



HUMAN FACTORS
and ERGONOMICS SOCIETY

HFES 2026 Western Regional Conference

April 17, 2026 · El Paso, Texas

University Union Suites, The University of Texas at El Paso

Conference Website: <https://www.utep.edu/cs/hfes-ep/hfeselpaso@gmail.com>

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HELIX SOLUTIONS

Friday, April 17, 2026

7:30 – 8:30 am

Check-in & Welcome Breakfast

Check-in: UE3 — 3rd Floor Center Lounge; Breakfast: University Suite Room 312

Name tags, light breakfast, and coffee service. Time to find your session room before the morning panel.

8:30 – 8:45 am

Welcome Remarks

Union Cinema — Room 109

Welcome remarks by Dr. Arunkumar Pennathur, Chair of HFES 2026 Western Regional Conference, El Paso

8:45 – 9:45 am

Community Engagement Panel

Union Cinema — Room 109

Beyond the User: Can Traditional HFE Methods Meet the Demands of Community-Based Participatory Research?

Priyadarshini Pennathur, Chair · The University of Texas at El Paso

Naomi Fertman, Co-Chair · The University of Texas at El Paso

Arunkumar Pennathur · The University of Texas at El Paso

Juan Ferret · Philosophic Systems Institute

Miguel Palomar · EP VIBE

Camille Castillo · Homeless Coalition

With community partners from the El Paso region

Abstract

Traditional methods in human factors engineering, such as contextual inquiry, field-based qualitative studies, or workflow analysis, have consistently focused on placing people, workers, or users at the core of design process, embodying the principle of human-centered design. Participatory design and co-design approaches have extended this further, actively involving people in shaping solutions. Yet community contexts introduce distinct challenges: community members are not just end-users, but have ownership over the problems and the data, and the solutions directly impact them. Community-based participatory research (CBPR) formalizes this through shared governance, co-ownership of findings and accountability, principles that sit in tension with traditional HFE research timelines and methods. This panel examines whether traditional HFE methods differ from community-based participatory research (CBPR), where HFE's methodological toolkit fits within a CBPR model, what adaptations are necessary, and what each approach can learn from one another.

Community organizations and outreach partners from the El Paso region join human-centered design and human factors engineering researchers to discuss how to leverage and integrate both approaches. Community partners will describe specific, bounded design challenges and panelists will address the methodological and logistical considerations that arise when HFE research moves into community-engaged research with the goal of identifying practical frameworks and strategies that attendees can apply in their own work.

9:45 – 10:00 am

Morning Break

Coffee and beverages.

10:00 – 11:00 am

Opening Remarks & Keynote

Union Cinema — Room 109



Human Factors Considerations for Enhancing Joint Human-AI Performance: From Function Allocation to Human-AI System Test and Evaluation

Dr. Emilie M. Roth · Roth Cognitive Engineering

There is growing evidence that how functions are distributed across human and intelligent agents can strongly impact the quality of joint human-AI system performance. This talk covers strategies for designing robust joint human-AI systems—identifying and leveraging complementary performance as part of the function allocation process, and via test and evaluation methods that stress test proposed designs. Dr. Roth draws on recent work including an analytic framework for human-intelligent system function allocation and a report providing human-factors guidance for AI/ML integration in FAA systems.

Dr. Roth is a Fellow of HFES, owner and principal scientist of Roth Cognitive Engineering (founded 1997), and has over 30 years of experience across nuclear power, railroad operations, military command and control, and healthcare. She has participated in multiple National Academies consensus studies including Human-AI Teaming (2021–2022).

Followed by group photo.

11:00 – 11:15 am

Break

Move to concurrent session rooms.

11:15 am – 12:15 pm

Session 1 | Concurrent Presentations

Concurrent tracks (four rooms).

1A

The Working Body: Performance, Strain, and Support

Elkins Room 314

Session Chair: S.S.N. Gattineni (UT El Paso) · **Co-chair:** O. Cano (UT El Paso)

11:15

Exercise-Induced Blood Flow Patterns: The Interaction Between Human Movement and Vascular Physiology

A. Gurovich · UT El Paso

11:30

Detecting Early Physiological Signs of Work-Related Muscle Strain and Fatigue Using Quantitative Sensory Testing

O. Cano, G. Ibarra-Mejia · UT El Paso

11:45

Biomechanical Analysis of Grip and Twisting in Juice Extraction with an Electric Industrial Juicer

D.S. Flores Plazola, R.A. Rosales Cinco · Universidad de Guadalajara

12:00

Soft Industrial Exoskeletons for Occupational Assistance: A Comprehensive State-of-the-Art Review

I. Carvajal, J. Hernandez, E. Martinez · UACJ

1B**When Humans Make Bad Decisions I: Adversarial Minds***Ray Room 309***Session Chair:** J. Sultana (UT El Paso) · **Co-chair:** M.T. Nazim (UT El Paso)

11:15

Do Cyber Adversaries Exhibit the Sunk Cost Fallacy? A Data-Driven Experimental Study*M.A. Sheriff, M.A.I. Khan, M.T. Nazim, C. Kiekintveld, P. Aggarwal · UT El Paso*

11:30

Persistence of the Representativeness Heuristic in Increasingly Realistic Cyber Attack Contexts*M.T. Nazim, P. Aggarwal, C. Kiekintveld · UT El Paso*

11:45

Detecting Deception and Preference Drift: A Bayesian RL Approach to Adversarial Naivety in LLM Negotiations*A. Alvarez · UT El Paso*

12:00

Human Factors in the Acceptance of Bitcoin*E. Smith, Y. Davizon, K. Iyer, J. Acosta, J. Ferret · UT El Paso***1C****Designing for Communities: Access, Mobility, and Health***Smiley Room 310***Session Chair:** K. Haghjoo (UT El Paso) · **Co-chair:** J. Mendoza (UT El Paso)

11:15

Cultural Stigma and Help-Seeking Hesitancy Among Mexican American Informal Dementia Caregivers*J. Guevara Mendoza, L. Tovar, A. Pennathur · UT El Paso*

11:30

Transfer Analysis in the A.M.G. Urban Train System: A Case Study of People with Visual Disabilities*K. Vazquez · Universidad de Guadalajara*

11:45

Analysis of Barriers and Risks for Wheelchair Users During Public Transport Transfers in the Guadalajara Metropolitan Area*A.Y. Godinez, J.A. Rey-Galindo · Universidad de Guadalajara*

12:00

Developing a Human-Centered Methodological Framework for Evaluating Micromobility Experiences*K. Haghjoo, S.S.N. Gattineni, S. Zaheen, J. Kim, A.A. Raheem · UT El Paso***1D****The Practice of Human Factors: Industry, Policy, and Research Systems***Wiggins Room 315***Session Chair:** A. Dominguez Kramer (UT El Paso) · **Co-chair:** V. Fontes (UT El Paso)

11:15

Center for Operator Performance: Industry–Academia Collaboration*D. Strobhar · Beville Engineering*

11:30	<p>Understanding How Shifts in Research Policy Shape the Work System of Scientists: A Human Factors and STS Perspective</p> <p><i>A. Dominguez Kramer, A. Pennathur · UT El Paso</i></p>
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11:45	<p>Biomechanical Analysis of a Manual Handling Task Performed by a Bakery Employee in Zapopan, Jalisco, Mexico</p> <p><i>F.C. Gutiérrez Espinosa · Universidad de Guadalajara</i></p>
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12:15 – 1:15 pm **Catered Lunch**
University Suite — Room 312

1:15 – 2:15 pm **Session 2 | Concurrent Presentations**

Concurrent tracks (four rooms).

2A **The Working Body: Wearables, Augmentation, and Measurement**
Elkins Room 314
Session Chair: S.S.N. Gattineni (UT El Paso) · **Co-chair:** C.J. Colorado Issa (UACJ)

1:15	<p>A Multimodal sEMG–IMU Wearable System for Upper-Limb Ergonomic Assessment: Work in Progress</p> <p><i>I. Carvajal, J. Hernandez, E. Martinez · UACJ</i></p>
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1:30	<p>Use of Exoskeletons in Controlled Environments: A Systematic Literature Review of Protocols and Applications</p> <p><i>C.J. Colorado Issa, J.L. Hernández Arellano, A. Chacara Montes, M. López Acosta · UACJ</i></p>
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1:45	<p>Estimating Ground Reaction Forces from Marker-Based 3D Gait Trajectories Using Machine Learning</p> <p><i>V.M. Bonilla, A.B. Nasser, J. Jang, J. Cho · UT El Paso</i></p>
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2:00	<p>Analyzing Human Gaze when Observing Computer-Generated Artworks Compared to Traditional Human-Made Artworks</p> <p><i>S. Rojas Murillo, C. Lee, Y. Zhang · Hofstra University</i></p>
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2B **When Humans Make Bad Decisions II: Shortcuts and Systems**
Ray Room 309
Session Chair: J. Sultana (UT El Paso) · **Co-chair:** A. Rahman (UT El Paso)

1:15	<p>Even Cyber Adversaries Take Shortcuts: An Empirical Study of Default Heuristics in Cybersecurity Tasks</p> <p><i>M.A.I. Khan, M.A. Sheriff, M.T. Nazim, C. Kiekintveld, P. Aggarwal · UT El Paso</i></p>
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1:30	<p>Using Choice Overload to Degrade Cyber Attacks</p> <p><i>A. Rahman · UT El Paso</i></p>
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1:45	<p>Modeling Human Phishing Susceptibility Through Instance-Based Learning: A Systematic Evaluation</p> <p><i>S. Kuikel, A. Piplai, C. González, P. Aggarwal · UT El Paso</i></p>
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2:00	<p>From Narrative to Intent Schema Architecture: An AI System for Human-Centered Advising Decision Support</p> <p><i>P.M. Nguyen, X. Wang, S. Bogle, P. Aggarwal, S. Rayana · Texas A&M University – Victoria</i></p>
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2C	<p>Care, Communication, and Human Connection</p> <p><i>Smiley Room 310</i></p> <p>Session Chair: P. Edayath (UT El Paso) · Co-chair: J. Sanchez-Balandran (UT El Paso)</p>
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1:15	<p>Design and Development of a Frugal Multifunctional Birthing Bed in Indigenous Communities</p> <p><i>F. Cortes Chavez, E.L. González Muñoz · Universidad Panamericana</i></p>
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1:30	<p>Patient Comfort versus Clinical Efficiency in Women’s Health Examinations</p> <p><i>J. Sanchez-Balandran, A. Pennathur · UT El Paso</i></p>
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1:45	<p>Understanding the Role of Communication in Postpartum Well-Being</p> <p><i>P. Edayath, D. Campos, A. Pennathur, P. Pennathur · UT El Paso</i></p>
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2:00	<i>Open Discussion</i>
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2D	<p>Technology Reshaping How and Where We Work</p> <p><i>Wiggins Room 315</i></p> <p>Session Chair: S. Aital (UT El Paso) · Co-chair: E. Puchaicela (UT El Paso)</p>
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1:15	<p>Sociodemographic and Work Characteristics Study of WFH Conditions Among Mexican Employees</p> <p><i>M.A. Rodríguez, A.A. Maldonado · UACJ</i></p>
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1:30	<p>A Comparative Study of Traditional Training and Mixed Reality–Assisted Standard Work Execution for CNC Operator Training</p> <p><i>S. Aital, J. Senthilkumar, A. Lopes · UT El Paso</i></p>
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1:45	<p>Seeing Interviews Through Smart Glasses: A Ground Truth Theory of Evaluative Conversations in Hiring and Performance Management</p> <p><i>R. Posthuma · UT El Paso</i></p>
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2:00	<p>A Testbed for Evaluating Prosodic Manipulations in Terms of Their Value in Collaborative Dialogue</p> <p><i>E. Puchaicela, V. Bolado, N. Ward · UT El Paso</i></p>
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2:15 – 2:30 pm

Afternoon Break

University Suite — Room 312

Coffee and beverages.

2:30 – 3:30 pm

Industry Panel

Union Cinema — Room 109

Humans and Advanced Technology in the Modern Workplace: An Evolving Interdependence

Mr. Luiz Nunez, ILC Dover. Mr. Gustavo Fierro, Mount Franklin Foods. Mr. Miguel Ortiz-Lopez, Eagle Foods
Panel Chair: Dr. Amit Lopes

Abstract

Two decades ago, Mital and Pennathur (2004) argued in the International Journal of Industrial Ergonomics that the relationship between advanced manufacturing technologies (AMT) and the human workforce is fundamentally interdependent—that neither full automation nor unaided human performance can optimize productivity, quality, reliability, or flexibility alone. They called for a human-centered approach to designing manufacturing systems that leverages the complementary strengths of technology and people.

Since that publication, the technological landscape has been transformed. Collaborative robots (cobots), AI-driven decision support, digital twins, Industry 4.0/5.0, generative AI tools, and wearable assistive technologies have reshaped what “advanced technology” means on the shop floor, in logistics, in healthcare delivery, and across service industries. Yet the core thesis endures: humans remain essential for judgment, flexibility, creativity, and real-time adaptation—capabilities that even today’s most sophisticated systems cannot fully replicate.

This industry panel brings together leaders from the El Paso–Juárez region’s industry to examine how the human–technology relationship has evolved and where it is heading. Panelists will share firsthand accounts of deploying advanced technologies in their operations, reflect on what worked and what did not, and discuss the human factors challenges that emerged—including workforce training and reskilling, worker trust and acceptance, stress and cognitive load in technology-rich environments, error management, and equitable technology access in a binational border community.

The panel will explore questions such as: Has the promise of automation-driven productivity gains materialized in practice? How are organizations balancing technological capability with human skill development? What new human factors challenges have emerged with AI, cobots, and smart manufacturing that were not anticipated two decades ago? And how should the next generation of human factors professionals prepare for these evolving interdependencies? Attendees will gain practical, experience-based perspectives on designing, implementing, and sustaining human-centered technology systems in real-world industry settings.

3:30 – 4:30 pm

Poster Session

UE3 — 3rd Floor Center Lounge

Posters are grouped thematically. Authors present at their boards throughout the full session.

Gait, Biomechanics & Rehabilitation

M. Saucedo-Flores,
J. Kim, V. Lebisova,
J. Jang
UT El Paso

Cost-Effective Gait Retraining Using Visual Feedback to Reduce Ankle Inversion in Chronic Ankle Instability

V. Lebisova, J. Kim,
M. Saucedo-Flores,
V. Murrell, J. Jang
UT El Paso

Event-Centric Gait Rehabilitation Using a 1D Temporal Convolutional Network for Real-Time Feedback in Chronic Ankle Instability

A.B. Nasser, J. Cho, J.D. Eggleston, C. Genrich, D.S. Nava <i>UT El Paso</i>	Differentiating Chronic Ankle Instability from Uninjured Controls Using Markerless Smartphone Motion Capture
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Workplace Ergonomics, Safety & Emerging Environments

J.L. González Narváez <i>Autonomous University of Carmen</i>	Ergonomic and Environmental Assessment of Railway Construction Workers: A Case Study of the Maya Train Project
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J. Sultana <i>UT El Paso</i>	Neuroergonomic Evaluation of Exoskeleton-Assisted Construction Postures Using Multimodal Physiological Monitoring
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E. Nunez <i>UT El Paso</i>	Virtual Reality for Construction Safety: A Systematic Review of Human-Centered Training Design
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R. Ronquillo <i>UT El Paso</i>	Effects of Simulated High-Altitude Construction Work on Cognitive Load and Vigilance in Virtual Reality
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Community Health, Systems & Policy

A. Vernon <i>UT El Paso / College of Nursing</i>	Systems Integration for Dementia-Capable Workforces: A Human Factors Model in a Border Region
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S.S.N. Gattineni <i>UT El Paso</i>	Multimodal Human–Environment Assessment of Air Pollution and Stress in Micromobility Users
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E. Calleros, P. Aggarwal <i>UT El Paso</i>	Privacy Awareness in Cross-Border Healthcare: El Paso–Ciudad Juárez Study
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AI, Decision Support & Cyber Systems

S. Deng <i>UT El Paso</i>	Risk, Rewards, and Security: A Psychological Model of Cyber Decisions
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S. Choi, J. Kim, J. Jeon <i>Kumoh National Institute of Technology</i>	Human-Centered Decision Support for Construction Schedule Prediction Using Large Language Models
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4:30 – 5:15 pm

Awards & Closing Remarks

Union Cinema — Room 109

Best presentation awards (3), best poster awards (3), student acknowledgments, and sponsor thanks.

5:15 – 6:00 pm

Student & Professional Networking Reception

University Suite Room 312

Light finger food and beverages. All attendees welcome.