**CURRICULUM VITAE**

University of Idaho

**NAME:** Roger Lew **DATE:** 1/2024

**RANK OR TITLE:** Assistant Research Professor

**DEPARTMENT:** Virtual Technology and Design

**OFFICE LOCATION AND CAMPUS ZIP:** AAN 115 MS 2481

**OFFICE PHONE:** 208-660-4525

**FAX:** n/a

**EMAIL:** [rogerlew@uidaho.edu](mailto:rogerlew@uidaho.edu)

**WEB:** <https://www.uidaho.edu/caa/programs/virtual-technology-and-design/our-people/roger-lew>

**DATE OF FIRST EMPLOYMENT AT UI:** 2004

**DATE OF TENURE:** untenured

**DATE OF PRESENT RANK OR TITLE:** April 2016

**EDUCATION BEYOND HIGH SCHOOL:**

**Degrees:**

**Ph.D. in Neuroscience** 2014

University of Idaho, Moscow, Idaho

**Masters in Human Factors Psychology** 2007 University of Idaho, Moscow, Idaho

**Bachelor of Science in Psychology** 2004 University of Idaho, Moscow, Idaho

**Certificates and Licenses:**

n/a

**EXPERIENCE:**

**Teaching, Extension and Research Appointments:**

**University of Idaho**

Research Assistant Professor, Virtual Technology and Design (VTD)

April 2016 - Present

**University of Idaho**

Affiliate Faculty, Psychology Department

December 2018 - Present

**University of Idaho**

Post Doctoral Researcher for Idaho EPSCoR MILES Project

September 2014 - April 2016

**University of Idaho**

Research Assistant/Associate, Instructor

2010 - 2013

**University of Idaho**

IDeA Network for Biomedical Research Excellence (INBRE) Research Fellow

2007 – 2010

**Academic Administrative Appointments:**

n/a

**Non-Academic Employment including Armed Forces:**

**CRI Advantage (Subcontractor for Idaho National Laboratories)**

Human Factors Engineer

October 2014 – June 2018

Description: Design, develop, evaluation, and document advanced digital control system prototypes. Provide Human Factors guidance and evaluation to utilities in support of control room modernization efforts in accordance with NUREG 0700/0711. Implement DCS mimics that interface with NPP models and enable formative evaluation and usability testing.

**Idaho National Laboratory**

Human Factors Intern

May 2013 - October 2014

Description: Provided Human Factors expertise and software development for the Human Systems and Simulation Laboratory (HSSL) of the Human Factors, Controls, and Statistics Department has a full-scope, fully-reconfigurable nuclear power plant (NPP) control room simulator.

**Consulting:**

**NetForm**

Software Developer

2016

Developed an online service for conducting social network snowball surveys

**Intellective Consulting**

Prototype Hardware Developer

2016-2018

Developed a scientific apparatus for presenting thermal stimuli in a controlled manner.

**TEACHING ACCOMPLISHMENTS:** (Academic and Extension teaching)

**Areas of Specialization:** Research Methods, Virtual Technology, Nuclear Power Human Factors

**Courses Taught:**

Advanced Human Factors (PSYC 562) 2023-2024

Human Technological Systems (VTD 425) 2022-2024

Virtual Reality and Autism (VTD 404) Spring 2021

Smart Cities Special Topic Seminar (LARC 504/VTD 404) Spring 2016

VTD Capstone (VTD 458) Fall 2017 – Spring 2019

Introduction to Research Methods (PSYC 218) 2011-2013

Sensation and Perception (PSYC 444) 2011-2013

Engineering Psychology (PSYC 446) 2011-2013

Upward Bound Math and Science (UBMS) Summer of 2009

Engineering Psychology (PSYC 446) 2011-2013

**Students Advised:**

Undergraduate Students:n/a

Graduate Students:

Advised to completion of degree-major professor (student name, degree, and date):

Zeth Dubois, Masters of Integrated Art and Architecture, May 2020 (defended Dec 2019)

Served on graduate committee (student name, degree, and date):

Jared Oxborrow, Masters of Integrated Art and Architecture, in progress

Nathan Hurlocker, Masters of Integrated Art and Architecture, in progress

Julio Gonzalez, Masters of Integrated Art and Architecture, in progress

William Fenton, Human Factors PhD, in progress

Dylan Quinn, Water Resources MS, December 2018

**Materials Developed:** (non-scholarship activity)

n/a

**Courses Developed:**

Human Technological Systems (VTD 425)

Smart Cities Special Topic Seminar

Upward Bound Math and Science (UBMS) Summer Course on Python programming

Smart Cities Special Topic Seminar (LARC 504/VTD 404)

Virtual Reality and Autism (VTD 404)

**Non-credit Classes, Workshops, Seminars, Invited Lectures, etc.:**

Pressurized Water Reactor Owner’s Group 2022

Naples, FL

December 2022

Human Factors Introduction Invited Lecture

University of Idaho, Resilient Controls for the Power Grid, Fall 2018, 2019, 2020

Virtual Landscapes with Unity3d

University of Anchorage Alaska

July 12-14, 2016

Human Factors for Process Control Invited Lecture

Worksafe BC, Vancouver, BC

July 2017

**Honors and Awards:**

**SCHOLARSHIP ACCOMPLISHMENTS:** (Including scholarship of teaching and learning, artistic creativity, discovery, and application/integration)

**Publications, Exhibitions, Performances, Recitals:**

**Refereed/Adjudicated:** (i.e. books, book chaps., journals, proc., abstr., etc.; provide citations-author, date, title, publisher)

Hall, A., Alivisatos, C., Ulrich, T. A., Lew, R., Boring, R. L., & Poresky, C. (2023). Visual Style Elements in Human-System Interface Design for Nuclear Power Operations: Does Style Affect Performance and Preference? *Human Factors: The Journal of the Human Factors and Ergonomics Society.* https://doi.org/10.1177/00187208231209148

duBois, Z., Lew, R., & Boring, R. L. (2023). Fail-Safe Automatic Timed Response Protocol for Cyber Incident and Fault Management. In HCI for Cybersecurity, Privacy and Trust (p. [specific page numbers]). <https://doi.org/10.1007/978-3-031-35822-7_41>

Boring, R. L., Mortensen, T. J., Ulrich, T. A., Lew, R. (2022). Humans with/as Big Data in Nuclear. *Human Factors in Energy: Oil, Gas, Nuclear and Electric Power*, 54.

Mortenson, T., Boring, R. L., Ulrich, T. A. (2022). A Prospective Design Method for Nuclear Power: The Evaluation, Requirements, and Goals Outline for Nuclear (ERGON) Method. *Human Factors in Energy: Oil, Gas, Nuclear and Electric Power*, 54.

Lew, R., Boring, R. L., Ulrich, T. A. (2022). Envisioning 21st Century Mixed-Initiative Operations for Energy Systems. *Human Factors and Systems Interaction*, 52.

Lew, R., Boring, R. L., Ulrich, T. A. (2022). Open-Source Software Architecture for Computer Based Procedure Systems. *Proceedings of the Human Factors and Ergonomics Society, 66 (1)*. Atlanta, GA.

Boring, R. L., Ulrich, T. A., Park, J. Ahn, J., Lew, R. (2022). Modeling Task Time Duration Using the Hunter Dynamic Human Reliability Analysis FrameworK. *Proceedings of the Human Factors and Ergonomics Society, 66 (1)*. Atlanta, GA.

Lew, R., Mortenson, T., Boring, R. L., Ulrich, T. A. (2022). Development of a Dynamic Cognitive Modeling Architecture of Human Reliability Simulation using the Rancor Microworld Simulator. *Conference: Probabilistic Safety Assessment and Management PSAM 16At*: Honolulu, Hawaii.

Lew, R. Ulrich, T. A., Boring R. L. (2020) Simulation Technologies for Integrated Energy Systems Engineering and Operations. *Advances in Artificial Intelligence, Software and Systems Engineering.* DOI: 10.1007/978-3-030-51328-3\_77

Poresky, C., Lew, R., Ulrich, T. A., Boring, R. L. (2019). Fault Understanding, Navigation, and Control Interface: A Visualization System for Cyber-Resilient Operations for Advanced Nuclear Power Plants. *In Industrial Control Systems Security and Resiliency.*

Soule, T. Heckendorn R., B., Dyre B., and Lew, R. (2010). Ensemble Classifiers: AdaBoost and Orthogonal Evolution of Teams. In R. Riolo, T. McConaghy, and E, Vladislavleva editors, *Genetic Programming Theory and Practice VIII, volume 8 of Genetic and Evolutionary Computation*, chapter 4 ( pp. 55-69). Ann Arbor, USA, 2010.

Ulrich, T. A., Boring, R. L., Lew, R. (2019). Extrapolating Nuclear Process Control Microworld Simulation Performance Data from Novices to Experts - A Preliminary Analysis. *In book: Advances in Human Error, Reliability, Resilience, and Performance*.

Lew, R., Lau, N, Boring, R. L., Anderson, J. (2016), The role of HCI in cross-sector research on grand challenges. *HCI in Business, Government, and Organizations: eCommerce and Innovation*, 519- 530.

**Peer Reviewed/Evaluated:** (i.e. journals, articles, proceedings, abstracts, etc.)

Lew, R., & Boring, R. L. (2023). Flppr: Cognitive Loading Task for Error Dependency Research. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting, 67*(1), 2243-2247. <https://doi.org/10.1177/21695067231196252>

Hall, A., Boring, R. L., Ulrich, T. A., Lew, R., Velazquez, M., Xing, J., Whiting, T., & Makrakis, G. M. (2023). A Comparison of Three Types of Computer-Based Procedures: An Experiment Using the Rancor Microworld Simulator. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting, 67*(1), 2552-2557. <https://doi.org/10.1177/21695067231205507>

Ulrich, T. A., Boring, R. L., Lew, R., & Whiting, T. A. (2023). Rancor Computer-Based Procedures – A Framework For Task Level Human Performance Data Collection. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting, 67*(1). <https://doi.org/10.1177/21695067231196242>

Boring, R. L., Ulrich, T. A., & Lew, R. (2023). Levels of Digitization, Digitalization, and Automation for Advanced Reactors. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting, 67*(1). <https://doi.org/10.1177/21695067231192575>

Boring, R., Ulrich, T. A., Lew, R., Hall, A., Park, J., & Kim, J. (2023). Preliminary Empirical Findings on Dependency from a Simulator Study. *In Proceedings of the 13th Nuclear Plant Instrumentation, Control & Human-Machine Interface Technologies* (NPIC&HMIT 2023). <https://doi.org/10.13182/NPICHMIT23-41446>

Velazquez, M., Hall, A., Boring, R., Ulrich, T. A., & Lew, R. (2023). Method to Investigate Cognitive Aging Effects in Nuclear Operations Using the Rancor Microworld Simulator. In Proceedings of the 13th Nuclear Plant Instrumentation, Control & Human-Machine Interface Technologies (NPIC&HMIT 2023). <https://doi.org/10.13182/NPICHMIT23-41162>

Boring, R., Ulrich, T. A., & Lew, R. (2023). The Next-Generation Control Room: Using the Rancor Microworld Simulator to Modernize Digital Control Rooms. *In Proceedings of the 13th Nuclear Plant Instrumentation, Control & Human-Machine Interface Technologies* (NPIC&HMIT 2023). <https://doi.org/10.13182/NPICHMIT23-41274>

Ulrich, T. A., Westover, T., & Lew, R. (2023). A Thermal Power Dispatch Concept of Operations Research Plan. *In Proceedings of the 13th Nuclear Plant Instrumentation, Control & Human-Machine Interface Technologies* (NPIC&HMIT 2023). <https://doi.org/10.13182/NPICHMIT23-41237>

Lew, R., & Ulrich, T. A. (2023). Rancor Reduced Order Model Nuclear Power Plant Simulator for Real-Time Simulations and Hardware in-the-Loop Testing. *In Proceedings of the 13th Nuclear Plant Instrumentation, Control & Human-Machine Interface Technologies* (NPIC&HMIT 2023). <https://doi.org/10.13182/NPICHMIT23-41233>

Boring, R., Mortenson, T., Ulrich, T. A., & Lew, R. (2023). Function Allocation Perspectives for Advanced Reactors. In *Proceedings of the 13th Nuclear Plant Instrumentation, Control & Human-Machine Interface Technologies* (NPIC&HMIT 2023). <https://doi.org/10.13182/NPICHMIT23-41273>

Lew, R., Boring, R., & Ulrich, T. A. (2023). Human error and performance modeling with virtual operator model (HUNTER) synchronously coupled to Rancor Microworld Nuclear Power Plant Simulator. In Proceedings of the 14th International Conference on Applied Human Factors and Ergonomics (AHFE 2023). <https://doi.org/10.54941/ahfe1003548>

Boring, R. L., Ulrich, T. A., & Lew, R. (2023). The Procedure Performance Predictor (P3): Application of the HUNTER Dynamic Human Reliability Analysis Software to Inform the Development of New Procedures. In Proceedings of the 33rd European Safety and Reliability Conference. <https://doi.org/10.3850/978-981-18-8071-1_P637-cd>

Boring, R., Ulrich, T. A., Lew, R., & Park, J. (2023). HUNTER Procedure Performance Predictor: Supporting New Procedure Development with a Dynamic Human Reliability Analysis Method. *In Proceedings of AHFE 2023 Hawaii Edition.* <https://doi.org/10.54941/ahfe1004402>

Ulrich, T. A., Boring, R., Kim, J., & Lew, R. (2023). Human Error Dynamic Simulation of Work as Performed – Modelling Procedure Deviations with Empirically Derived Failure Mechanisms*. In Proceedings of AHFE 2023 Hawaii Edition.* <https://doi.org/10.54941/ahfe1004455>

Boring, R., Ulrich, T. A., Lew, R., & Park, J. (2023). Synchronous vs. Asynchronous Coupling in the HUNTER Dynamic Human Reliability Analysis Framework*. In Proceedings of the 14th International Conference on Applied Human Factors and Ergonomics* (AHFE 2023). <https://doi.org/10.54941/ahfe1003552>

Poresky, C., Alivistos, C., Kendrick, J., Peterson, P. F., Lew, R., Ulrich, T. A., Boring, R. L. Advanced Reactor Control and Operations (ARCO): A University Research Facility for Developing Optimized Digital Control Rooms. *Nuclear Technology.* 10.1080/00295450.2022.2092366

Park, J., Boring. R. L., Ulrich, T. A., Lew, R., Lee, S., Park, B., Kim, J. (2022). A Framework to Collect Human Reliability Analysis Data for Nuclear Power Plants Using a Simplified Simulator and Student Operators. *Reliability Engineering & System Safety, 221* (1). 10.1016/j.ress.2022.108326

Dobre, M., Long, J. W., Maxwell, C., Elliot, W. J. (2022). Water quality and forest restoration in the Lake Tahoe basin: impacts of future management options. *Ecology and Society, 27* (2). 10.5751/ES-13133-270206.

Dobre, M., Srivastava, A., Lew, R., Deval, C., Brooks, E. S., Elliot, W. J, Robichaud, P. (2022). WEPPcloud hydrologic and erosion simulation datasets from 28 watersheds in US Pacific Northwest and calibrating model parameters for undisturbed and disturbed forest management conditions. *Data in Brief, 42* (2).

Lew, R., Poudel, B., Wallace, J., Westover, T. (*Submitted*). An Integrated Reduced Order Model of a Nuclear Power Plant with Thermal Dispatch System and Hydrogen Plant. *Energies*.

Lew, R., Ulrich, T. A., Boring, R. L. (2021) Simulation Technologies for Integrated Energy Systems Engineering and Operations. Advances in Intelligent Systems and Computing book series (AISC, volume 1213)

Ulrich, T. A., Lew, R., Mortenson, T., Medema, H., Boring, R. L., Werner. S., Terry, L., Minard, N. (2021). A Dual Full-Scope and Reduced-Scope Microworld Simulator Approach to Evaluate the Human Factors of a Coupled Hydrogen Production Concept of Operations. *Lecture Notes in Networks and Systems book series* (LNNS, volume 264).

Lew, R. Ulrich, T. A., Boring, R. L. (2021) Rancor Microworld Toolkit for Integrated Energy and Systems Engineering. *Human Factors and Ergonomics Society 65th Annual Conference*, Baltimore MD.

Deval, C., Brooks, E. S., Dobre, M., Lew, R., Robichaud, P. R., Fowler, A., Boll, J., Easton, Z. M., Collick, A. (in press). Pi-VAT: A web-based visualization tool for decision support using spatially complex water quality model output. Journal of Hydrology.

Dobre, M., Long, J., Elliot, W.J., Maxwell C., Lew, R., Brooks, E., Scheller, R. M. (in press). Water quality and forest restoration in the Lake Tahoe basin: impacts of future management options. Ecology and Society.

Dobre, M., Srivastava, A., Lew, R., Brooks, E. S., Elliot, W. J., Robichaud, P. R., Flanagan, D. C. (submitted). An online watershed-scale hydrologic modeling tool. Part II. Model performance assessment and applications to forest management and wildfires. Journal of Hydrology.

Boring, R. L., Ulrich, T. A., Lew, R. (2021). Putting GONUKE into Practice: Considerations for Human Factors Evaluations. Human Factors and Ergonomics Society 65th Annual Conference, Baltimore MD.

Mortenson, T., Boring, R. L., Ulrich, T. A., Lew, R. (2021). A Prospective Design Method for Nuclear Power: the Evaluation, Requirements, and Goals Outline for Nuclear (ergon) Method. Human Factors and Ergonomics Society 65th Annual Conference, Baltimore MD.

Lew, R., Dobre, M., Srivastava, A., Brooks, E. S., Elliot, W. J., Robichaud, P. R., Flanagan, D. C. (*Submitted*). WEPPcloud: An online watershed-scale hydrologic modeling tool. Part I. Model description. *Journal of Hydrology*.

Dobre, M., Srivastava. A., Lew, R., Deval, C., Brooks, E., S., Elliot, W. J., Robichaud, P. R. (*Submitted*). WEPPcloud: An online watershed-scale hydrologic modeling tool. Part II. Model performance assessment and applications to forest management and wildfires. *Journal of Hydrology*.

Neris, J., Santin, C., Lew, R., Robichaud, P. R., Elliot, W.J. Sheridan, G., Rohlfs, A.-M., Quinn, O., Doerr, S. H. (2021). Mitigating impacts on water quality following the Australian 2019/2020 wildfires: the case of Sydney’s largest water supply catchment. *Integrated Environmental Assessment and Management* (IF3.2). https://doi.org/10.1002/ieam.4406

Lew, R., Boring, R. L., Ulrich. T. A. (2020). Rancor Hybrid Energy System Microworld. *Proceedings of the Human Factors and Ergonomics Society, 2020*.

Ulrich, T. A., Boring, R. L., Lew, R. (2019). On the Use of Microworlds for an Error Seeding Method to Support Human Error Analysis. *Resilience Week 2019*.

Boring, R. L., Ulrich. T. A. Medema, H., Lew, R. (2019). Operator Resilience to Cyber Interdictions in Nuclear Power Plants. *Resilience Week 2019*.

Lew, R., Boring, R. L., Ulrich. T. A. (2019). Computerized Operator Support System for Nuclear Power Plant Hybrid Main Control Room. *Proceedings of the Human Factors and Ergonomics Society, 2019*.

Boring, R. L., Ulrich. T. A. Lew, R., Rasmussen, M. (2019). Human Reliability Studies With Microworld Simulators. *Proceedings of the Human Factors and Ergonomics Society, 2019*.

Lew, R., Boring, R. L., Ulrich, T. A. (2019). Integrated Approach to Advanced Reactor Operations. *Proceedings of the 11th Nuclear Plant Instrumentation, Control and Human-Machine Interface Technologies (NPIC&HMIT 2019).*

Poresky, C. Kendrick, J., Peterson, P. F., Lew, R., Ulrich, T. A., Boring, R. L. (2019).Advanced Reactor Control and Operations (ARCO): A University Research Facility for Developing Optimized Digital Control Rooms. *Proceedings of the 11th Nuclear Plant Instrumentation, Control and Human-Machine Interface Technologies (NPIC&HMIT 2019).*

Lew, R., Boring, R. L., Ulrich, T. A. (2019). Task Engine for Job and User Notification (TEJUN). A tool for prototyping computerized procedures. *Proceedings of the 11th Nuclear Plant Instrumentation, Control and Human-Machine Interface Technologies (NPIC&HMIT 2019).*

Lew, R., Boring, R. L., Ulrich, T. A. (2019). Transitioning Nuclear Power Plant Main Control Room from Paper Based Procedures to Computer Based Procedures. *Proceedings of the 11th Nuclear Plant Instrumentation, Control and Human-Machine Interface Technologies (NPIC&HMIT 2019).*

Ulrich, T. A., Boring, R. L., Lew, R. (2019). Graphical Augmentation Interface for Yoked Overview (GAIYO): A Tool for Building Overview Screens for Main Control Rooms. *Proceedings of the 11th Nuclear Plant Instrumentation, Control and Human-Machine Interface Technologies (NPIC&HMIT 2019).*

Lew, R., Boring, R. L., Ulrich, T. A. (2019). Beyond COSS: Human Factors for Whole Plant Management. *Advances in Artificial Intelligence, Software and Systems Engineering, Proceedings of the AHFE 2019 International Conference on Human Factors in Artificial Intelligence and Social Computing, the AHFE International Conference on Human Factors, Software, Service and Systems Engineering, and the AHFE International Conference of Human Factors in Energy, July 24-28, 2019, Washington D.C., USA.*

Boring, R. L., Ulrich, T. A., Lew, R., Rasmussen, M. (2019). Parts and Wholes: Scenarios and Simulators for Human Performance Studies. *In Advances in Human Error, Reliability, Resilience, and Performance.*

Lew, R., Boring, R. L., Ulrich, T. A. (2018). Applications of Dynamic Reliability Analysis (dHRA) for Context Aware Operations*. In Advances in Human Error, Reliability, Resilience, and Performance.*

Ulrich, T. A., Boring, R. L., Lew, R. (2018). Extrapolating Nuclear Process Control Microworld Simulation Performance Data from Novices to Experts – A Preliminary Analysis*. In Advances in Human Error, Reliability, Resilience, and Performance.*

Boring, R. L., Ulrich, T. A., Lew, R., Kovesdi, C. R., Al Rashdan, A. (2018). A Comparison Study of Operator Preference and Performance for Analog Versus Digital Turbine Control Systems in Control Room Modernization. *Nuclear Technology*.

Ulrich, T. A., Boring, R. L., Lew, R. (2018). Qualitative or Quantitative Data for Nuclear Control Room Usability Studies? A Pragmatic Approach to Data Collection and Presentation. *Resilience Week 2018*.

Boring, R. L., Ulrich, T. A., Lew, R. (2018). Findings From an Operator-In-The-Loop Study on System Overview Displays in a Modernized Nuclear Power Plant. *Resilience Week 2018*.

Lew, R., Boring, R. L., Ulrich, T. A. (2018). Transitioning nuclear power plant main control room from paper based procedures to computer based procedures. *Resilience Week 2018*.

Lew, R., Ulrich, T. A., Boring, R. L., Werner, S. (2017). Applications of the rancor microworld nuclear power plant simulator. *Resilience Week 2017*.

Ulrich, T. A., Lew, R., Werner, S., Boring, R. L. (2017). Rancor: A Gamified Microworld Nuclear Power Plant Simulation for Engineering Psychology Research and Process Control Applications. *Proc. Hum. Factors Ergon. Soc. Annu. Meet. 61*, 398–402.

Ulrich, T. A., Lew, R., Werner, S., Boring, R. L. (2017). Nuclear Reactor Crew Evaluation of a Computerized Operator Support System HMI for Chemical and Volume Control System. *International Conference on Augmented Cognition*.

Ulrich, T. A., Boring, R. L., Werner, S., Lew, R., (2017). A Comparison of an Attention Acknowledgement Measure and Eye Tracking: Application of the as Low as Reasonable Assessment (ALARA) Discount Usability Principle for Control System Studies. *International Conference on Augmented Cognition*.

Ulrich, T. A., Boring, R. L., Werner, S., Lew, R., (2017). A Comparison of an Attention Acknowledgement Measure and Eye Tracking: Application of the as Low as Reasonable Assessment (ALARA) Discount Usability Principle for Control System Studies. *International Conference on Augmented Cognition*.

Boring, R. L., Lew, R., Ulrich, T. A. (2017). Advanced Nuclear Interface Modeling Environment (ANIME): A Tool for Developing Human-Computer Interfaces for Experimental Process Control Systems. *International Conference on Augmented Cognition*.

Boring, R. L., Lew, R., Ulrich, T. A., Savchenko (2016). When human error is good: Applications of beneficial error seeding. *Probabilistic Safety Assessment and Management (PSAM 13)*.

Boring, R. L., Lew, R., Ulrich, T. A. (2016). Epistemiation: An Approach for Knowledge Elicitation of Expert Users During Product Design. *Resilience Week 2016*.

Ulrich, T. A., Boring, R. L., Werner, S., Lew, R., (2017). COSSplay: Validating a Computerized Operator Support System Using a Microworld Simulator. *International Conference on Human-Computer Interaction*.

Boring, R. L., Lew, R., Ulrich, T. A. (2016). Epistemiation: An Approach for Knowledge Elicitation of Expert Users During Product Design. *Resilience Week 2016*.

Boring, R. L., Ulrich, T. A., Lew, R, (2016), RevealFlow: A Process Control Visualization Framework. *International Conference on Human-Computer Interaction*.

Barton, B. K., Heath, G., Lew, R. (2016). Detection and direction determination of approaching vehicle noises among older adults. *The International Journal of Aging and Human Development 82* (2-3), 229-250.

Boring, R. L., Ulrich, T. A., Lew, R. (2015). Guideline for operational nuclear usability and knowledge elicitation (GONUKE). *6th International Conference on Applied Human Factors and Ergonomics (AHFE 2015) and the affiliated conferences, AHFE 2015. Procedia Manufacturing00.*

Boring, R. L., Ulrich, T. A., Thomas, K., Lew, R. (2015). Computerized Operator Support Systems to aid in decision making in nuclear power plants. *6th International Conference on Applied Human Factors and Ergonomics (AHFE 2015) and the affiliated conferences, AHFE 2015. Procedia Manufacturing00.*

Carthen, C. D., Rushton, T. J., Johnson, C. M. Hesson, A., Nielson, D., Worrell, B., Anderson, J. W., Lew, R., Wood, N. R., Ziegler, M., Delparte, D. M., Johansen, W. J., Dascalu, S. M., Harris, F. C. Design of a virtual watershed client for the WC-WAVE Project. *Collaboration Technologies and Systems (CTS), 2015 International Conference on, At Atlanta, GA.*

Ulrich, T. A., Lew, R., Boring (2014). A Computerized Operator Support System Prototype. *In Proceedings of the 58th Annual Meeting of the Human Factors and Ergonomics Society.*

Dyre, B. P., Adamic, E. J., Werner, S., Lew, R., Gertman, D., Boring, R. L. (2013). A Microworld Simulator for Process Control Research and Training. *In Proceedings of the 57th Annual Meeting of the Human Factors and Ergonomics Society.*

Barton, B. K., Lew, R., Kovesdi, C., Cottrell, N. D., and Ulrich, T., (2013). Developmental differences in auditory detection and localization of approaching vehicles. *Accident Analysis and Prevention*, <http://dx.doi.org/10.1016/j.aap.2012.12.040>

Spielman, Z. Bulkley, N., Dyre, B., Lew, R. Vargas, J, Hammack, T. (2013). Evaluation of a Peripherally-Located Instrument Landing Display Under Dual-Task Conditions. *International Symposium of Aviation Psychology 2013*.

Barton, B. K., Ulrich, T. A., and Lew R. (2012). Auditory detection and localization of approaching vehicles. *Accident Analysis and Prevention, 49*, 347-353.

Ragsdale, S. A., Lew, R., Dyre, B. P., and Boring, R. L. (2012). Fault diagnosis with multistate alarms in a nuclear power control simulator. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting, 56*.

Hope, R., Lew, R., Colby, K. A., and Dyre, B. P. (2012). Optically controlled braking responses to variable deceleration magnitudes in a car following task. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting, 56*.

Ragsdale, S. A., Lew, R., Dyre, B. P., and Boring, R. L. (2012). Alarm Strategy and Complexity: Predictions of Operator Response. *NPIC & HMIT*.

Stanton, N., Lew, R., Boyle, N., Hope, R., Dyre, B., and Bustamante, E. A. (2011). An Implemen- tation of a Graded Deceleration Display in Brake Light Warning Systems. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting, 55*, (1), 1573-1577.

Hope, R., Lew, R., Boyle, N., Stanton, N., Dyre, B., and Bustamante, E. A. (2011). Effects and Evaluation of the Graded Deceleration Display on Driver Braking Performance. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting, 55*, (1), 1573-1577.

Lew, R. Dyre, B., Soule, T., Ragsdale, S. A. and Werner, S. (2010). Assessing mental workload from skin conductance and pupillometry using wavelets and genetic programming. *In Proceedings of the 54th Annual Meeting of the Human Factors and Ergonomics Society.*

Bulkley, N. Caufield, K., Lew, R., and Dyre B. P. (2009). A Peripherally-Located Virtual Instrument Landing Display Affords More Precise Control of Approach Path during Simulated Landings than Traditional Instrument Landing Displays. *In Proceedings of the 53th Annual Meeting of the Human Factors and Ergonomics Society.*

Lew, R., Dyre, B. P., Werner, S., Wotring, B., and Tran, T. (2008). Exploring the potential of short- time fourier transforms for analyzing skin conductance and pupillometry in real-time applications. *In Proceedings of the 52th Annual Meeting of the Human Factors and Ergonomics Society*, 1536- 1540.

Lew, R., Dyre, B. P. and Wotring, B. (2006). Effects of lane markings on steering errors while driving in blowing snow. *In Proceedings of the 50th Annual Meeting of the Human Factors and Ergonomics Society*, 1656-1660.

Dyre, B. P., Cooper, S., Lew, R. and Wotring, B. (2006). The magnitude of motion parallax affects control of egospeed. *In Proceedings of the 50th Annual Meeting of the Human Factors and Ergonomics Society*, 1666-1669.

Dyre, B. P. and Lew, R. (2005). Steering errors may result from non- rigid transparent optical flow. *In Proceedings of the 49th Annual Meeting of the Human Factors and Ergonomics Society, 1531-1534*.

Dyre, B. P., Schaudt, W. A., and Lew, R. (2005). Contrast gradients increase apparent egospeed while moving through simulated fog. *Journal of Vision, 5* (8), 335a.

**Other:** (reports, proceedings, papers, citations and references, performances)

Ulrich, T. A., Lew, R. Hancock, S. Westover, T., Hall, A. Boring, R. L., Thomas, K., Medema, H., Werner, S., Terry, L., Minard, N., Michael, A., Alivisatos, C., Mortenson. T. (September 2021*).* Dynamic Human-in-the-Loop Simulated Nuclear Power Plant Thermal Power Dispatch System Demonstration and Evaluation Study. *Idaho National Laboratory*, Technical Report, EXT-21-64329.

Boring, R., Lew, R., Ulrich, T., Joe, J. (2014). A Computerized Operator Support Prototype. *Idaho National Laboratory*, Technical Report, INL/EXT-14-31511.

Ulrich, T. Lew, R. Thomas, K., Boring, R. Villim, R. (2013). A Computerized Operator Support Prototype. *Idaho National Laboratory*, Technical Report,INL/EXT-13-29751.

**Refereed/Adjudicated (currently scheduled or submitted):** (provide citations)

Lew, R., Boring, R. L., Ulrich, T. A. (In press), Applications of Dynamic Human Reliability Analysis (dHRA) for Context Aware Operations. *In book: Advances in Human Error, Reliability, Resilience, and Performance*.

Boring, R. L., Ulrich, T. A., Lew, R., Rasmussen, M. (In press), Parts and Wholes: Scenarios and Simulators for Human Performance Studies. *In book: Advances in Human Error, Reliability, Resilience, and Performance*.

**Published Abstracts:**

Brooks, E. S., Deval, C., Dobre, M., Lew, R., Long, J. W., Elliot, W. J., & Robichaud, P. (2023). Targeted Forestry Management in the Lake Tahoe Basin with WEPPcloud and PI-VAT. *In Proceedings of Soil Erosion Research Under a Changing Climate*, January 8-13, 2023, Aguadilla, Puerto Rico, USA. <https://doi.org/10.13031/soil.2023087>

Srivastava, A., Dobre, M., Lew, R., Brooks, E. S., Robichaud, P. R., & Elliot, W. J. (2023). Incorporating Forest Regeneration Routines in the Water Erosion Prediction Project (WEPP) Model. *In Proceedings of Soil Erosion Research Under a Changing Climate*, January 8-13, 2023, Aguadilla, Puerto Rico, USA. <https://doi.org/10.13031/soil.2023076>

Robichaud, P., Lewis, S. A., Dobre, M., Lew, R., & Brooks, E. S. (2023). Expanding the WEPPcloud Toolbox: WEPPcloud – TREE, Timber Recovery Erosion Estimator. *In Proceedings of Soil Erosion Research Under a Changing Climate*, January 8-13, 2023, Aguadilla, Puerto Rico, USA. <https://doi.org/10.13031/soil.2023082>

Dobre, M., Srivastava, A., Lew, R., Deval, C., Brooks, E. S., Elliot, W. J., & Robichaud, P. (2023). Applicability of an Online Decision-Support Tool (WEPPcloud) to Watershed-Scale Forest Management in the Western US. *In Proceedings of Soil Erosion Research Under a Changing Climate*, January 8-13, 2023, Aguadilla, Puerto Rico, USA. <https://doi.org/10.13031/soil.23038>

Dyre, B. P. and Lew, R. (2008). Environmental modulations of visually- induced steering errors resulting from non-rigid transparent optical flow. *Abstracts of the Vision Sciences Society.*

Dyre, B. P. and Lew, R. (2005). Misperceived heading and steering errors occur when driving through blowing snow. *Abstracts of the Psychonomic Society 46th Annual Meeting, Toronto, ON.*

Lew, R. and Dyre, B. P. (2008). Linear sub-space modeling responses to transparent motions com- prised of radial dot flows. *Abstracts of the Vision Sciences Society.*

Lew, R., Dyre, B. P., Powers, A. and Yarbrough, F. (2007). Visually induced steering errors from simulated blowing snow are affected by environmental objects. *Abstracts of the Psychonomic Society 48th Annual Meeting, Long Beach, CA.*

Deval, C., Dobre, M., Brooks, E., Lew, R. Viz-WEPPcloud: A web-based, interactive, hillslope scale BMP guiding tool for the Water Erosion Prediction Project (WEPP) model. AGU 2020.

Doerr, S., Neris, J., Elliot, W. J., Robichaud, P. R., Lew, R., Santin, C., Sheridan, G. J. Incorporating water contamination risk from wildfire ash into the decision-making process: a new online tool for researchers and end-users. AGU 2019.

**Poster Presentations and Co-Authorship on Presentations at Professional Meetings:**

Jansen, V.S., J. Hinds., R. Lew, J. Karl, C. Wardropper. 2021. Web-based vegetation mapping tools for science and management on the Rinker Rock Creek Ranch. University of Idaho. Rock Creek Research Webinar. (Oral Presentation) March 1st

Jansen, V.S., J. Hinds., R. Lew, J. Karl, C. Wardropper. 2021. RangeSAT: Satellite-based Assessment Tools for Rangeland Management. Society of Rangeland Management. (Oral Presentation) Feb 17th.

Jansen, V.S., J. Hinds., R. Lew, J. Karl, C. Kolden, H. Schmalz, J. Fields. 2020. RangeSAT. Satellite-based Assessment Tools for Rangelands. Pacific Northwest Drought Early Warning System Webinar. June 22. (Oral Presentation)

Jansen V.S., Kolden C.A., Karl J., Launchbaugh K., Lew R., Laurence-Traynor A. 2019. Using satellite data to estimate upland vegetation amounts across Rock Creek Ranch, Idaho. University of Idaho. Rock Creek Research Webinar. (Oral Presentation)

Lew, R., M. Dobre, W. Elliot, P. Robichaud, E. Brooks, and J. Frankenberger. 2017. Usability and Functional Enhancements to an Online Interface for Predicting Post Fire Erosion (WEPP-PEP). Presented at the European Geophysical Union (EGU) Apr. 23-28, Vienne, AU (Oral Presentation)

Dobre, M., E. Brooks, R. Lew, C. Kolden, D. Quinn, W. Elliot, and P. Robichaud. 2017. Quantifying soil burn severity for hydrologic modeling to assess post-fire effects on sediment delivery. Presented at the European Geophysical Union (EGU) Apr. 23-28, Vienne, AU. (Oral Presentation)

Quinn, D., E. Brooks, M. Dobre, R. Lew, P. Robichaud, and W. Elliot. 2017. The effects of hillslope-scale variability in burn severity on post-fire sediment delivery. Presented at the European Geophysical Union (EGU) Apr. 23-28, Vienne, AU (Poster Presentation)  
Shaljian, M., C.K. Keller, K.B. Jones, E.S. Brooks, D.R. Huggins. 2016. Chemical Denudation and Cation Depletion in a Semi-Arid Catchment of the Long-Term Agroecological Research Observatory.

American Geophysical Union Meetings Dec. 12-16. H33J-1696. (Poster presentation).  
Dobre, M., E.S. Brooks, A. Srivastava, R. Lew, W.J. Elliot. 2016 Modeling sediment yield and phosphorus in the Lake Tahoe basin with the Water Erosion Prediction Project (WEPP) model. American Geophysical Union Meetings Dec. 12-16. H33L-03. (Oral presentation).

**Professional Meeting Papers, Workshops, Showings, Recitals:** (provide date and location)

NPIC-HMIT, Knoxville, TN, July, 2023

AHFE, San Francisco, CA, July, 2023

Human Factors and Ergonomics Society Conference, Washington DC, October 2023

Human Factors and Ergonomics Society Conference, Washington DC, October 2023

Human Factors and Ergonomics Society Conference, Atlanta, GA, October 2022

Advanced Human Factors and Ergonomics, New York, NY, July 2022

PSAM, Virtual, July 2022

Human Factors and Ergonomics Society Conference, Baltimore MD, October 2021

Advanced Human Factors and Ergonomics, Virtual, July 2021

Human Factors and Ergonomics Society Conference, Virtual, October 2020

Advanced Human Factors and Ergonomics, Virtual, July 2020

Human Factors and Ergonomics Society Conference, Seattle, WA, October 2019

Advanced Human Factors and Ergonomics, Washington DC, July 2019

NPIC-HMIT, Orlando, FL, February 2019

Human Factors and Ergonomics Society Conference, Philadelphia, PA, October 2018

Resilience Week, Denver, CO, August 2018

European Safety and Reliability Conference, Trondheim, Norway, June 2018

American Water Resources Association Conference, Portland, OR, November 2018

Human Factors and Ergonomics Society Conference, Austin, TX, October 2017

Resilience Week, Wilmington, DE, September 2017

Human Computer Interaction International, Vancouver, BC, July 2017

American Nuclear Society Meeting, San Francisco, CA, June 2017

European Geoscience Union Conference, Vienna, Austria, April 2017

Human Factors and Ergonomics Society Conference, Washington D.C., September 2016

Resilience Week, Chicago, IL, August 2016

Human Computer Interaction International, Toronto, ON, July 2016

Human Factors and Ergonomics Society Conference, Chicago, IL, October 2014

Human Factors and Ergonomics Society Conference, Boston, MA, October 2012

Human Factors and Ergonomics Society Conference, San Francisco, CA, October 2010

Human Factors and Ergonomics Society Conference, San Antonio, TX, October 2009

Human Factors and Ergonomics Society Conference, Chicago, IL, October 2008

Vision Sciences Society Conference, Naples, FL, 2008

Psychonomics Society Meeting, Long Beach, CA, 2007

Human Factors and Ergonomics Society Conference, Chicago, IL, October 2006

Human Factors and Ergonomics Society Conference, Chicago, IL, October 2005

Psychonomics Society Meeting, Toronto, ON, 2005

**Patents:** (provide title/description, patent number and date)

BA-1141 (High Accuracy Self-Navigation of Drones in Indoor Environments)

BA-1249 (Route-Operable Unmanned Navigation of Drones (ROUNDS)

BA-1097 (Automated Gauge Reading and Related Systems, Methods, and Devices) Issued as patent no. 11,544,916

**Grants and Contracts Awarded:** (provide principal and co investigators, title, sponsor, funding dates, amount)

2023-2024 Idaho National Laboratory, Thermal Power Delivery System for Flexible Power Generation and Operations 250k, PI Roger Lew

Washington State Department of Ecology(WASSTA23). Subaward from Palouse Conservation District(PALCON). Mapping residual crop residue with RangeSAT. 34k

Idaho National Laboratory. Cognitive Modeling for Human Reliability Analysis Development Support. 13k

Idaho National Laboratory. Rancor Microworld Commercialization Human Factors and Development Support. 47k

Idaho National Laboratory. Integrated Energy Systems (FPOG). 32k

Idaho National Laboratory. Automated Gauge Reading for Nuclear Power Applications. No cost extension through 6/30/2023

U.S. Department of Energy (DOE), sub-award from University of Tennessee. IRP-RC-3: Developing the technical basis and risk assessment tools for flexible plant operations. $250k

US Forest Service. Fire Impacts of Watershed Response (mod-6).

Jet Propulsion Laboratories(JPL), National Aeronautic Space Ad.(NASA). Improving predictions of water yield and sediment loads in the Columbia River Basin through the incorporation of Landsat-derived vegetation parameters into an existing online process-based hydrology and erosion model (WEPPcloud). $96k

PI: Roger Lew

Rancor TCF Systems 2020-2022

Battelle Energy Alliance LLC (Idaho National Laboratory)

3/1/2020 - 9/30/2022

$100k

PI: Roger Lew

Integrated Energy Systems 2020-2021

Battelle Energy Alliance LLC (Idaho National Laboratory)

1/1/2020 - 9/30/2021

$47k

PI: Erin Brooks

CI: Mariana Dobre

CI: Roger Lew

East Lake Tahoe WEPP Analysis

United States Forest Service

4/20/2020 - 4/19/2021

$97.5k

PI: Roger Lew

Drones in Nuclear Applications Contract

Battelle Energy Alliance LLC (Idaho National Laboratory)

3/25/2020 - 9/30/2020

$15k

PI: Roger Lew

Computer Operator Support Systems

Battelle Energy Alliance LLC (Idaho National Laboratory)

10/1/2017 - 12/31/2018

$70k

PI: Erin Brooks

CI: Roger Lew

Fire Impacts on Watershed Response

United States Forest Service

9/23/2019 - 9/22/2020

PI: Erin Brooks

PI: Roger Lew

Quantifying Post-fire Erosion on Rangelands

USDA-ARS

9/20/2019 - 9/19/2020

PI: Roger Lew

Image Processing for Drones in Nuclear Power Applications

Battelle Energy Alliance LLC (Idaho National Laboratory)

3/1/2018 - 9/1/2018

$33k

PI: Roger Lew

Computer Operator Support Systems

Battelle Energy Alliance LLC (Idaho National Laboratory)

3/21/2016 - 9/30/2017

$100k

PI: Roger Lew

Computer Operator Support Systems

Battelle Energy Alliance LLC (Idaho National Laboratory)

11/1/2017 - 9/30/2018

$80k

PI: Roger Lew

Computer Operator Support Systems

Battelle Energy Alliance LLC (Idaho National Laboratory)

10/1/2018 - 10/31/2018

$10k

PI: Roger Lew

Computer Based Procedure Integration for Nuclear Power Plant Microworld TEJUN-Rancor

Battelle Energy Alliance LLC (Idaho National Laboratory)

11/1/2018 - 9/30/2019

$15k

PI: Roger Lew

Image Processing for Nuclear Power Applications

Battelle Energy Alliance LLC (Idaho National Laboratory)

6/9/2018 - 9/15/2018

$31k

***Pending***

PI: Roger Lew

Image Processing for Nuclear Power Applications

Battelle Energy Alliance LLC (Idaho National Laboratory)

1/2019 – 9/2019

$50k

**Honors and Awards:**

n/a

**SERVICE:**

**Major Committee Assignments:** (National, State, District, County, University, College, Departmental and dates)

University of Idaho USLCC CAA Representative, 2017 to 2021, 2023 - Present

Computational Steering Committee 2022 - Present

IRIC Facility Committee, January 2021 to 2023

**Professional and Scholarly Organizations** (including memberships, committee assignments, editorial services, offices held and dates)

Full Member of the Human Factors and Ergonomics Society

Chair of Demonstrations Session 2018, 2019

Chair of Resilience Week Cognitive Symposium 2016, 2017, 2018

Professional Member of American Nuclear Society

**Outreach Service:** (Including popular press, interview articles, newspaper articles, workshops-seminars-tours organized, Extension impact statements)

Jansen, V.S., R. Lew, J. Hinds, and H. Schmalz. 2020. Deploying RangeSAT to Wallowa County ranchers. Enterprise, Oregon, March 4 – 5.

Fire Earth Project. (2018). Fire Resilience Workshop, Issaquah, WA, November 2018

Fire Earth Project. (2017). Fire Resilience Workshop, Sun Valley, ID, May 2017

**Community Service**:(non-academic unrelated to employment)

Volunteering for Moscow Central Lion’s Club (as a non-member)

**Honors and Awards:**

n/a

**PROFESSIONAL DEVELOPMENT:** (workshops and seminars attended)

**Teaching:**

n/a

**Scholarship:**

n/a

**Outreach:**

Kenai Alaska Adventure Learning Workshop

Alaska EPSCoR / Brant Miller

October 2014

**Administration/Management:**

n/a