



2025 AI in Fire Engineering Summit

May 28-30, 2025

Berkeley, California, USA



SFPE FOUNDATION

Grand Challenges Initiative



Berkeley
Engineering



PRE-CONFERENCE	
Wednesday, May 28	
9:30 am	Registration Opens; Expo Hall Opens for Poster Set Up
9:30 – 11:30	Speaker Ready Room Open
10:00 – 11:30	Tour of campus labs; only open to AI Summit registrants; no cost to attend. The tour group will meet in front of the front entrance to the ASUC Student Union and depart at 10:00 am for a walking tour around various campus laboratories. The tour will include multiple facilities, including the Berkeley Fire Research Lab, where wildland fire, spacecraft fire safety, and fire emissions testing takes place. We will see CITRIS and the Banatao Institute, a University of California research center focused on creating IT solutions that generate societal and economic benefits for everyone. We will also see the new Materials Characterization Facility in the historic Hearst Mining Building, see the Campanile, and tour Contra Costa County Fire Department's EV-powered fire vehicle, including various drones and other high-tech apparatus used today.
Wednesday, May 28	
2025 AI IN FIRE ENGINEERING SUMMIT	
1:00 – 1:20 pm	Welcome & Opening Remarks <i>Leslie Marshall, Ph.D., Director, SFPE Foundation</i> <i>Michael Gollner, Ph.D., University of California, Berkeley</i> <i>Tsu-Jae King Liu, Ph.D., Dean and Roy W. Carlson Professor of Engineering, University of California, Berkeley</i>

Wednesday, May 28	
2025 AI IN FIRE ENGINEERING SUMMIT	
Part 0: Situating AI within Fire Engineering	
1:20 – 2:20	Opening Plenary Session
1:20 – 1:50	Demystifying AI for Fire Science and Management <i>Ilkay Altintas, Ph.D., University of California, San Diego</i>
1:50 – 2:20	Artificial Intelligence as an Agent to Suppress Fires: How Can ML Address Challenges in Wildfire Management? <i>Matthias Ihme, Ph.D., Stanford University</i>
2:20 – 3:15	Panel Presentation and Discussion What is AI, and where is it heading? • What digitalization means, and how AI fits in – <i>Yoon Ko, Ph.D., National Research Council Canada</i> • AI and the role of the fire protection engineer – <i>Jonathan Hodges, Ph.D., Jensen Hughes</i> • Integrating AI into curriculum – <i>Milosh Puchovsky, P.E., Worcester Polytechnic Institute</i> • What [explainable] AI is, and how it relates to fire engineering and ethics – <i>MZ Naser, Ph.D., Clemson University</i> • Why we need to establish a trustworthy AI research and education framework – <i>Xilei Zhao, Ph.D., University of Florida</i>
3:15 – 3:45	Networking Break and Research Posters in Expo Hall Light refreshments served
Part 1: Data Management & Analysis for Risk Assessment	
3:45 – 4:10	AI for Resiliency & Fire Protection <i>Jaap de Vries, Ph.D., FM</i>
4:10 – 4:35	Curating Synthetic & High-Resolution Observational Data for Wildfire Studies (Modeling and Validation) <i>Ali Tohidi, Ph.D., University of Maryland</i>
4:35 – 5:00	Automated Fire Pattern Recognition via Shape Metrics and Spatial Localization <i>Shuna Ni, Ph.D., University of Maryland</i>
5:00 – 5:15	Audience Questions & Discussion with Part 1 Speakers

5:15 – 6:00	Panel Discussion Challenges and needs for shared data/databases for use with AI models and tools • <i>Seth Sienkiewicz, P.E., FM - Facilitator</i> • <i>David Saah, Ph.D., Spatial Informatics Group</i> • <i>Nalini Venkatasubramanian, Ph.D., University of California, Irvine</i> • <i>Jason Webb, Potter Electric Signal</i> • <i>Ruchira Datta, Ph.D., Firescore.ai</i>	This panel supported by: 
6:00 – 7:00	Opening Reception, West Pauley Patio and Expo Hall Open Appetizers and drinks served	

Thursday, May 29	
2025 AI IN FIRE ENGINEERING SUMMIT	
9:00 – 9:10 am	Welcome & Day 1 Recap <i>Amanda Kimball, P.E., Executive Director, Fire Protection Research Foundation & 2025 SFPE President</i>
9:10 – 9:35	A Review of the Literature on AI in Fire Journals, with Pioneers, Trends, and Gaps <i>Guillermo Rein, Ph.D., Imperial College London</i>
Part 2: Smart Fire Modeling	
9:35 – 10:00	Isolating the Primary Drivers of Fire Risk to Structures in California <i>Michael Gollner, Ph.D., University of California, Berkeley</i>
10:00 – 10:25	Prediction of the Most Fire-Sensitive Point in Building Structures with Differentiable Agents for Thermal Simulators <i>Khalid M. Mosalam, Ph.D., University of California, Berkeley</i>
10:25 – 10:40	Break Light refreshments provided
10:40 – 11:05	AI prediction of flammability and flammable dispersion <i>Qingsheng Samuel Wang, Ph.D., Texas A&M University</i>
11:05 – 11:20	Audience Questions & Discussion with Part 2 Speakers

11:20 am – 12:15 pm	Panel Discussion Structural/wildfire modeling applications in California • <i>Guillermo Rein, Ph.D., Imperial College London - Facilitator</i> • <i>Dave Winnacker, Retired Fire Chief, Moraga-Orinda Fire District (retired)</i> • <i>Michael Gollner, Ph.D., University of California, Berkeley</i> • <i>Mike Peterson, Ph.D., California Department of Insurance</i> • <i>Nima Masoudvaziri, Ph.D., Berkshire Hathaway Specialty Insurance</i>
12:15 – 1:30	Lunch & Networking Break, Research Posters in Expo Hall, West Pauley Patio Open Boxed lunch provided to all attendees
1:00 – 1:30	Sponsored Product Demonstration in General Session Room (East Pauley) <i>Alex Momand, CEO, FireScore.ai</i> 
Part 3: Digitalized Design, Operation, Inspection, & Maintenance (DIOM) of Fire Protection (FP) Systems	
1:30 – 1:55	Speaker 1 Verification and Validation of AI Systems for Digitalized DIOM of FP Systems <i>Jonathan Hodges, Ph.D., Jensen Hughes</i>
1:55 – 2:20	Speaker 2 AI and Property Loss Control in Warehouses <i>David Flack, Cardinal Health</i>
2:20 – 2:30	Audience Questions & Discussion with Part 3 Speakers

2:30 – 3:15	Panel Discussion AI and fire protection engineering consulting: What does FPE look like in 10 years? • <i>Peter Senez, Ph.D., Senez Co. - Facilitator</i> • <i>Derek White, P.E., Jensen Hughes</i> • <i>Corey Kinsman, P.E., Performance Based Fire Protection Engineering</i> • <i>Chris Lautenberger, P.E., Ph.D., CloudFire Inc.</i> • <i>Qianru Guo P.E., Ph.D., Simpson Gumpertz and Heger</i> • <i>Ralf Bruyninckx, FPC Risk, part of Sweco</i>
3:15 – 3:45	Keynote <i>Chief Daniel Berlant, California State Fire Marshal</i>
3:45 – 4:15	Networking Break, Research Posters in Expo Hall Light refreshments served
Part 4: Digitalized Firefighting and Evacuation	
4:15 – 4:40	Perspective on Technology and Evacuations <i>Chris Bachman, Assistant Chief / Fire Marshal, Contra Costa County Fire Protection District</i>
4:40 – 5:05	AI Applications in Smart Firefighting <i>Xinyan Huang, Ph.D., The Hong Kong Polytechnic University</i>
5:05 – 5:30	Application of AI and Computer Vision in Assisting Firefighting: Flashover Detection and Prediction <i>M. Hamed Mozaffari, P.E., Ph.D., National Research Council Canada</i>
5:30 – 5:45	Audience Questions & Discussion with Part 4 Speakers
5:45 – 6:30	Panel Discussion Is it possible to overcome trust issues with AI? • <i>Xinyan Huang, Ph.D., The Hong Kong Polytechnic University - Facilitator</i> • <i>Robin Zevotek, P.E., NFPA, Principal Engineer</i> • <i>Ben Rogers, CalFire Chief Technology Officer</i> • <i>Kevin Sehlmeier, Retired Michigan State Fire Marshal</i>
6:30 – 7:30	Evening Reception, West Pauley Patio and Expo Hall Open Appetizers and drinks served

Friday, May 30	
2025 AI IN FIRE ENGINEERING SUMMIT	
9:00 – 9:30	Key Takeaways from Days 1 & 2 + AI in FE Workshop Goals <i>Amanda Kimball, P.E., Executive Director, Fire Protection Research Foundation & 2025 SFPE President</i>
GCI Workshop: Driving the Future of AI in Fire Engineering	
9:30 – 10:30	Workshopping Research & Educational Priorities – Breakout groups Group 1: Data Management & Analysis for Risk Assessment (East Pauley/General Session Room) <i>Michael Gollner – Facilitator</i> <i>Maryam Zamanialaei – Scribe</i> Group 2: Smart Fire Modeling (West Pauley/Expo Hall) <i>Jonathan Hodges – Facilitator</i> <i>Wuquan Cui – Scribe</i> Group 3: Digitalized Design, Operation, Inspection, & Maintenance (DIOM) of Fire Protection (FP) Systems (West Pauley/Expo Hall) <i>Yoon Ko – Facilitator</i> <i>Emily Kalil – Scribe</i> Group 4: Digitalized Firefighting and Evacuation (West Pauley Patio) <i>Amanda Kimball – Facilitator</i> <i>Jesse Roman – Scribe</i>
10:30 – 10:50	Break Light refreshments provided
10:50 – 11:30	Breakout Group Report-Outs <i>Leslie Marshall, Ph.D., Director, SFPE Foundation & facilitators from each breakout group</i>
11:30 – 11:45	Prioritization Exercise and Next Steps: <i>Leslie Marshall, Ph.D., Director, SFPE Foundation</i> • Identify top research needs/projects (attendee voting) • Identify top educational/outreach priorities (attendee voting) • Committing to collaboration & building progress hubs through GCI Working Groups
11:45 – 12:00	Closing Remarks <i>Leslie Marshall, Ph.D., Director, SFPE Foundation</i>