

Ulises D. Techera Ph.D.

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ACADEMIC BACKGROUND

University of Colorado Boulder

Graduated: 2017

Ph.D. in Civil Engineering, with an emphasis in Construction Engineering and Management.

Dissertation: Fatigue in the Construction Industry

Cumulative GPA: 3.94

Advisors: Dr. Matthew Hallowell

University of Colorado Boulder

Graduated: 2017

M.S. in Civil Engineering

Cumulative GPA: 3.94

Polytechnic University of Catalonia

Graduated: 2014

Equivalent, B.S. - M.S. in Civil Engineering

Research Focus: Optimization of Reinforced Concrete Frame Design, Using Moment Redistribution by Means of Genetic Algorithms.

Advisor: Dr. Jesús Bairán

PROFESSIONAL EXPERIENCE

Assistant Professor of Teaching

2018 – Present

University of Colorado Boulder, CU/CMU Civil Engineering Partnership.

Grand Junction, Colorado

- Taught construction management and structural engineering courses.
- Assisted in ABET accreditation, obtained in 2021
- Developed new courses
- Created and implemented an industry reach out program called “Build Your Professional Future” by which civil engineering students can interact with different company representatives each week to seek internships
- Faculty Advisor for the Civil Engineering Club, the ASCE Student Chapter, the AISC Student Chapter, and the SHPE Student Chapter
- Served on a Ph.D. student dissertation committee
- Coordinated new laboratory development

Owner

2019 – Present

TECHERA LLC. Research and Development

Grand Junction, Colorado

- Principal Investigator in a project funded by EPRI to identify fatigue assessment technologies with potential application in the electrical sector.
- Co-Principal Investigator in a Pilot Test with the objective of evaluating implementation requirements and user feedback of specific fatigue assessment tools in the field.

- Partnered with EPRI and the National Safety Council (NSC), as a Technical Advisor, to develop and implement a research project to determine:
 - Fatigue management barriers in the US electrical sector.
 - Fatigue Risk Management System (FRMS) components currently present in electrical power utility companies in the US
- Developed products and recommendations to better manage fatigue in the US electrical sector
- Reviewed study reports for each participant company
- Develop FRMS for oil and gas industry through INGAA

Project Manager

2016 – 2018

Van Matre Construction LLC.*Lafayette, Colorado*

- Managed Structural Division of company (approx. \$2.5 M revenue)
- Client Liaison
- Defined scope, calculated schedule and budget
- Drafted and Managed Contract
- Oversaw the design process
- Managed 3 Foreman and their crews (approx. 15 construction workers)
- Approved work
- Tracked project progress
- Closed-out the project

Research Assistant

2014 – 2017

University of Colorado at Boulder*Boulder, Colorado – Fatigue in the Construction Industry*

- Mentored undergraduate and graduate research assistants

Project Coordinator

2008 – 2010

Inver Gestion ISEAR S.L.*Barcelona, Spain*

- Coordinated projects in Conceptual Design, Schematic Design, Construction Documents, and Project Close-out.
- Provided construction materials to the work site

Craft Worker

2006 – 2008

Coaxial Proyectos Innovadores S.L.*Barcelona, Spain*

- Plumber
- Electrician

TEACHING EXPERIENCE
University of Colorado Boulder, CMU/CU Civil Engineering PartnershipCVEN 3246 – *Introduction to Construction*, (3 credits, Junior Level)**Instructor**

Falls 2022 - 2018

- This course introduces students to the principal participants in construction, delivery methods, contract documents, budgeting, scheduling, and the most common project control practices.

University of Colorado Boulder, CMU/CU Civil Engineering Partnership
 CVEN 3256 – ***Construction Equipment and Methods***, (3 credits, Junior Level)

Instructor
 Fall 2022 - 2018

- Throughout the course, students learn the most common construction methods and equipment used to design excavation support systems, earthwork operations, equipment selection, formwork installation, blasting, shoring, scaffolding, and cofferdam operations.

University of Colorado Boulder, CMU/CU Civil Engineering Partnership

CVEN 3525 – ***Structural Analysis***, (3 credits, Junior Level)

Instructor
 Falls 2022 - 2018

- This course introduces students to the structural analysis of some of the most common elements present in most infrastructures such as trusses, cables, arches, beams, and frames.

University of Colorado Boulder, CMU/CU Civil Engineering Partnership
 CVEN 4545 – ***Steel Design***, (3 credits, Senior Level)

Instructor
 Falls 2022- 2020

- This course applies basic principles of structural engineering and mechanics to the design of steel structures; design of tension members, columns, beams, open-web joists, steel decks, bolts, bolted connections, welding processes, and welded connections.

University of Colorado Boulder, CMU/CU Civil Engineering Partnership
 CVEN 4555 – ***Reinforced Concrete Design***, (3 credits, Senior Level)

Instructor
 Springs 2023- 2020

- This course applies basic principles of structural engineering and mechanics to the design of reinforced concrete structures, including design of beams, columns, slabs, and footings; continuous beams and frames; cast-in-place buildings.

University of Colorado Boulder, CMU/CU Civil Engineering Partnership
 CVEN 4836 – ***Building Information Modeling***, (3 credits, Senior Level)

Instructor
 Springs 2023- 2019

- Building Information and Modeling (BIM) is the most advanced way to design in civil Engineering. BIM allows for a more complete design, easy visualization of components, faster and more accurate structural design, budgeting, and project scheduling.

University of Colorado Boulder, CMU/CU Civil Engineering Partnership
 ENGR 140 – ***Engineering Projects***, (3 credits, Freshman Level)

Instructor
 Fall and Spring 2018

- Project-based course that exposes students to basic concepts of project management and leadership. Students complete two projects throughout the course and they present them to the community in a showcase.

University of Colorado Boulder, CMU/CU Civil Engineering Partnership
 ENGR 263 – ***Mechanics of Solids***, (3 credits, Sophomore Level)

Instructor
 Spring 2018

- Addresses concepts of stress and strain; material properties, axial loading, torsion, simple bending, and transverse shear; analysis of stress and strain; and deflections of beams.

University of Colorado BoulderCVEN 3227 – *Probability and Statistics*, (3 credits, Junior Level)

- Introduces uncertainty-based analysis concepts and applications in the planning and design of civil engineering systems, emphasizing probability, statistics and design concepts and methods.

Teaching Assistant

Spring 2016

University of Colorado BoulderCVEN 3161 – *Mechanics of Materials 1* (3 credits, Junior Level)

- Addresses concepts of stress and strain; material properties, axial loading, torsion, simple bending, and transverse shear; analysis of stress and strain; and deflections of beams. Includes selected experimental and computational laboratories.

Teaching Assistant

Fall 2015

Polytechnic University of Catalonia*Reinforced Concrete Design* (5 credits, Senior Level)

- Applies basic principles of structural engineering and mechanics to the design of reinforced concrete structures, including design of beams, columns, slabs, and footings; continuous beams and frames; cast-in-place buildings.

Teaching Assistant

Fall 2013/Spring 2014

HERPA Academy*Math, English, and Natural Sciences* (Middle-School Level)

- Created lesson plans, imparted lecture and practical classes, developed tests and homework, implemented grading, corrected coursework.

Instructor

Jan 2011- June 2012

PEER-REVIEWED JOURNAL PUBLICATIONS

- [1] **Techera, U.**, Hallowell, M., and Littlejohn, R. (2019). “Fatigue in Electrical-Transmission and Distribution-Line Construction” *Journal of Construction Engineering and Management*, 145(1), 04018119.
- [2] **Alruqi, W.**, Hallowell, M., and Techera, U. (2017) “Safety climate dimensions and their relationship to construction safety performance: a meta-analytic review” *Safety Science*, 109:165-173
- [3] **Techera, U.**, Hallowell, M., and Littlejohn, R. (2017). “Measuring and Predicting Fatigue in Construction: An Empirical Field Study” *Journal of Construction Engineering and Management*, 144(8): 04018062.
- [4] **Techera, U.**, Hallowell, M., Stambaugh, N., and Littlejohn, R. (2016). “Causes and consequences of occupational fatigue: Meta-analysis and systems model.” *Journal of Occupational and Environmental Medicine*, 58(10):961-73

PEER-REVIEWED CONFERENCE PROCEEDINGS

- [1] **Techera, U.**, Bhandari, S., Hallowell, M., Marks, E., and Littlejohn, R. (2020). “Impact of Worker Fatigue on Hazard Recognition Skills” *Proceedings of the ASCE Construction Research Congress 2020*. Phoenix, Arizona, USA, March 2020.
 - [2] **Techera, U.**, and Bozic, C. (2017). “Differences in Learning Outcomes and Engagement Across Traditional, Blended, and Online Engineering Management Undergraduate Courses” Proceedings of the ASCE Annual Conference & Exposition. Columbus, Ohio, June 2017.
 - [3] **Techera, U.**, Hallowell, M., and Littlejohn, R. (2017). “Objectively Assessing and Predicting Fatigue Levels Among Construction Workers” *6th CSCE/ASCE/CRC International Construction Specialty Conference*, Vancouver, British Columbia; Canada, May 31-June 3, 2017, (Accepted, February 2017).
 - [4] **Techera, U.**, Hallowell, M., Marks, E., and Stambaugh, N. (2016). “Measuring occupational fatigue: A comprehensive review and comparison of subjective and objective methods” *Proceedings of the ASCE Construction Research Congress 2016: pp. 1546-1555*. San Juan, Puerto Rico, May 31-June 2, 2016. <http://ascelibrary.org/doi/abs/10.1061/9780784479827.289>
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WORKS IN PROGRESS

- [1] Hajifar, S., Cavuoto, L., **Techera, U.**, “Fatigue Assessment Technologies Implementation Requirements and User Feedback: A case Study” *Automation in Construction*, (Planned Submission: June 2023).
 - [2] **Techera, U.**, Hallowell, M., and Littlejohn, R., “Correlation between Fatigue and Hazard Recognition Ability” *Safety Science*, (Planned Submission: May 2023).
 - [3] **Techera, U.**, Hallowell, M., and Goodrum, P., “The impact of workload on worker fatigue” *Journal of Construction, Engineering and Management* (Planned Submission: September 2023).
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DOCTORAL DISSERTATION

- [1] **Techera, U.D.**, 2017. Measuring and Managing Construction Worker Fatigue (Doctoral dissertation, University of Colorado at Boulder)
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TECNICAL REPORTS

- [1] **EPRI**, Practical Fatigue Measurement Approaches for Utility Field Operations: Technology Scouting and Pilot Test, PaloAlto, CA, 2022. <https://www.epri.com/research/products/000000003002025011>
- [2] **EPRI**, Practical Fatigue Measurement Approaches for Utility Field Operations: Technology Scouting, PaloAlto, CA, 2021. <https://www.epri.com/research/programs/014875/results/3002021083> <https://www.epri.com/research/programs/014875/results/3002016547>
- [3] **EPRI**, Fatigue Management in the Electric Utility Industry, Electric Power Research Institute, Palo Alto, CA, 2019. <https://www.epri.com/research/programs/014875/results/3002016547>

- [4] **Techera, U.** and Hallowell, M., n, R., “Managing worker fatigue on transmission/Distribution (td) line work”, Bethesda, MD, 2016, ELECTRI INTERNATIONAL The Foundation for Electrical Construction Inc., <https://electri.org/product/managing-worker-fatigue-on-transmission-distribution-td-line-work/>
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INVITED SCHOLARLY PRESENTATIONS

- [1] “Fatigue Management Workshop” (Presenter and Moderator) INGAA Foundation, Houston, TX, December 8th, 2021.
- [2] “Managing Fatigue in Electrical Utility” (Presenter) EPRI Fatigue Management Workshop, Online, October 27-28, 2020.
- [3] “Worker Fatigue in Pipeline Construction” (Presenter and Moderator) INGAA Foundation, INGA Safety Roundtable, Houston, TX, February 17-18, 2020.
- [4] “Fatigue in Electrical Utility Company workers” (Presenter) EPRI Energy and Environment Program Advisory and Sector Council Meeting, Chicago, IL, September 16-19, 2019.
- [5] “Fatigue in TD workers” (Presenter) Quanta Services Risk and Safety Conference, Houston, TX, September 28, 2017.
- [6] “Electrical Workers Fatigue” (Presenter and committee member) EEI Mutual Assistance Conference (Edison Electric Institute), Seattle, WA, October 2-5, 2016.
- [7] “Electrical Workers Fatigue” (Presenter) EEI Fall Occupational Safety & Health Committee Conference (Edison Electric Institute), Dayton, Ohio, September 26-29, 2016.
- [8] “Utility Workers Fatigue” (Presenter and committee member) PSEG, The Human Factor in Performance, (PSEG), Newark, NJ, June 9-10, 2016
- [9] “Electrical Workers Fatigue” (Presenter) ELECTRI International council meeting (ELECTRI International), Naples, FL, January 20-22, 2016
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RESEARCH PROJECTS AND GRANTS

- [1] Electric Power Research Institute (EPRI), “Practical Fatigue Measurement Approaches for Use at Utility Job-sites-Pilot Test”, September 2021, Total: \$93,000; Dr. Techera (\$56,315)
- [2] Electric Power Research Institute (EPRI), “Practical Fatigue Measurement Approaches for Use at Utility Job-sites-Technology Scouting”, April 2021, \$20,000
- [3] CU Boulder Community Impact Grant, October 2020, \$5,000
- [4] Electric Power Research Institute. “Fatigue Management in the Electric Utility Industry: Characterization and Mitigation Approaches” October 2019., \$7,500
- [5] America Walks Foundation. “Pedestrian Crossing Infrastructure Improvement in Grand Junction, CO.” December 2018. \$1,500
- [6] ELECTRI International Foundation. “Managing Worker Fatigue on Transmissions and Distribution Line Work”. October 2014.
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AWARDS AND HONORS

University of Colorado Doctoral Assistantship for Excellence Award <i>(tuition, fees, and up to \$35,000/year)</i>	2014–2017
University of Colorado Dean's Graduate Assistantship <i>(\$5,000)</i>	2014–2017
Balsells Fellowship <i>(\$3,000)</i>	2014–2016

PROFESSIONAL MEMBERSHIPS

Hispanic Society of Professional Engineers (SHPE)	2021–Present
American Institute of Steel Construction (AISC)	2019–Present
Structural Engineering Institute (SEI)	2018–Present
American Society of Civil Engineers (ASCE)	2017–Present
Construction Institute (CI)	2017–Present
American Society of Engineering Education (ASEE)	2016–Present

PROFESSIONAL SERVICE

Automation in Construction (Reviewer)	2018–Present
Journal of Cleaner Products (Reviewer)	2018–Present
International Journal of Construction Education and Research (Associate Editor)	2017–Present
ASCE, Construction Research Congress (Reviewer)	2016–Present
American Society of Engineering Education (ASEE) (Reviewer)	2016–Present

PROFESSIONAL TRAINING

OSHA 30 (June 2022)

- The course is specifically made to meet the requirements for safety directors, forepersons, and field supervisors. This all-inclusive training program provides essential safety information on OSHA compliance issues.

OSHA 10 (January 2022)

- These courses serve as an orientation to occupational safety and health for workers covered by OSHA 29 CFR 1926.

GPS data collection and mapping

Assessment and Evaluation Methods and Tools of Structural Forensic Investigations (7005IW2019)

ASCE Webinar (April 2018)

- Definition, types of forensic investigations and the typical clients associated with each
- Load carrying capacity investigations concentrating on projects in which no existing structural drawings are available, and buildings constructed with vintage structural systems
- Investigations associated with deteriorated concrete and steel structures

Graduate Certificate in College Teaching (March 2018)

- Sustained and systematic pedagogical training that promotes current and best practices in teaching and learning; appropriate use of instructional technology; and systematic assessment of student learning outcomes.

§ 40 hours of coursework, reflective teaching experience, faculty and peer observation and evaluation.

Design-Build Certification Course by DBIA (June 2017)

- Fundamentals of Project Delivery; Principles of Design-Build Project Delivery; Post-Award Design-Build

Construction and Architecture industry software packages:

- MATLAB: Modeling, Intermediate level, 8 years of experience
- AutoCAD: Design, Advanced level, 12 years of experience
- Revit: Design, Advanced level, 3 years of experience
- Navisworks: Modeling, Advanced level, 3 years of experience
- Micro-station: Design and Work Packaging, Intermediate level, 1 year of experience
- Robot Professional Structural Analysis: Intermediate level, 1 year of experience
- Autodesk 3D Max and Sketchup 3D: Modeling, Intermediate level, 5 years of experience
- MVP Stats: Statistical Software, Advanced level, 5 years of experience
- SPSS: Statistical Software, Advanced level, 5 years of experience
- @Risk: Risk Modeling, Intermediate level, 1 year of experience
- Primavera: Risk Modeling, Intermediate level, 1 year of experience
- SIGMA Estimates: Scheduling, Advanced level, 1 year of experience

LANGUAGES

- Spanish
 - English
 - Catalan
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