

# **ASME DTOG** 2025

DIGITAL HORIZONS: ENERGIZING TRANSFORMATION IN OIL AND GAS, & BEYOND





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#### **ORGANIZING COMMITTEE LEADERSHIP**



**Ed Marotta**General Conference Chair
SLB



Barbara Thompson Conference Vice-Chair BakerHughes



**Thalia Kruger** General Sessions Program Co-Chair NextBlue Industry



**liro Esko** General Sessions Program Co-Chair Siemens



Sagar Gaur Technical Program Chair ChampionX



Hamdi Mnasri Technica lTrack Chair Accenture



Mehrad Jaloli Technical Track Chair HP



**Julieta Cadete**Marketing Coordinator
Chevron



Matt Francheck
Academic Outreach Co-Chair
University of Houston



**Dr. Joshua Gray** Academic Outreach Co-Chair Rice University



**Dr. Greg Kusinski** Oil & Gas Operator Outreach Chair Chevron



Michael Edwards
Workshop Co-Chair
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**Brian Webster** Workshop Co-Chair Shell



Phaneendra B. Kondapi Cont. Education/Courses Chair Jaajitech Digital



Rafik Borji Cont. Education/Courses Vice - Chair Technip FMC



**Uyiosa Abusomwan**Cont. Education/Courses Vice-Chair
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**Dr. Jason Baker** Sponsorship Chair STRATASE



**Brian Skeels**Sponsorship Vice-Chair
TechnipFMC



**Dr. Burak Ozturk** Sponsorship Vice-Chair VIAS3D



**Jim Kaculi** In Memoriam Chevron



#### GENERAL CONFERENCE INFORMATION



Location: Texas V-VII Ballroom Foyer (Lobby Level)

#### REGISTRATION HOURS AND LOCATION

Sunday

October 26: 4:00 pm - 6:00 pm October 27: 7:00 am - 5:00 pm

**Tuesday** 

Wednesday

October 28: 7:00 am - 5:00 pm October 29: 8:00 am - 11:45 am

**Monday** 

#### **CONFERENCE MEALS**

**Morning Refreshments** 

Monday / Tuesday 7:00 am - 8:00 am | Wednesday 8:00 am - 8:30 am

Lunch **Beverage Breaks** 

**Monday** 

October 27: 12:45 pm - 1:45 pm October 27: 3:25 pm - 4:00 pm

**Tuesday** 

October 28: 12:45 pm - 1:45 pm October 28: 10:30 am - 11:00am | 3:25 pm - 4:00 pm

**Monday** 

**Tuesday** 

Wednesday

October 29: 11:45 am - 12:45 pm

## **CONFERENCE RECEPTION - Presented by the Petroleum Division Young Professionals**

**Sponsored by:** 





**Monday** 

October 27: 5:15 pm - 7:00 pm

All conference registrants are invited to join their colleagues for hors d'oeuvres and refreshments during the Monday evening event. Remember to wear your conference badge! Badges are required for all functions



#### GENERAL CONFERENCE INFORMATION

#### **TECHNICAL SESSION ROOM EQUIPMENT**

Each technical session room is equipped with a screen, LCD projector, and laptop. Speakers should arrive to their session room 10 minutes prior to the session start time. Bring a copy of your presentation on a USB/thumb-drive so you can load it onto the show computer.

#### **BADGE REQUIRED FOR ADMISSION**

All conference attendees must always have an official ASME DTOG 2025 badge to gain admission to technical sessions, plenaries, and other conference events. Without a badge, you will not be granted admission to conference activities.

#### PHOTOGRAPHS/VIDEO/AUDIO RECORDINGS

Unless otherwise agreed to in a separate document, participants are reminded that material presented at ASME conferences is under copyright of ASME. As a result, any recording of the presentations is prohibited.

#### **LIMITATION OF LIABILITY**

You agree to release and hold harmless ASME from all claims, demands, and causes of action arising out of or relating to your participation in this event.

#### **ASME CONFERENCES APP**

DTOG will utilize the mobile app "ASME Conferences" in place of a printed program to enhance the conference experience for attendees, speakers, exhibitors, and sponsors.

You will be able to:

- Connect with Attendees
- View Speaker Profiles and Abstracts
- Search and Save Session Information to your calendar
- o Receive important announcements like schedule changes, important events, etc.



# **SCHEDULE AT A GLANCE**

Sunday October 26	Monday October 27	Tuesday October 28	Wednesday October 29		
Registration 4:00 pm – 6:00 pm	Registration 7:00 AM – 5:00 PM	Registration 7:00 AM – 5:00 PM	Registration 8:00 AM – 11:45 AM		
	Morning Refreshments 7:00 AM – 8:00 AM	Morning Refreshments 7:00 AM – 8:00 AM	Morning Refreshments 8:00 AM – 8:30 AM		
	Conference Welcome Day 1 8:00 AM - 8:15 AM	Conference Welcome Day 2 8:00 AM - 8:15 AM			
	Keynote Session 8:15 AM - 9:00 AM	Keynote Session 8:15 AM - 9:00 AM	Standardization		
	Technical Sessions 9:10 AM - 10:50 AM	Technical Sessions 9:10 AM - 10:30 AM Coffee Break 10:30 AM - 11:00 AM	Workshop 8:30 AM - 11:45 AM	Short Course 8:30 AM - 11:45 AM	
	Plenary Session 11:00 AM- 11:45 AM	Plenary Session 11:00 AM- 11:45 AM			
	Panel Session 11:45 AM- 12:45 PM	Panel Session 11:45 AM- 12:45 PM	Conference Lunch 11:45 AM - 12:45 PM		
	Conference Lunch 12:45 PM - 1:45 PM	Conference Lunch 12:45 PM - 1:45 PM	Standardization Workshop Continued	Short Course Continued	
	Technical Sessions 1:45 PM - 3:25 PM	Technical Sessions 1:45 PM - 3:25 PM	12:45 PM – 3:30 PM 12:45 PM – 2:30 PM		
	Coffee Break 3:25 PM – 4:00 PM	Coffee Break 3:25 PM – 4:00 PM			
	Plenary Session 4:00 PM- 4:45 PM	Plenary Session 4:00 PM- 4:45 PM			
	Awards Presentation 4:45 PM- 5:15 PM	Panel Session 4:45 PM - 5:45 PM			
	Welcome Reception 5:15 PM – 7:00 PM				



# DTOG 2025 PLENARY & PANEL SESSIONS OPENING KEYNOTE

Monday, October 27 8:15am - 9:00am TX Ballroom V-VII



Chris Angelides
Managing Director
Ernst & Young LLP

**Biography:** Chris Angelides has three decades of international, technical, and commercial, experience in the Energy industry across the value chain. He has held senior leadership roles in Strategic Planning, Operations, and Stakeholder Management. His experience includes managing Business Unit with P&L responsibility, developing, and implementing Sustainability and Decarbonization Strategies, and establishing Alliance Partnerships to support the Energy Transition.

He currently serves as a Managing Director in Oil and Gas consulting at the Ernst & Young LLP (EY) Houston office. He is focused on supporting EY clients in their Energy Strategy, Decarbonization & Sustainability journeys. His expertise is in Integration of New and Conventional, Mobility, Hydrogen Economy, CCUS, ESG for industry, and a Just & Fair Transition.

He is an Adjunct Professor at the University of Houston (UH) Bauer College of Business, where he teaches courses on Intro to Oil & Gas Strategy and Sustainability & ESG for Industry. He also serves as a Board Member of the UH Bauer College, and as an Advisory Board member of the Consortium for Energy Corporate Social Responsibility (CECSR) at UH Energy.





#### AI PLENARY SESSION

Monday, October 27 TX Ballroom V-VII 11:00am - 11:45am

Title: Al Hype Housekeeping:

Filtering the Marketing Noise to a Signal of Real Applicability Signal



Brent Railey
Global Manager of Data &
Analytics, Digital
Transformation
Chevron Phillips Chemical
Company

**Description:** Just as a filter has trade-offs (a tight filter removes a lot of what you need, but requires more frequent cleaning/replacement; and a less discriminant filter gets the big stuff, is less maintenance, but might let something through that causes problems), so does filtering the promises and claims and marketing about AI that comes from consultants, software vendors, and service providers. What's real vs. marketing hype to sell me something that doesn't really work? Is it a panacea or does it introduce problems of its own? How can my organization handle the onslaught of marketing promises and seemingly unrealistic claims? This session aims to introduce answers to these challenges.

**Biography:** Brent Railey is the Chief Data and Analytics Officer at Chevron Phillips Chemical Company, where he has worked for the last 19 years in various roles, all over the world, from IT to commercial to supply chain.

His achievements at CPChem in analytics include creating the self-service analytics program and forming the Data Science team, as well as delivering multiple high-value advanced analytics projects. His passion is torturing data until it tells the truth hidden within it.



#### **PANEL | Track: BREAKING INTO AI**

Monday, October 27 TX Ballroom V-VII

11:45am - 12:45am

Panel Title: Harnessing The Power of AI in the Energy Industry

**Description:** All is transforming the energy sector by improving efficiency, enhancing operations, increasing safety, and accelerating energy transition. All can be used for predictive maintenance, optimizing energy consumption, forecasting demand, and integrating all energy sources, ultimately contributing to a more sustainable and reliable energy system. This panel brings together industry leaders, policymakers, and All experts to discuss how All-powered tools are implemented leveraging existing tools and expertise and ensuring responsible implementation through ethical practices and data governance.

#### **PANELISTS**



**Kumar Lakshmipathi** GenAl Lead for Energy AWS



**Uyiosa Abusomwan**Professor of Practice & EATON Global
Rice University



Edgar Avalos Gauna Lecturer, Materials Science, CFD, Machine Learning Rice University



Caleb Eastman
IT/OT Specialist & Speaker
Siemens Automation

#### **MODERATOR**



Brent Railey
Global Manager of Data & Analytics,
Digital Transformation
Chevron Phillips Chemical Company



#### **DTOG 2025 PLENARY & PANEL SESSIONS**

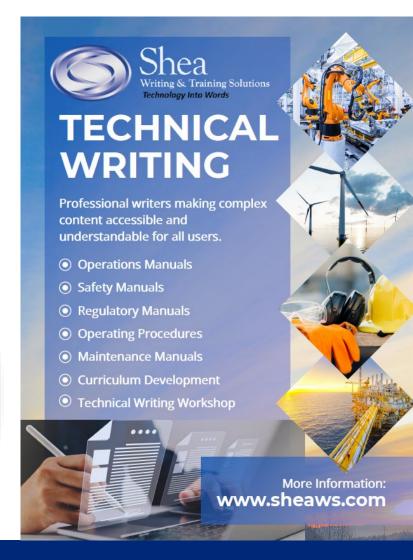
#### **PLENARY**

Monday, October 27 TX Ballroom V-VII 4:00pm – 4:45pm

Title: The Digital Leap: Strategies for Integrating New Technology into the Organization (A Digital Twin Case Study)

James Brady Chief Digital Officer, Baker Hughes

Description: The presentation will address the challenge of moving beyond digital pilot projects to achieve enterprise-wide adoption. Key talking points will cover the need for executive leadership and a cultural shift that views technology as a core business enabler, not just an IT project. Using the Digital Twin as an example, the presentation will detail strategies for organizational redesign, breaking down silos, addressing the talent and skill gap, and establishing strong data governance to ensure new technology successfully drives measurable business value and operational excellence.





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- decision-making
- Apply advanced simulation, modeling and emulation to build up your comprehensive digital twin, a virtual representation of a physical object, process or system
- Visualize and navigate the complexities and data of your refineries, pipelines and drilling rigs using the industrial metaverse's photorealistic, high-fidelity simulation and design capabilities



# The #1 Requirements Management Solution to Automate Standards Compliance and Development in Oil & Gas Projects

Leverage the top-rated requirements and traceability platform to effectively manage oil and gas standards, infrastructure setup, systems development, and automate compliance with a single source of truth.

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Join Jeff Price, SUSE, Field CTO for his presentation:

Unleashing Potential: SUSE Rancher Prime Powers Frictionless Modernization in Oil & Gas

Tuesday, October 28<sup>th</sup> | 1:45 - 2:05 PM



#### **KEYNOTE ADDRESS**

Tuesday, October 28 TX Ballroom V-VII
8:15am – 9:00am
Title: AI Hype Housekeeping:
Filtering the Marketing Noise to a Signal of Real Applicability Signal



Shobhana Mani Vice President, Innovation and Digital Science, Technology bo

**Description:** Just as a filter has trade-offs (a tight filter removes a lot of what you need, but requires more frequent cleaning/replacement; and a less discriminant filter gets the big stuff, is less maintenance, but might let something through that causes problems), so does filtering the promises and claims and marketing about AI that comes from consultants, software vendors, and service providers. What's real vs. marketing hype to sell me something that doesn't really work? Is it a panacea or does it introduce problems of its own? How can my organization handle the onslaught of marketing promises and seemingly unrealistic claims? This session aims to introduce answers to these challenges.

**Biography:** Shobhana Mani is the VP for Innovation and Digital Science at bp. In this role, she is accountable for driving innovation across technology, physical and digital, with a business focused innovation ecosystem that leverages specialized capabilities and expertise including innovation management, multi-scale modelling and digital science.

Prior to joining bp in Aug 2023, Shobhana spent 12 years at Halliburton, where she held multiple technology, commercialization, and product leadership roles – most recently serving as Director of Investor Relations. Prior to Halliburton, she held technical and leadership roles at General Electric and Phillips Semiconductors. Her experience includes research and development in electronics, sensing technologies and distributed control systems.

Shobhana holds a Master of Science degree in electrical engineering from Arizona State University.



#### **RENEWABLES PLENARY SESSION**

Tuesday, October 28 TX Ballroom V-VII 11:00am -11:45am

Title: Geodata-Driven Innovation:

Accelerating Renewable Energy with Digital Intelligence



Céline GersonDickie MaGroup DirectorDirector of DirectorAmericas & President USAAmericasFugroFugro



Dickie Martin
Director of Innovation
Americas
Fugro

**Description:** Fugro's decades of experience in the Oil & Gas sector have built a foundation of geoscience, engineering, and operational excellence that is now powering the future of renewable energy. In this keynote presentation and fireside chat, we will share how Fugro is transforming the way Geo-data is captured and delivered to achieve its vision of creating a holistic and real-time digital twin of Earth by 2030. Through advancements in uncrewed vessels, Al-powered analytics, cloud-native platforms, and remote operations, Fugro is improving the speed, quality, and safety of Geodata solutions, which serve as the backbone for informed decision-making throughout the lifecycle of energy assets.

Biography; Céline Gerson: With over 25 years of experience, Céline has a proven record of successfully growing complex technical businesses across various industries. Céline is a member of the Executive Leadership Team of Fugro N.V. and also leads the strategic growth and P&L management for Fugro Americas. Before joining Fugro, Céline held numerous executive roles worldwide, from strategy to commercial to global P&L business management for Fortune 500 companies in the energy and industrial markets. Along with being a Harvard Business School Alumna, Céline holds a Bachelor's degree from the European University of Brussels and a Juris Doctorate from the University of Houston. She is particularly passionate about energy diversification, sustainability, and digital transformation.

Biography; Dickie Martin: With nearly 40 years of experience, Dickie leads innovation across Fugro Americas, driving advancements in remote operations, autonomous systems, and AI-powered Geo-data solutions. He has held leadership roles in pioneering technologies that enhance safety, efficiency, and insight across energy, infrastructure, and ocean science sectors. Dickie collaborates globally to develop and commercialize cutting-edge systems – from autonomous vessels and subsea robotics to cloudbased analytics platforms. He is particularly passionate about the transformative potential of agentic AI and the emerging possibilities of artificial general intelligence.



#### PANEL | Track: DIGITAL CHALLENGES IN RENEWABLE ENERGY/STORAGE

Tuesday, October 28 TX Ballroom V-VII

11:45pm -12:45pm

Title: Renewables & Storage: Navigating Digital Headwinds and Al Frontiers

**Description:** The expansion of renewables and energy storage brings a complex set of digital challenges. The panel will explore critical issues including escalating cybersecurity threats and the intricacies of grid integration for intermittent sources. It will delve into the complexities of data management and integration, highlighting the need for accurate advanced analytics and forecasting. It will also confront the digital divide, address infrastructure limitations and digital literacy concerns that impact equitable access. Finally, it will tackle unique AI challenges in this sector, covering regulation, bias, and the energy use of AI itself, ensuring these solutions truly advance sustainability.

#### **PANELISTS**



**Vesa Koivumaa** Head of Strategic Growth Wartsila



Maria Angela Capello President Red Tree Consulting



**Dr. Harish S. Krishnamoorthy**Associate Professor, ECE Department,
University of Houston



Maierdan Halifu SVP & Regional Research Director Rystad Energy

#### **MODERATOR**



**Celine Gerson**President & Group Director Americas
Fugro



#### **O&G PLENARY SESSION**

Tuesday, October 28 TX Ballroom V-VII

4:00pm - 4:45pm

Title: Delivering Global Business Value Across Upstream Oil & Gas



Patrick Bangert VP & Chief of Al OXY

**Description:** This keynote explores several use cases of AI within the core business of upstream oil and gas. Patrick will discuss both the technical and scientific context of developing these AI solutions, as well as the necessary cultural transformation required to successfully derive business value from them in real-world operations.

**Biography:** Patrick is the Chief of Artificial Intelligence at Occidental Petroleum where he leads a global cross-functional team to improve many physical and human processes by leveraging advanced analytics and AI. His thought leadership on AI has won him several awards and makes him a popular speaker at conferences and events.

Previously, he was senior vice-president for data, analytics, and AI at Searce, which provides professional services for Google Cloud and AWS. He headed the profit center that is responsible for all projects with a data scientific character globally. Before Searce, Patrick was the vice-president for corporate strategy at Samsung SDS where he led the AI Division from 2020 to 2023 bringing AI tools and services into Samsung Cloud for computer vision, natural language processing, and machine learning with a particular focus on medical imaging.

As a volunteer, Patrick spent six years co-directing the Digital Energy Technical Section of the Society for Petroleum Engineers (SPE) and published their quarterly newsletter.

Before joining Samsung, Patrick spent 15 years as CEO at algorithmica technologies, a machine learning software company serving the chemicals and oil and gas industries. Prior to that, he was assistant professor of applied mathematics at Jacobs University in Germany, as well as a researcher at Los Alamos National Laboratory and NASA's Jet Propulsion Laboratory. Patrick obtained his machine learning PhD in mathematics and his Masters in theoretical physics from University College London, and his business degree from INSEAD.

A German native, Patrick grew up in Malaysia and the Philippines, and later lived in the UK, Austria, Nepal and USA. He has done business in many countries and believes that AI must serve humanity beyond mere automation of routine tasks. An avid reader of books, Patrick lives in the San Francisco Bay Area with his wife and two children.



#### **PANEL | Track: DIGITAL CHALLENGES IN O&G**

Tuesday, October 28 TX Ballroom V-VII

4:45-5:45

Panel Title: Navigating Digital Hurdles: Data & Digital Standards/Standardization in the Energy Sector

**Description:** The oil and gas industry is grappling with a myriad of digital challenges, from data silos to cybersecurity threats, making their effective address paramount for future success. This session will delve into these pressing issues while simultaneously showcasing the crucial progress being achieved in data and digital standards and standardization across the broader energy sector. By examining these advancements, we will demonstrate how these initiatives are providing foundational solutions, fostering greater efficiency, and driving innovation to overcome current hurdles.

#### **PANELISTS**



Clark Dressen CTO MxD



Matt Rettagliata
Head of Power and Energy Solutions
Google



**Elbert van der Bijl** Director of Marketing Yokogawa



**Dr. Ramanan Krishnamoorti**Vice President for Energy and
Innovation
University of Houston



Keith Gray
VP for Computational Science and Engineering
TotalEnergies

#### **MODERATOR**



Patrick Bangert VP And Chief of Al Oxy



#### **DATA & DIGITAL STANDARDS WORKSHOP 2.0**

Wednesday, October 29 Paluxy 8:30 AM - 3:30 PM



**Michael Edwards**Partners in Performance
Co-Chair



**Brian Webster**Shell Technology Center
Co-Chair

#### **WORKSHOP OBJECTIVES**

#### 1. Review 2024 workshop 1.0 outcome and priority setting

- 1. Recommended Priorities: Safety, Efficiency and Interoperability
- 2. Recommended Eco-system: Role of the SDOs
- 3. Discuss, debate and alignment exercise on recommendations

#### 2. Review Industry Standards & Standardization Landscape Study

- 1. Show landscape of current data and digital standards in the energy (oil & gas operations focus) sector?
- 2. What does the current industry landscape look like as it relates to data and digitalization standards and
- 3. Standardization initiatives for the energy sector.
- 4. Map and prioritize above based recommendations: Safety, Efficiency and Interoperability

#### 3. Deliberate on partnerships and future collaboration

- 1. Working with the SDOs & Partnerships
- 2. Ecosystem to drive and measure standardization value for our industry

#### **VISION**

Integral to transforming our sector, is an:

- Understanding of our current applicable data/digital standards and digitalization processes today, and a
- Unified industry **vision** to progress industry standards through our existing SDO systems. Driving standardize, as a critical enabler to digital transformation, required clarity of which select data and digital requirements need to become "industry standards".

There is a need for a SDO collaborative eco-system that drives a unified direction for data & digital standards that will aid industry standardization while keeping pace with new technology advancements across our value chain.



#### **DATA & DIGITAL STANDARDS WORKSHOP 2.0**

Wednesday, October 29 Paluxy 8:30 AM - 3:30 PM



**Michael Edwards**Partners in Performance
Co-Chair



**Brian Webster**Shell Technology Center
Co-Chair

#### SCOPE

Includes data, digital and digitalization standards for:
The upstream oil & gas and renewables energy sub-sectors and

**Disciplines:** reservoir, subsurface, well integrity, drilling & completions, production, engineering, project planning, remote operational processes, asset automated control systems, automation of equipment on onshore & offshore assets and cybersecurity.

#### **AGENDA**

#### **I.Introduction & Safety Moment**

- I. Chair remarks
- II. Workshop objective Note: Reinforce value case for a direction on data and digital standards and digitalization industry initiative to drive overall standardization

#### II.Outcome of our 2024 Workshop 1.0 & Industry Recommendations

- II. Outcome from 2024 Workshop
- III. Recommended Priorities: Safety, Efficiency and Interoperability
- IV. Recommended Eco-system: Role of the SDOs
- V. Discuss, debate and alignment exercise on recommendations

#### III.Outcome of Landscape Study

- III. Show results of landscape study of current data and digital standards in the energy (oil & gas operations focus) sector.
- IV. Map and prioritize current industry landscape and related data and digitalization standards and standardization initiatives for the energy sector.
  - III. Note: Prioritize based recommendations: Safety, Efficiency and Interoperability
- V. Exercise: Where are the gaps and what is missing?

#### IV.Reimaging an Eco-system

- IV. Consensus building process and value proposition for streamlining industry requirements
- V. Role of SDOs, Trades, Classification Societies and others
- VI. Other relevant standards: Downstream Renewables Industry Digital Standards
- VII. Reimaging eco-system exercise and outcome
- VIII. Path forwards and leadership communication



#### **SHORT COURSE**

Wednesday, October 29 Woodbine 8:30 AM - 2:30 PM

#### **Description:**

As we navigate the digital transformation, AI stands at the forefront, offering unprecedented opportunities to enhance efficiency, safety, and sustainability. Our workshop, "Demystifying AI," will delve into the fundamentals of AI, including data preparation, classical machine learning, and generative AI, all tied to real-world applications in the oil and gas industry. Join us as we explore how these innovations can drive the future of energy and unlock new potentials in your operations.

#### **Workshop Outline:**

- 1.Introduction Dr. Borji
  - 1. 1.1. Objectives of the workshop (15min)
  - 2. 1.2. Al Types and Typical workflow (25min)
- 2. Al Tools Landscape Dr. Borji (20 min)
- 3. Data Cleansing and its application (Model based approach) Dr. Franchek (60min)
- 4. Neural Nets based Solutions (3 hrs.')
  - 1. 4.1. Physics Informed Neural Nets Dr. Rekik
  - 2. 4.2. Computer Vision Practical Methods (YOLO) Ms. Aloui
  - 3. 4.3. LLMs & Applications Dr. Song
  - 4. 4.4. Al Agents & Applications Dr. Marotta

#### **COURSE INSTRUCTORS**



**Dr. Ed Marotta**ChampionX



**Dr. Matt Franchek**University of Houston



**Dr. Rafik Borji** Technip FMC



**Dr. Gangbing Song** University of Houston



**Dr. Malek Rekik**Data Scientist



**Ms. Rahma Aloui** University of Houston



## TRACKS, TOPICS, AND TECHNICAL PROGRAM

#### TRACK 1: DIGITAL CHALLENGES IN OIL & GAS INDUSTRY

The oil and gas sector is undergoing a transformative digital revolution, integrating advanced technologies to optimize production, reduce costs, and enhance sustainability. This track delves into innovative digital solutions tailored for both onshore and offshore operations, focusing on challenges unique to unconventional reservoirs, complex wells, and emissions monitoring. Discussions will highlight real-time asset monitoring, Aldriven failure predictions, hybrid modeling approaches, and advancements in automation and machine learning. Attendees will gain insights into how computer vision, IoT, and edge computing are reshaping safety, inspection, and operational efficiency. Additionally, this track explores best practices in data governance, cybersecurity, and emerging standards for Al/ML implementation, paving the way for a digitally empowered oil and gas future.

#### TRACK 2: DIGITAL CHALLENGES IN RENEWABLE ENERGY / STORAGE

As the global energy sector shifts toward renewables, the need for digital solutions in wind, solar, hydrogen, and energy storage systems has never been greater. This track addresses the digital transformation challenges faced by renewable energy providers, from optimizing offshore wind farms and batteries to integrating multi-physics systems for holistic efficiency. Participants will explore cutting-edge topics such as AI-driven predictive maintenance, adaptive modeling, and the role of neural networks in analyzing renewable energy data. The track also emphasizes the importance of data governance, compliance with regulatory frameworks, and robust cybersecurity measures. Case studies and entrepreneurial showcases will spotlight groundbreaking projects that demonstrate how digital innovations are driving sustainability and shaping the future of clean energy.

#### TRACK 3: DIGITAL CHALLENGES IN RENEWABLE ENERGY / STORAGE

Breaking into artificial intelligence (AI) through machine learning (ML) or generative AI requires a structured approach that balances foundational knowledge, hands-on experience, and continuous learning. Individuals should start by building a strong mathematical foundation in linear algebra, calculus, probability, and statistics, as these concepts underpin ML algorithms. Programming proficiency, particularly in Python, is crucial.

Teams and organizations aiming to integrate AI should focus on fostering a culture of experimentation and learning. Companies can start small by identifying problems that AI can solve, assembling cross-functional teams with domain expertise, and leveraging pre-trained models or cloud-based AI services before developing custom solutions. Upskilling employees through internal training, workshops, or collaborations with AI research institutions can accelerate adoption. Organizations should also prioritize ethical AI practices, data governance, and model interpretability to ensure responsible implementation.

With sessions on ethical AI, workforce augmentation, and entrepreneurial innovations, this track offers a holistic view of AI's pervasive influence. Whether you're looking to harness AI's potential for your industry or stay ahead in this rapidly evolving landscape, this track is your gateway to understanding and leveraging the power of AI across boundaries.



# **AUTHOR INDEX**

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aloui	rahma	173488	01-07 Next-Generation Emission Monitoring: From Detection to Decision
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Gaur	Sagar	171459	01-07 Next-Generation Emission Monitoring: From Detection to Decision
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