.S. 2013-2016 **Geosciences**
- The University of Texas at Dallas, Richardson, TX.
- M.S. 2008-2010 **Geophysics**
- Jilin University, Changchun, Jilin, China.
- B.S. 2004-2008 **Earth Exploration and Information Technology (Geophysics)**
- Jilin University, Changchun, Jilin, China.

Research Experience

- 2022 – present Design and Development of Next Generation Data Visualization Tool for NCSES.
Research: *Advancing next-generation, human-centered, AI-powered data communication tools to support NCSES surveys, data collections, science and engineering indicators, and restricted datasets across 16 federal agencies through the Standard Application Process (SAP).*
- 2023 – present Design and Development of Science Educational Technology and Pre-Service
Teacher Preparation Tools for HomeWorld Educational Resources and
UTeach Dallas
Research: *Designing and developing system-based science education technologies and adaptive learning environments informed by Self-Determination Theory and aligned with the NGSS (currently under review for*

IES grants). Developing a virtual experiential environment to support UTeach Dallas pre-service teachers (Funded by NSF NAIRR).

- 2019 – Present **Developing a AI-Powered Learning Assessment Method to Better Understand Video Learners' Affection and Prior Knowledge on the Topic**
Developing a novel approach to understanding video-based learning experiences and the AI-powered auto-detection of learners' prior knowledge by integrating multi-level data sources: (1) quantitative survey data reflecting macro-level abstract learning and overall affective states, (2) qualitative test-based data capturing meso-level concept-focused learning and affective responses, and (3) computer vision-based analyses of attention and emotion providing micro-level continuous affective and facial feature data. This research is conducted in collaboration with Prof. Carlos Busso of the UTD Multimodal Signal Processing Lab (currently at Carnegie Mellon University). To date, we have collected video-viewing data from 172 participants, yielding approximately 30,000 meaningful clips across controlled and real-world settings, accompanied by detailed surveys, facial video recordings, and learning assessments. One paper was published in 2025, with two additional papers currently in preparation.
- 2017 – Present **Geoscience Educational Multimedia and Technology Design**
This study seeks to enhance the role of scientists and science educators' understanding of how different video design strategies influence student engagement and learning outcomes, while also contributing to the development of new science education tools. Specifically, the research examines the relationship between cognitive and emotional learning experiences and video design strategies across diverse audiences and learning environments. The work can be organized into four projects:
- Place-Based Video Design Framework for Science Education – An in-subject experimental study assessing 71 students across six classes at three universities over three years (One paper is published).*
- Timely Trending Events and Informal Education on YouTube – A quasi-experimental design evaluating differences in public engagement and user features between Geonews and general geoscience videos (One paper is published).*
- System-Based Learning Tool: Google Earth Geoscience Video Library – Development of an immersive, video-based environment for Earth systems science communication (One paper is published).*
- Collaborative Video Creation for Science Classrooms –A new strategy that transforms scientists' domain knowledge and real-world research insights into effective educational videos through collaboration among education professors, science students, and K–12 teachers. This project, conducted with Prof. Mary Urquhart and five middle school science teachers, also incorporates survey feedback from 42 K–12 science educators, as well as working with University College London and Louisiana State University, Dr. Peter Clift (one paper is submitted in Sept, 2025, and another paper is in preparation).*

Publication

Science Education Related Peer-reviewed Articles

- Wang, N.** & Leem S.G., (2025, September, Accepted) Modernizing Data Quality: Evolving Dimensions for Unstructured Text Data in Big Data, AI, and Ethical Contexts. "Data Quality Matters - Best Practices for Integrity and Assurance", ISBN 978-1-83634-986-0
- Salman, A. N., **Wang, N.**, Martinez-Lucas, L. M., Vidal, A., & Busso, C. (2024, November). MSP-GEO Corpus: A Multimodal Database for Understanding Video-Learning Experience. In Proceedings of the 26th International Conference on Multimodal Interaction (pp. 488-497). <https://doi.org/10.1145/3678957.3685737>
- Wang, N.**, Stern, R.J. and Waite L. (2023). Workflow for Designing Place-Based Geoscience Educational Videos for Geoscience Majors: The Permian Basin Example. *Journal of Geoscience Education*. <https://doi.org/10.1080/10899995.2022.2093543>
- Wang, N.**, Clowdus, Z., Sealander, A., & Stern, R. (2022). Geonews: timely geoscience educational YouTube videos about recent geologic events. *Geoscience Communication (EGU journal)*, 5(2), 125-142. <https://doi.org/10.5194/gc-5-125-2022>
- Wang, N.**, Stern, R. J., Urquhart, M. L., & Seals, K. M. (2022). Google Earth Geoscience Video Library (GEGVL): Organizing Geoscience Videos in a Google Earth Environment to Support Place-Based Geoscience Education. *Geosciences (MDPI Journal)*. <https://doi.org/10.3390/geosciences12060250>
- Stern, R. J., Ryan, J., **Wang, N.**, Ricchezza, V. J., & Willis, S. (2020). Geoscience Videos and Animations: How to Make Them with Your Students, and How to Use Them in the Classroom. *GSA Today*, 30. <https://doi.org/10.1130/GSATG451GW.1>.

Other Publication

- Wang, N.** (2022). *Effective Video Solutions for Earth Science Education (Doctoral dissertation)*. The University of Texas at Dallas.
- Wang, N.** (2016). *Magnetic fabric investigation of Permian and Triassic red beds, west Texas and western Wyoming: Evaluating the relative roles of pigment and specular hematite in red beds as magnetic fabric contributors*. The University of Texas at Dallas.
- Wang, N.**, Lu, X.H., Miao, C.S., Yan, L. (2010). Ideal Anisotropic Seismic Wave Field Analysis and Numerical Simulation in Three-Dimensional Orientation: *Global Geology (China)*, V.29, P.130-138. DOI: 1004-5589 (2010) 01-0130-09.
- Wang, N.** (2010). *Tectonic characteristics and evolution in Nantun Formation of Lower Cretaceous, Ta'nan Depression*. Jilin University.

Awards and Scholarships

2025-present	Sigma Xi Full Membership
2022-present	ORISE - NSF NCSES Research Ambassadors, ORISE Postdoc Fellow
2023	Learning Analytics in STEM Ed. Research (LASER) Scholar Fellowship
2022	Dr. Kristain Soegaard Scholarship, Univ. of Texas at Dallas
2021	Schwartz Opportunity Fund Scholarship, Univ. of Texas at Dallas

2020	Oscar Wilhelm Award Scholarship, Univ. of Texas at Dallas
2019-2021	2 nd Place. AAPG YouTube Video Global Competition
2018	SAGE / GAGE Scholarship, IRIS (Incorporated Research Institutions for Seismology)
2018-2019	Gaynor Opportunity Fund Scholarship, Univ. of Texas at Dallas
2018	Pioneer Natural Resources Scholarship, Pioneer Natural Resources

Grants

2025	NSF NAIRR 2025 , HWER-UTD Teaching Clinical Training Simulator: Developing an AI-Agent-Based Virtual System for Better Teacher Preparation" (NAIRR250203) HomeWorld Ed Res. \$2,500 and supplementary AWS resources (value: \$25,000) for a preliminary research.
2025	Tool Competition 2025 , Automatic Video Learning User Analytics (Selected for Phase 2). HomeWorld Ed Res. Requested \$250,000.
2024	IES Research Grant , STEM Educational Program, Innovation and Development Type (submitted, under review till Nov, 2025), HomeWorld Ed Res. Requested, \$2,000,000.
2019-2021	Geology Society of America (GSA) Graduate Research Grant : Estimating learner expertise with eye-tracking data. Awarded \$3,600.
2020	American Association of Petroleum Geologists (AAPG) Foundation Grant : Engaging YouTube users via 'Geonews videos' (Geoscience videos on topic of timely geohazard events). Awarded \$150,000 to UTD GSS and UTD Science/Math Education.
2019	AGU Celebrate 100 Awarded Grants : Creating video series about the geology of Texas. Awarded \$3,000 to UTD GSS.

Professional Appointments

2019 – 2021	Contracted Reviewer , NAGT (National Association of Geoscience Teachers), Remote: Reviewed forty-one educational activities on Science Education Resource Center (SERC) website for NAGT to ensure their educational usefulness and scientific accuracy.
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Voluntary Professional Service

2025	Reviewer , AECT (Association for Educational Communications and Technology)
2023-2025	Reviewer , AERA (American Educational Research Association), Serve as a reviewer for four sections of AERA 2024, 2025, and 2026, reviewed 120 papers and 10 workshop proposals.
2022-2023	Invited Working Group Member , AGU Educational Section, Early-Career Working Group
2023	Reviewer , Earth Science, Systems and Society,
2021-2023	Reviewer , International Journal of Educational Technology in Higher Education: Reviewed Four papers.
2022-2023	Reviewer , EGUSphere Geoscience Communication: Reviewed one paper.
2022	Reviewer , AGU Books: Earth System Geophysics: Reviewed two chapters.
2021	Reviewer , UXPA 2022 International Conference (User Experience Professionals Association): Reviewed three proposals for UXPA 2022 International Conference.
2021	Reviewer , Journal of Map: Reviewed one paper.

2018-2025 **Reviewer**, Journal of Geoscience Education: Reviewed five papers.

Science Outreach Service

2021-2022 **Lead Presenter**, NSF STEM FOR ALL 2021 and 2022.

<https://multiplex.videohall.com/presentations/2590>

<https://multiplex.videohall.com/presentations/1929>

2016 – Present **Website manager and YouTube channel manager**, UTD Geoscience Studio:
Created, updated and managed the website and YouTube channel for UTD
Geoscience Studio, providing free geoscience educational videos for all levels of
students and the public.

2018 **Volunteer**, Dallas Perot Museum: Helped organize a geoscience tour for 18
summer teen program K-12 students.

2018 **Science Outreach Filmmaker**, Business Development Department at UT Dallas:
Worked with two mathematics professors to create two films for Pi Day outreach
event. Worked with four biochemistry professors and students to produce one film to
introduce biochemistry to the general public. Made or helped creation over 100
geosciences educational or outreaching videos or animations.

Conferences

Invited Talks

2025 **Wang N.** Making the Invisible Visible: Bridging Science, Learning, and Humanity in
the AI Era. Frontiers of Research. Sigma Xi Society.

2025 **Wang N.** Unlocking Gov Data Insights: AI-Powered Visual Data Storytelling.
Department of Energy, ORISE institute, “IGNITE!OFF” Competition Semi-Finals 2025.

2023 **Wang N.** and Julian T.. Representing NSF NCSES. Design Strategies for Website-
Embedded Data Visualization Tools. The annual Federal Computer Assisted Survey
Information Collection (FedCASIC) Workshops 2023. Session 1C. Data Visualization
and Dissemination. [link](#)

2019 Stern, R. J., **Wang, N.**, Walker, E. N., Creecy, K., Clowdus, Z., Sullivan, G., Willis,
S., & Crowley, C. W. (2019, December). Community Engagement and AGU
Celebrates 100 Years: The Role of Regional Videos Produced By Scientists And
Students. In *AGU Fall Meeting Abstracts* (Vol. 2019, pp. U33B-09).

2019 **Wang, N.** and Stern, R. J. (2019, Oct). From Data Visualization to Geoscience
Visual Storytelling. In *SAGE&GAGE Workshop* (#4285449955, [link](#))

Other Presentations

2022 **Wang, N.** and Stern, R. J., Google Earth GeoEd Video Library (GEGVL): An
Organized and Immersive Way of Using Videos for Geoscience Education and
Student Engagement. *GSA SC 2022*.

2021 **Wang, N.**, Urquhart, M. L., Stern, R. J., Geoscientists Team Up with Middle
School Teachers to Create and Assess A Plate Tectonics Video Series. *AGU 2021*.

- 2021 **Wang N..**, Katherine S., Somtochukwu1. N., Stern, R. J., Geospatial Organization of Geoscience Videos using Google Earth GeoEd Video Library (GEGVL). *GSA Annual Meeting 2021*. (abstract # 369938)
- 2021 **Wang N..**, and Stern, R. J., The Google-Earth GeoEd Video Library (GEGVL): a new, fun, and easy way to find good, place-based Geoscientific Videos for Teaching and Self-Education. *Earth Educators' Rendezvous 2021* [link](#)
- 2020 **Wang N..**, and Stern, R. J., The Google Earth GeoEd Video Library (GEGVL): Building a Place-based Geoscience Educational Video Library using Google Earth. *AGU 2020*. (abstract #ED046-04). 2020AGUFMED046..04W
- 2020 **Wang N..**, Urquhart, M. L., and Stern, R. J., Vivid Earth Science: Video Resources for Earth Science Teachers. STAT CAST 2020.
- 2019 **Wang N..**, Urquhart, M. L., and Stern, R. J., Why Not Make Videos and Animations for Your Classroom? *Metroplex Mini-CAST 2019*.
- 2019 **Wang N..**, and Stern, R. J., Permian Basin Educational Video Design, Assessment and Dissemination. *AAPG Southwest Section Annual Convention. Article #70388, 2019*.
- 2018 **Wang N..**, and Stern, R. J., Geoscientific Educational Video Design, Assessment and Dissemination: An example using the Permian Basin of W Texas and S.W. New Mexico. *GSA Annual Meeting. 2017*.
- 2017 **Wang N..**, and Stern, R. J., Using Videography, 3D Photorealistic Models and an Inexpensive Drone to Help Improve Geoscience Research and Education. *GSA South-Central Section Meeting. 2017*.
- 2016 L. White, B. Aguilar, T. Savage, A. McKee, M. AlFarhan, **Wang N.**, C. Aiken. Drone Photogrammetry in Oklahoma. West Texas and Saudi Arabia and Comparisons of Results and Control Methods on Outcrops. *AAPG Geosciences Technology Workshop 'New Opportunities with Drones: New Needs', FAA Rule Changes, New Technologies. 2016*.
- 2015 **Wang N.**, Bower B., and Stern R.J.. Explosive Volcanism Hazard of Earth's Tallest Volcanoes for Aviation. *GSA South- Central Section Meeting 2015*.

Certificates and Training

Federal Record Management Training Certificate 2023 - 2026

Issued 2023-2026 by National Science Foundation

Federal Data Security Training Certificate 2023 -2026

Issued 2023-2026 by National Science Foundation

Human Subject Research Certificate

Issued Oct 2023 by Collaborative Institutional Training Initiative

Remote Online Sessions for Emerging Seismologists 2021 (ROSES 2021)

Eleven-weeks training about emerging skills and technology in seismology.

Artificial Intelligence for Earth System Science Summer School (AI4ESS 2020)

One-week training about A.I. fundamentals, ESS applications, and emerging methods.

Certificate of Open Educational Resources

Issued Jun 2021 by Texas Higher Education Coordinating Board

NIH Certificate for Protecting Human Research Participants

Issued Oct 2017 by the National Institutes of Health, Credential ID 2630778

CITI Program HSP-Social and Behavioral

Issued Oct 2023 Expired Oct 2026 Credential ID 55041233

Leadership and Administration Experience

2023 – Present	Research Board Member and Principle Research Consultant , HomeWorld Educational Resources: Develop grant applications for competitive funding opportunities (e.g., NSF NAIRR, IES Research Grant, UTD Big Ideas Competitions, Google Gen AI Challenges, Tool Competitions, MIT Solve Global Challenges), design strategic fundraising initiatives (e.g., partnerships with local energy and environmental companies), supervise research projects, lead the development of innovative educational tools, and cultivate strategic collaborations.
2016 – 2025	Co-founder and Lab Manager , UTD Geoscience Studio Lab: Explore the best strategies of creating, designing, disseminating, class implementing, and assessing instructional geoscience multimedia. Provide video-based science communication training to geoscientists and students. Supporting Department (Seminar streaming, social media advertising, student training, and events media), University (e.g., media service for several departments, such as communication department and development department, created promotional videos for events, communication and outreach activities of UT Dallas), Local Community (e.g., Perot Museum), Professional Groups (e.g., The International Association for Geoscience Diversity, Dallas Paleontological Society and GSA meeting).

Membership of professional affiliations

SoLAR	(Full member of Society for Learning Analytics Research)
AECT	(Association for Educational Communications and Technology)
AERA	(American Educational Research Association)
UXPA	(User Experience Professional Association)
AGU	(American Geophysical Union)
GSA	(Geological Society of America)
IEDMS	(International Educational Data Mining Society)
NAGT	(National Association of Geoscience Teachers)
AAPG	(American Association of Petroleum Geologists)
STAT	(Science Teachers Association of Texas)
NAST	(National Science Teacher Association)
Sigma Xi	(Honored full member of Sigma Xi)
ACM	(Association for Computing Machinery)