CURRICULUM VITAE

University of Idaho

NAME: Roger Lew **DATE:** 2/2020

RANK OR TITLE: Assistant Research Professor

DEPARTMENT: Virtual Technology and Design

OFFICE LOCATION AND CAMPUS ZIP: IRIC 241 MS 2481 **OFFICE PHONE:** 208-660-4525
FAX: n/a
EMAIL: rogerlew@uidaho.edu
WEB: n/a

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 Advantange (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:

Smart Cities Special Topic Seminar (LARC 504/VTD 404)	Spring 2016
VTD Capstone (VTD 458)	Fall 2017 - Present
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
William Fenton, Human Factors PhD, in progress
Dylan Quinn, Water Resources MS, December 2018

Materials Developed: (non-scholarship activity)
n/a

Courses Developed:

Smart Cities Special Topic Seminar
Upward Bound Math and Science (UBMS) Summer Course on Python programming

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

Human Factors Introduction Invited Lecture
University of Idaho, Resilient Controls for the Power Grid, Fall 2018

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)

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.)

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.*

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*.

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

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*.

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.

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.*

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

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

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.*

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.*

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.*

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*.

Peer Reviewed/Evaluated (currently scheduled or submitted):

Presentations and Other Creative Activities: (i.e. slide sets, web pages, video productions, etc., provide date and location)

Professional Meeting Papers, Workshops, Showings, Recitals: (provide date and location)
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)
n/a

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

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)
Fire Resilience Workshop, Issaquah, WA, November 2018
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