Matt Ziegler, PhD

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Postdoctoral Researcher – UW Paul G Allen School of Computer Science and Engineering
Innovation Fellow – Nippon Foundation Ocean Nexus Center

EDUCATION

University of Washington PhD in Computer Science and Engineering. (Sep 2018–Dec 2022)
Thesis: *Communication Technologies Reshaping Environmental Institutions*
Adviced by Richard Anderson and Kurtis Heimerl; associated with the UW ICTD Lab
Graduate Fellow at the UW Center for Environmental Politics

University of Wisconsin – Madison GPA: 3.785 (Fall 2009 – Spring 2013)
BS with double major in Computer Science and Biological Aspects of Conservation

Summer Institute for Training in Biostatistics (Summer 2011)
Department of Biostatistics and Medical Informatics, University of Wisconsin

Høgskolen I Telemark – Bø, Norway (Fall 2011)
Alpine Ecology and Environmental Management program

TECHNICAL EXPERIENCE

Backend development: Python, Flask, Django, SQLAlchemy, PosgreSQL, MongoDB, PhP/Laravel, various other DB's
Frontend development: React, Angular, React Native, jQuery, D3
Data Science: Python, Jupyter, Pandas, Numpy, R, Gradio
Infrastructure / Misc: Docker, Azure, GitLab Integrations, Nginx, Apache, Git, Shell Scripting, OOP, Unit testing
Extensive experience working on AI and data-driven products
Experienced in user research, UX design, usability testing, prototyping, and qualitative methods

PUBLICATIONS

[In submission] Matt Ziegler, Sarah Lothian, Brian O'Neill, Richard Anderson, Yoshitaka Ota (2024). **AI Language Models Could Both Help and Harm Equity in Marine Policymaking: The Case Study of the BBNJ Question-Answering Bot.** Preprint: https://arxiv.org/abs/2403.01755

[In submission] Matt Ziegler, Richard Anderson. **A Cross-Sectional Study of Environmental Organizations' Communication Technology Practices**

[In submission] Brian F. O'Neill, Gerald Gurinder Singh, Matthew Jerome Schneider, Timothy Clark, Natalie Tellwright, Nicole Kaiser, Anne-Lise Boyer, John N. "Jack" Kittinger, Katy Dalton, Yoshitaka Ota, Elena Finkbeinerg, Alejandro Garcia Lozano, Elke Kellner, Matthew Ziegler, Juno Fitzpatrick. **From Watching Fish to Watching People? Surveillance and the Challenges of Electronic Monitoring for Transparency at Sea in the Blue Economy**

[In preparation] Claudia Delgado-Ramírez, Matt Ziegler, Andrés Cisneros-Montemayor, Yoshitaka Ota, Lenin Pérez-Frias. **Digital technologies and conservation in the fisheries sector: the case of the use of PescaData, Whatsapp and Facebook in small-scale fisheries in Yucatan.**

[In preparation] Matt Ziegler, Richard Anderson. **"We See Things but We're Afraid to Call:" Tensions, Paradoxes, and Tradeoffs Designing an Anti-Poaching Hotline.**

Matt Ziegler, Galen Weld, Ewin Tang, and Maureen Daum (2022). **Demo: Visualizing USSD and IVR Usage Data with Icicle Charts.** ACM SIGCAS/SIGCHI Conference on Computing and Sustainable Societies (COMPASS '22). https://doi.org/10.1145/3530190.3542934

Matt Ziegler, Michael Quinlan, Zage Strassberg-Phillips, Manasi Shah, Lauren Vreeken, Chris Jones, Karen Goodfellow, Jes Lefcourt, Richard Anderson, Kurtis Heimerl (2021). **"How's Shelby the Turtle today?" Strengths and Weaknesses of Interactive Animal-Tracking Maps for Environmental Communication.** ACM SIGCAS Conference on Computing and Sustainable Societies (COMPASS '21) https://doi.org/10.1145/3460112.3471967. **Honorable mention**

Sylvia Janicki, Matt Ziegler, Jennifer Mankoff (2021). **Navigating Illness, Finding Place: Enhancing the Experience of Place for People Living with Chronic Illness.** ACM SIGCAS Conference on Computing and Sustainable Societies (COMPASS '21) https://doi.org/10.1145/3460112.3471955

Matt Ziegler, Morgan Wack, Nancy Ingutia, Ian Muiruri, Nicholas Njogu, Kennedy Muriithi, William Njoroge, James Long, Kurtis Heimerl (2020). **Can Phones Build Relationships? A Case Study of a Kenyan Wildlife Conservancy's Community Development.** ACM SIGCAS Conference on Computing and Sustainable Societies (COMPASS '20) https://doi.org/10.1145/3378393.3402279. **Best paper award**

Matt Ziegler (2019). **Who Breathes the Smoke? Technologies for Community-Based Natural Resource Management.** Fifth Workshop on Computing within Limits (LIMITS 19) https://doi.org/10.1145/3338103.3338107

Matt Ziegler, Lokesh Garg, Shailesh Tiwari, Aditya Vaishistha, Kurtis Heimerl (2019). **Fresh Insights: User Research Towards a Market Information Service for Bihari Vegetable Farmers.** 10th ACM Information and Communication Technology for Development Conference https://doi.org/10.1145/3287098.3287115

Julia Janicki, Nitish Narula, Matt Ziegler, Benoit Guénard, Evan P. Economo. (2016). **Visualizing and interacting with large-volume biodiversity data using client-server web-mapping applications: The design and implementation of antmaps.org.** Ecological Informatics. http://dx.doi.org/10.1016/j.ecoinf.2016.02.006

Matt Ziegler. (2015). **A Day in the Life of Winslow Homer: An Interactive Tour of Primate Behavioral Ecology.** Games + Learning + Society Conference. Poster presentation.

INVITED TALKS & RESEARCH PRESENTATIONS

Ocean Nexus Webinar Series, March 2024
Designing Equitable Ocean Technologies.

Duck Family Graduate Workshop on Environmental Politics and Governance 2021: panel discussant

Western Political Science Association Conference 2021:
A Cross-sectional Study of Mobile Phones' Effects on Wildlife Conservancy's Community Engagement

Duck Family Graduate Workshop on Environmental Politics and Governance 2020:
Using Mobile Phones to Improve Community Relations at Ol Pejeta Conservancy, Kenya

2019 UW Center for Environmental Politics Graduate Retreat:
Technologies for Community Management of Natural Resources

GRANTS AND FELLOWSHIPS

Center for Environmental Forensic Science Small Grant 2021: $15,000

National Science Foundation – Graduate Student Research Fellowship 2018: $138,000

Hilldale Fellowship for Undergraduate Research 2013: $3,500

TEACHING

UW CSE 599: Teachnology for Conservation (special topic). Co-instructor (Fall 2022)

UW CSE 332: Data Structures and Parallelism. TA (Spring 2022)

UW CSE 484: Computer Security. TA (Fall 2021)

SELECTED WORK EXPERIENCE

UW Paul G Allen School for Computer Science and Engineering. Postdoctoral Researcher; Ocean Nexus Center Innovation Fellow (February 2023 – present)

– Researching environmental justice and equity aspects of technologies in ocean governance
– Built "BBNJ Question-Answering Bot" prototype using GPT via OpenAI APIs, Gradio, Docker, and Weaviate
– Providing technical expertise on various ocean topics including electronic monitoring, AI/algorithm-based conservation planning tools, mobile app development, and supply chain traceability technologies.

Digital Green. Research Intern (January – May 2018)

– User research and prototyping for *Loop* farm-to-market mobile app in Bihar, India.

Menstrupedia. Intern in Design, Product Research, and Software Development (May – June 2016, April – July 2017)

– Mobile app development using React Native; Web development with PHP/Laravel and React
– User research and product design

Center for Predictive Computational Phenotyping – University of Wisconsin.
Associated Information Processing Consultant
(November 2015 – January 2016), (September – November 2016), (August – November 2017)

– Web application design and development for AI and NLP bioinformatics research tools, including MetaSRA for searching sequence read data using normalized ontologies; and an active learning platform for extracting experimental results from biomedical articles.
– Used Angular, Python, Bottle/Flask, PostgreSQL, MongoDB, Nginx

Okinawa Institute of Science and Technology – Biodiversity & Biocomplexity Unit.
Visiting Researcher (March-April 2015), Consultant (December 2016 – February 2017)

– Built Antmaps.org web application using Python/Django, PostgreSQL, Leaflet, and D3

Education Analytics Inc. Programmer – Limited Term (August 2014-December 2014)

– Web application development using Python/Django

Lomas Barbudal Monkey Project. Field Assistant (November 2013 – January 2014)

– Updated data collection / management pipeline
– Created educational website visualizing monkey behavior data: http://howtobeamonkey.org

UW Department of Biostatistics and Medical Informatics.
Computer Programmer (May 2011 – May 2013), Associate Systems Programmer (May – August 2013)

– Web application development using Python/Django; applications using biomedical NLP to search scientific literature for specific genes, metabolites, and gene interactions.
– Machine learning research for molecular biology applications: developed novel supervised learning and clustering techniques for gene expression analysis

Survey of Primitive Weevils in Wisconsin. Volunteer Field Assistant (Summer 2013)

UW Center for Limnology – Hanson Lab. Software Developer (October 2010 – May 2011)

– Web application development with Python/Django; technical support for ecosystem modeling

Wisconsin Center for Educational Research. Student Hourly Research Assistant (July 2009 – October 2010)

ACADEMIC SERVICE

Reviewed paper submissions for ACM Computing and Sustainable Societies (COMPASS); ACM Human-Computer Interaction(CHI); ACM Computer-Supported Collaborative Work and Social Computing (CSCW); ACM Computing Within Limits (LIMITS); IFIP TC-9: ICT and Society

Web chair for ACM Computing and Sustainable Societies (COMPASS) 2021 and 2022

Ran a departmental reading group on *Computing and the Environment*; 2019