DATA SCIENCE CONVENTION 2021

Gulf Coast Section
Data Analytics Study Group

SPE GCS DATA ANALYTICS STUDY GROUP

TRANSFORMING THE ENERGY INDUSTRY WITH DIGITAL INNOVATION

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JULY 8, 2021

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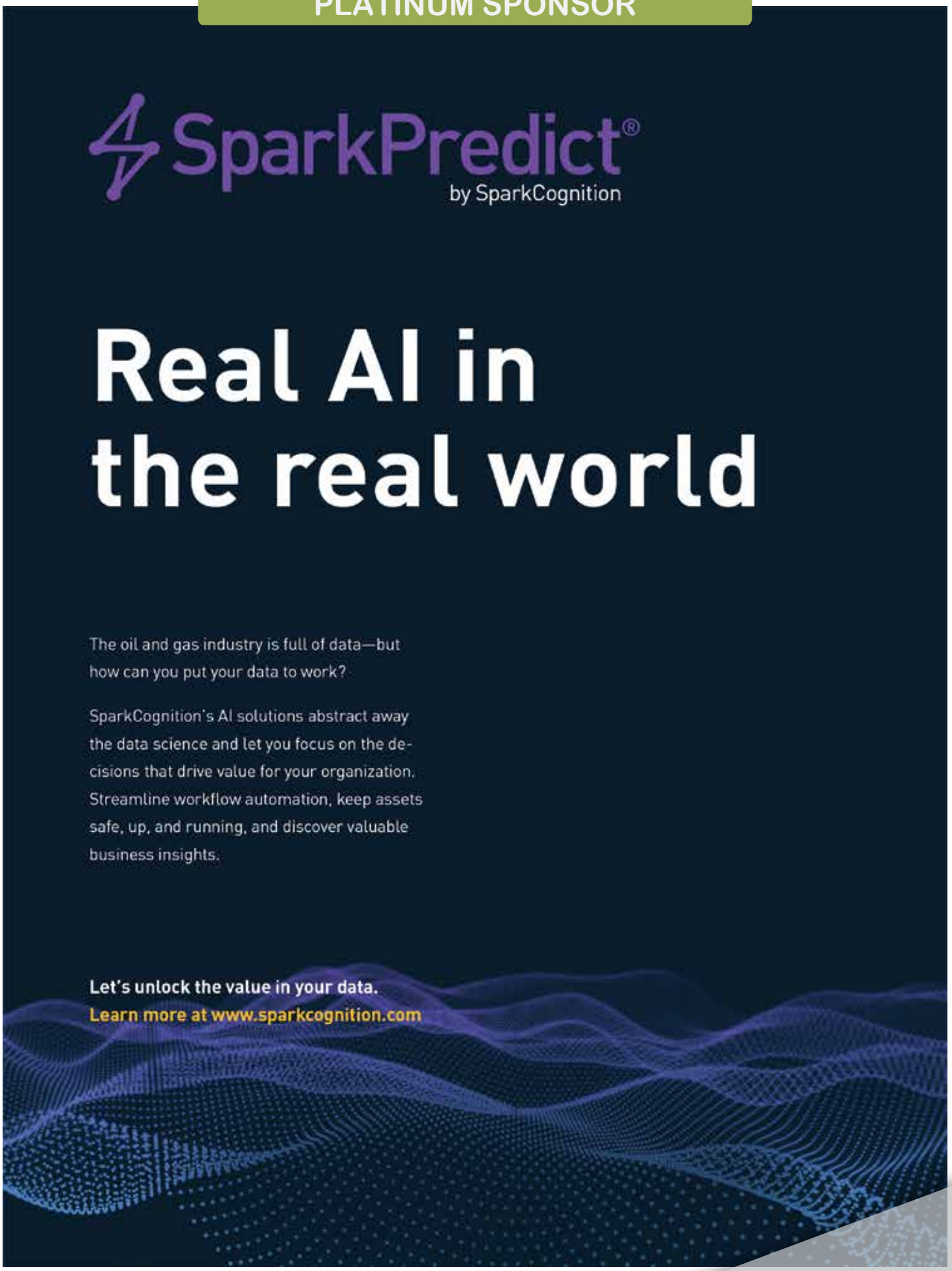


Welcome

Welcome to the Data Science Convention (DSC) 2021, organized by the SPE Gulf Coast Section Data Analytics Study Group. We are excited to bring back this in-person event opportunity after a tumultuous year that gave digital adoption a quantum leap! DSC is a one-day summit that provides data analytics professionals a unique opportunity to learn, share, and discuss with industry and academic leaders on ways digital innovation has been transforming the energy industry.

Every downcycle in the Oil & Gas industry is dominated by new buzz words of digitalization – recent ones include data, analytics, and ML/AI. Are these technologies providing the promised returns? Could these prove to be the saviors for the energy industry, or would they experience premature death on the hype cycle? The convention kicks-off with a keynote from an industry leader who has not only witnessed this journey, but also helped shape it.

Experts from operator, service, tech, start-up companies and academia, representing various sub-sectors of Energy and AI, share lessons and best practices in the technical and poster sessions. These practical use cases suggest that a more pertinent question to ask is: how do we apply these new-found tools in the information age to deliver real business value? The afternoon keynote provides interesting insights from a manager's perspective.

Whether its digitalization or energy transition, a key theme emerges. We, as an industry and as individuals, need to embrace the inevitable change and adapt to the progressively uncertain world to turn adversaries into allies. A panel of industry leaders with diverse expertise and backgrounds engage with the audience on new challenges such as ethics, diversity & inclusion in AI, and energy transition.

Humans rely on cooperation to thrive. We hope to provide a networking and knowledge sharing platform to realize the vision of the study group – taking charge of leading change in the energy industry. This is not possible without volunteer efforts from study group members, judges, and presenters, support from sponsors, and most importantly, participation from the attendees!

Happy learning! Happy networking!

Jayesh R. Jain, PhD
Baker Hughes
Data Analytics Programs Chair

Sarath Ketineni, PhD
Chevron
Data Analytics Study Group Chair

AGENDA

7:00 AM	7:50 AM	**Registration/Breakfast/Headshots photo session**	
7:50 AM	8:00 AM	**Introduction by Sarath Ketineni,** SPE Data Analytics Study Group Chair	
8:00 AM	8:30 AM	**Keynote**	**Ram Shenoy,** President, TiE Houston *Fulfilling the potential of the Digital Transformation to navigate the Energy Transition*
8:30 AM	9:00 AM	Technical	**Suri Bhat**, Global VP, Bluware & **Dhruv Vashisth**, Senior Partner Solutions Architect, AWS *The Global Race to Bring Machine Learning to Knowledge Workers…Even Geoscientists*
9:00 AM	9:30 AM	Technical	**Drew Derenthal,** Geologist, GeoSouthern Energy & **Jim Furl**, Reservoir Engineer, GeoSouthern Energy *Improving Predictive Analytics: Domain Expertise-Aligned Preprocessing in the Haynesville Shale*
9:30 AM	10:00 AM	**Coffee Break/Sponsor Exhibits/Poster Showcase**	
10:00 AM	10:30 AM	Technical	**Frank Male**, Research Associate, University of Texas at Austin *Three common statistical missteps we make in reservoir characterization*
10:30 AM	11:00 AM	Technical	**Alberto Rivas**, Principal Applications Developer, Seeq Corporation *Real-World Application of Diagnostic Methods to Process Data*
11:00 AM	11:30 AM	Technical	**Jaidev Amrite**, Head of Product - DeepNLP, SparkCognition *Reducing Safety Concerns with Natural Language Processing*
11:30 AM	12:30 PM	**Lunch Break/Sponsor Exhibits/Poster Showcase**	

AGENDA

12:30 PM	1:00 PM	**Keynote**	**John Willis**, VP of Drilling and Completions, Occidental Petroleum *Data Analytics from a Manager's Perspective*
1:00 PM	2:00 PM	**Panel Session**	**Neera Talbert**, Managing Director, AI for Energy, Microsoft **Melissa Suman**, US Land Division Manager, Digital & Integration, Schlumberger **Shana Bolen**, Digital Talent Development Program Manager, Chevron **Jon Walters**, VP - Advanced Analytics, Controls & Digital, NOV *Accelerating the Digital Transformation Post-2020*
2:00 PM	2:30 PM	**Coffee Break/Sponsor Exhibits/Poster Showcase**	
2:30 PM	3:00 PM	Technical	**Marc Spieler**, Global Director of Energy, NVIDIA *Leveraging Accelerated Computing to achieve lowest cost per BOE*
3:00 PM	3:30 PM	Technical	**Jeff Potts**, Advanced Analytics Leader, Baker Hughes *Automating Industrial Inspection with Deep Learning and Computer Vision*
3:30 PM	4:00 PM	Technical	**Dariusz Piotrowski**, Director, Global Solutions, IBM Industrial Sector, IBM *End-to-End Advanced Production Optimization of Interdependent Plant Operations*
4:00 PM	4:15 PM	**Awards & Closing Remarks**	
4:15 PM	5:00 PM	**Networking/Sponsor Exhibits/Poster Showcase**	

SPEAKERS

"Fulfilling the potential of the Digital Transformation to navigate the Energy Transition"

Keynote Address 8:00 AM - 8:30 AM

Abstract: The digital transformation of the oilfield has been taking place for nearly 50 years. Early digitization efforts started in the 1980s, which saw the advent of the concept of the digital oilfield. Yet, like many other industries, there has been a so-called IT productivity paradox: economists have not really seen commensurate financial returns in the oil & gas industry from digital transformation efforts. In the last decade, with the spreading commercial application of Artificial Intelligence/Machine Learning, as well as communication advances such as the Industrial Internet of Things, there is renewed interest in the Oilfield Digital Transformation. Interest is particularly strong because of the massive impact of AI/ML on other industries, and because it might be a strategic necessity for the oil & gas industry to navigate the widely forecast Energy Transition. Yet, at this time, it is still challenging to make compelling business cases for many digital transformation efforts. The financial returns of the oil & gas industry in this century lag far behind the S&P 500. Why is that? Like other technological disruptions, the true of impact of foundational technologies, such as encompassed by the term "digital transformation", is seen when it really does "transform" the nature of the work or operations being undertaken. The presentation will illustrate with some historical examples, concluding with some guidance on where the oil and gas industry might consider focusing its efforts.

Ram Shenoy
President
TiE Houston

Ram Shenoy is an angel investor and co-founder/board member of several companies based on different technology areas - machine learning; materials science and sensing; grid-scale renewable energy storage; and operations/logistics. He is the current President of TiE Houston, the Houston Chapter of The Indus Entrepreneurs, a global non-profit organization devoted to entrepreneurship. Shenoy retired after a career in upstream oil & gas, holding a variety of roles around technology development, management and marketing. He previously was Chief Technology Officer of ConocoPhillips, a large upstream oil & gas operator. Shenoy also spent many years with Schlumberger, his last position being Vice-President of Research, managing Schlumberger global corporate research laboratories. He graduated with a B.A and M.A. in Electrical Sciences from the University of Cambridge, UK, a Ph. D. In Electrical Engineering from Cornell University, NY, and an MBA from the Stern School of Business, New York University, NY

"The Global Race to Bring Machine Learning to Knowledge Workers…Even Geoscientists"

8:30 AM - 9:00 AM

Abstract: There is a global race underway to bring machine learning techniques to knowledge workers across every industry including the energy sector. E&P operators and service companies are exploring machine learning applications to illuminate patterns in seismic data. Traditional implementations require a significant amount of data, substantial compute power, and data science teams who may not have the required domain expertise. We present a novel way to implement interactive machine learning for seismic by utilizing a cloud-native data format, eliminating the laborious data preparation step, and enabling real-time quality control.

Suri Bhat
Global Vice President
of Sales and
Marketing, Bluware

Suri Bhat, Global Vice President of Sales and Marketing at Bluware, has served the upstream oil and gas industry for 25 years in both technical and business roles. With an early career in research and development, he has successfully transitioned from software development roles into customer facing roles including product marketing, business development, and sales. Mr. Bhat has hands-on experience in the upstream E&P life cycle, including land acquisitions and divestitures, geosciences, drilling and completions, production, IT, and data management. Mr. Bhat's work experience includes Halliburton Landmark, TIBCO, FEI Company (acquired by ThermoFisher Scientific), and Drillinginfo (Enverus). Mr. Bhat previously served as Chairman, Advisor, and Event Chair to the Society of Petroleum Engineers (SPE) Data Analytics Study Group. He holds a Master of Business Administration from Texas A&M University, a Master of Science in Industrial Engineering from the University of Houston, and a Bachelor of Science in Machine Tool Engineering from the University of Mumbai.

SPEAKERS

"The Global Race to Bring Machine Learning to Knowledge Workers…Even Geoscientists"

8:30 AM - 9:00 AM

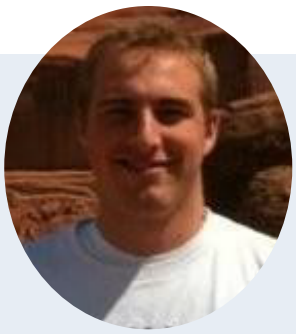
Dhruv Vashisth is a Senior Partner Solutions Architect at AWS. He has more than 17 years of experience in developing, architecting and delivering enterprise solutions, including 13 years in oil and gas industry spanning across multiple domains. Dhruv has been helping AWS energy partners to architect, build and go-to-market on AWS

Dhruv Vashisth
Senior Partner Solutions Architect, AWS

"Improving Predictive Analytics: Domain Expertise-Aligned Preprocessing in the Haynesville Shale"

9:00 AM - 9:30 AM

Abstract: This talk will focus on combining data science techniques and domain expertise to pre-process engineering and geological data for predicting cumulative production via multiple linear regression (MLR) in onshore unconventionals. We will also discuss variable reduction and best practices for creating unbiased, reliable MLR models. Using this workflow for entire plays, we have created highly interpretable models with MLR that perform on par with less interpretable random forest, boosted tree, and neural networks. The resulting model can be used to assist with completion normalization, play fairway mapping, and competitor benchmarking. Perhaps the greatest benefit of this workflow is the broad context that is provided. This allows us to ensure that we are asking ourselves the correct questions, which can spur a more focused technical analysis. We will use public data on the Haynesville and Middle Bossier formations of East Texas and Northern Louisiana as an example throughout the presentation.



Drew Derenthal
Geologist,
GeoSouthern Energy

Drew is a geologist with GeoSouthern Energy Corporation focusing on geologic mapping and analysis for asset development and new opportunities. He has ten years in the industry having previously worked in predominately onshore development and exploration for Anadarko Petroleum Corporation. His plays worked include Austin Chalk, Haynesville, Eagle Ford, Delaware Basin, Marcellus, Rome Trough, Val Verde Basin, and East Texas Tight Sands. He employs machine learning and python workflows in geologic property mapping and key performance driver identification. Drew received his Master's and Bachelor's degree in Geology from Brigham Young University.

SPEAKERS

"Improving Predictive Analytics: Domain Expertise-Aligned Preprocessing in the Haynesville Shale"

9:00 AM - 9:30 AM

Jim focuses on merging data science and typical reservoir engineering concepts to drive the development of GeoSouthern's Haynesville asset and to analyze new opportunities. His experience includes 3 years of field production engineering and 6 years in a variety of onshore reservoir engineering roles (development, A&D, exploration). Jim has a Bachelor's of Science in Petroleum Engineering from Marietta College.

Jim Furl
Reservoir Engineer
GeoSouthern Energy

"Three common statistical missteps we make in reservoir characterization"

10:00 AM - 10:30 AM

Abstract: Reservoir characterization analysis resulting from incorrect applications of statistics can be found in the literature, particularly in applications where integration of various disciplines is needed. Here, we look at three misapplications of ordinary least squares linear regression (LSLR) and show how they can lead to poor results and offer better alternatives, where available. The issues are

1. Application of algebra to an LSLR-derived model to reverse the roles of explanatory and response variables that may give biased predictions. In particular, we examine pore throat size equations (e.g., Winland's and Pittman's equations) and find that claims of over-predicted permeability may in part be due to statistical mistakes.
2. Using a log-transformed variable in an LSLR model, de-transforming without accounting for the role of noise gives an equation which under-predicts the mean value. Several approaches exist to address this problem.
3. Mis-application of R2 in three cases that lead to misleading results. For example, model fitting in decline curve analysis gives optimistic R2 values, as is also the case where a multimodal explanatory variable is present.

Using actual and synthetic datasets, we illustrate the effects that these errors have on analysis and some implications for using machine learning results.

Frank Male, PhD
Research Associate
University of Texas at Austin

Frank Male is a research associate in reservoir engineering at the Center for Subsurface Energy and the Environment at the University of Texas at Austin. He holds a BS in Physics and a BA in Political Science (2009) from Kansas State University, and a PhD in Physics (2015) from the University of Texas at Austin. He has previously worked at the Max Planck Institute for Dynamics and Self-Organization in Göttingen, Germany and the UT Bureau of Economic Geology. His research interests include scaling methods for production analysis and data analysis for formation evaluation and unconventional well productivity.

SPEAKERS

"Real-World Application of Diagnostic Methods to Process Data"

10:30 AM - 11:00 AM

Alberto Rivas, Ph.D.
Principal Applications Developer
Seeq Corporation

Abstract: An overview of a couple of diagnostic methods to analyze industrial process data and their implementation are presented. Specifically, the use of cross-correlation and causality methods for time series data is contrasted. Workflows have been implemented as tools to operationalize these diagnostic methods and allow the process engineer to readily conduct this type of analysis to their own data. An industrial use case is considered to demonstrate the usability of the developed tools. Initial results show that the information of cause-and-effect relationships between process signals can better assist in the diagnosis of complex industrial processes.

Alberto holds a B.S. from University of Guanajuato, Mexico, as well as an M.S. and Ph.D. from Texas A&M University, all in Mechanical Engineering. He has a strong background in Fluid Mechanics, Heat Transfer, Thermodynamics and Data Science. Alberto worked for FMC Technologies as a multi-physics analyst. He then worked for GE Oil & Gas as a CFD specialist first, and then as a developer of data-driven models for subsea field architectures, process engineering, and well drilling applications. Alberto has a passion for teaching too. He was a lecturer for University of Houston teaching Heat Transfer, Fluid Mechanics and Design of Experiments. Alberto received the 2015 Herbert Allen Award from ASME South Texas Section in recognition of outstanding technical achievements by an engineer 35 years of age or younger. In his current role at Seeq, Alberto focuses on operationalizing algorithms that empower process engineers to unlock potential from process data.

"Reducing Safety Concerns with Natural Language Processing"

11:00 AM - 11:30 AM

Jaidev Amrite
Head of Product - DeepNLP
SparkCognition

Abstract: Health, Safety and Environment (HSE) are a critical consideration throughout Oil & Gas operations. Safety incidents can be damaging to employee morale and expose the Operator to regulatory, financial and reputational risk. Today, HSE management is typically performed retroactively, by reviewing past incidents to implement regulations, best practices, training and personnel decisions. However, are we overlooking emerging hazards? Can we make HSE management more proactive and mitigate imminent risks before they cause incidents? In this session, we will demonstrate the use of AI techniques to operationalize all natural language data collected in the organization to actively monitor plant-wide operations.

Jaidev Amrite is the Head of Product for SparkCognition's Natural Language AI, DeepNLP. Before SparkCognition, Jaidev led multiple product development initiatives in IIoT, Data Analytics and Embedded Systems at National Instruments and Microsoft. Jaidev earned his Masters in Electrical and Computer Engineering from Georgia Tech and is passionate about making technology approachable through human centered design and social psychology.

SPEAKERS

"Data Analytics from a Manager's Perspective"

Keynote Address 12:30 PM - 1:00 PM

John Willis
Vice President of Drilling and Completions
Onshore Resources and Carbon Management
Occidental Petroleum

John Willis is Vice President of Drilling and Completions for Oxy's Onshore Resources and Carbon Management region. His prior role was Director of Drilling, Completions, and Well Servicing for the Delaware Basin area of New Mexico. He served as Chief of Drilling for Occidental Oil & Gas Corporation, Drilling Manager in Oman and Drilling Manager in Libya. His experience prior to Oxy includes other drilling roles, service company roles related to project management and software development, and he operated a consulting and software business. He has Chaired two SPE Forums, served on Forum Steering Committees, was an SPE Distinguished Lecturer, and Chaired the 2003 SPE/IADC Drilling Conference.

PANEL SESSION

"Accelerating the Digital Transformation Post-2020"

1:00 PM - 2:00 PM

2020 has been a pivotal year for the energy industry! Disruptors such as the unprecedented Covid-19 impact on energy demand and the investor spotlight on environmental, social, and governance (ESG) goals provided a huge impetus to accelerate the digital transformation in the energy industry. A panel of industry leaders with diverse expertise and backgrounds will discuss vital aspects such as upskilling professionals, diversity & inclusion in AI, remote operations, and energy transition that will shape the future of the energy industry!

"Responsible AI"

Neera Talbert
Managing Director
AI for Energy
Microsoft

Abstract: We are strongly committed to developing and deploying AI systems that follow responsible AI principles. In 2016, Satya Nadella first described the key concerns in the application of AI, citing a greater need for privacy, transparency, and security. That same year, we released the Tay chatbot on Twitter, which was quickly withdrawn due to unforeseen and targeted attacks resulting in the AI system repeating offensive statements. This led us to establish our AI and Ethics in Engineering and Research (Aether) community. Over the course of the next 2 years this committee published a set of AI principles in a book titled The Future Computed: Artificial Intelligence and its Role in Society. I will be talking about the principles and how we are partnering with companies to shape and delivery cross-industry solutions, specifically with a lens on Energy.

Neera Talbert is the Managing Director of AI for Energy in MSFT Engineering. Her organization has a focus on AI within a portfolio which focuses on oil and gas, renewables, and sustainability. In this role, she is responsible for delivering AI platform solutions to accelerate customer value as they transition to a cloud first model. Previously, Neera served as VP of Data and Analytics at CDK Global, VP of Professional Services at Revolution Analytics and Consulting Director at SAS. Her industry background includes Retail, Energy, Manufacturing, and Healthcare. Neera holds a degree from Texas A&M University. She is active in her community as a speaker and volunteer for STEM programs.

PANEL SESSION

"Reinventing Yourself"

Abstract: The world as we know it no longer exists. For some this is a scary concept. For others, it is exhilarating to be part of the Energy Industry transforming. I have always had a passion for the Energy industry but was embarrassed by our speed of digital adoption. While COVID was a terrible incident that left no nation untouched it was the cataclysmic event that caused us to reflect on how we deliver energy in a wider sense to sustain the world. Digital technologies will enable us to deliver energy more safely, more sustainably and more efficiently. This is an exciting time to be in for our industry, but many question how does this shift directly impact the people who have chosen a career in this industry? I am a big believer that if you are doing your job today the same way you were doing your job in January 2020 then you are not keeping pace with technology development and lagging behind. While domain knowledge will still be required, it is imperative that we all upskill ourselves which includes digitally. Ask yourself; How could machine learning improve your results? How could cloud computing make you more efficient? How can I deploy autonomous hardware to improve my production? It is time to reinvent yourself.

Melissa Suman
US Land Division Manager
Digital & Integration
Schlumberger

Melissa Suman is the US Land Division Manager, Digital & Integration, a position she assumed in 2020. The Digital & Integration Division combines leading digital, technical, data and project management expertise and solutions to transform performance across the energy industry. Prior to this, she was the Schlumberger Software Integrated Solutions (SIS) Vice President, Data and NExT responsible for both developing new External Data businesses and managing the global NExT training business. In 2016-2018, Melissa worked for SIS as Global Cloud Solutions Business and Operations Manager responsible for managing commercial business models, business development, deployment, operation and support of all commercial cloud solutions in Schlumberger. In 2014-2016, she served as Seismic Marine Operations Manager for WesternGeco. Prior to that, she held a variety of business development roles across many technologies and in many locations around the world. She joined Schlumberger as a Geophysicist in Houston in 2003. Melissa holds a Master of Science in Management of the Oil and Gas Industry from Heriot-Watt University and a bachelor's degree in Aerospace Engineering from Auburn University.

"Transformative Mindsets"

Abstract: As employees are upskilling and reskilling, leaders need to provide the time, technology, and opportunity to apply newly developed skills. In addition, we need to identify, grow, and activate the behaviors and mindsets critical to promoting and sustaining new, digital ways of working. As we strive to build an innovative culture, leaders need to champion continuous learning themselves and break down barriers to ensure their teams have time to learn to achieve professional goals and enhance the employee experience.

Shana Bolen
Digital Talent Development Program Manager,
Chevron

Shana is the Digital Talent Development Program Manager for Chevron located in Houston, TX, a position she has held since December 2019. This role leads the enterprise-wide effort to develop digital talent in Chevron and ensure we have the digital, specialty area and leadership skills needed in our workforce. In this role, Shana will lead our collaborative, integrated, agile program delivery to activate a cohesive and engaging learning experience for the workforce and to provide greater visibility and transparency into our progress. Shana joined Chevron in 2005 as a Drilling Engineer for the Gulf of Mexico Business Unit in Houston, TX and has since held numerous positions of increasing responsibility across multiple locations in the United States, Nigeria and Indonesia. Shana received Bachelor of Science degrees in Materials Science & Engineering and Chemistry from the University of Wisconsin-Madison. Shana lives in The Woodlands, TX with her husband Matt who also works for Chevron and daughter (Emerson age 4). In her free time, Shana enjoys traveling, photography, live music, and spending time with family and friends.

PANEL SESSION

"Learning to Ask the Right Questions"

Abstract: Brilliant analytics without changed behavior is a waste of time, resources, and the opportunity to gain momentum for your in-house data science team. How can we improve the chances that our analysis will change real world activity? What does it take to get people to actually do something differently because the analysis suggests they do something different? These are everyday struggles that stand in the way of organizations realizing value from their data and analytics organizations. Jon will discuss his experience and some of the best practices for attempting to address these challenges.

Jon Walters
VP Advanced Analytics
Controls and Digital
NOV

Jon has over 15 years of experience in the oil and gas industry working with NOV. He has held senior roles in global manufacturing and supply chain, Corporate Development (M&A), and now leads the Advanced Analytics organization for the Intervention and Stimulation Equipment business unit of NOV. Jon holds a bachelor's degree from the University of Texas at Austin, an MBA from Rice University, and a Master's of Data Science from Northwestern University.

SPEAKERS

"Leveraging Accelerated Computing to achieve lowest cost per BOE"

2:30 PM - 3:00 PM

Abstract: Oil and Gas was one of the first industries to adopt GPU accelerated computing for seismic processing in the late 2000's. Since then, accelerated computing for energy-related applications have expanded from the subsurface to the surface as Energy companies look to lower cost, reduce risk, and increase safety by leveraging AI and deep learning and digital twins. In this talk, Marc Spieler will discuss the cutting-edge of compute, along with relevant open software platforms and SDKs that have driven this expansion. Finally, Marc will highlight applications of AI that have been adopted in adjacent industries such as healthcare and finance, and explain why O&G must also adopt them to achieve the lowest cost per BOE.

Marc Spieler
Global Director
of Energy
NVIDIA

Marc Spieler is responsible for Global Business Development and Strategy for the Energy industry at NVIDIA. Through active engagement with major Energy companies and related research labs NVIDIA is creating Energy and Industrial HPC, Visualization, and AI enabled solutions to solve the industry's most difficult problems. Before joining NVIDIA, Marc spent 13 years with Halliburton, where he held leadership positions in Commercial and Strategic Alliances, Technology Operations, Customer Financial Services, and Corporate Development. Prior to Halliburton, Marc worked for Silicon Graphics, Inc. (SGI) where he held a variety of sales and business development roles in the energy vertical. Marc holds an MBA from Rice University in Texas and a Master of Science in Professional Development and Leadership as well as Bachelor of Science in Marketing from Winona State University in Minnesota.

SPEAKERS

"Automating Industrial Inspection with Deep Learning and Computer Vision"

3:00 PM - 3:30 PM

Abstract: Deep learning is revolutionizing industrial inspection with potential to achieve or exceed human level performance in certain inspection tasks and more consistent outputs when image quality varies. Generally, the computer vision models used in industrial inspection applications utilize convolutional neural networks based on state-of-the-art model architectures trained with GPU-accelerated supervised learning approaches. However, within this paradigm there is significant variety in model development and deployment, primarily due to application constraints, such as need for real-time remote edge processing, challenges in acquiring, and annotating data. Case studies from a variety of computer vision applications such as asset integrity, drill bit inspection, additive manufacturing and operations monitoring will be presented. Technical challenges and key learnings will be shared with perspectives on how to leverage deep learning and computer vision to transform industrial inspection and the future of energy.

Jeff Potts
Advanced Analytics Leader
Baker Hughes

Jeff Potts is the Advanced Analytics Leader for Baker Hughes. Jeff leads an interdisciplinary team of senior data scientists and technologists to deliver new analytics solutions leveraging AI and ML across Baker Hughes product companies, with focus on applications for industrial inspection, additive manufacturing, and energy transition.

Jeff holds a PhD in Materials Engineering from the University of Texas at Austin and a bachelor's degree in Mechanical Engineering from Oklahoma State University. He has published over twenty technical publications and filed over ten patent applications, with technical and leadership experience in a variety of areas including artificial intelligence, energy storage, augmented/mixed/virtual reality technologies and materials development.

"End-to-End Advances Production Optimization of Interdependent Plant Operations"

3:30 PM - 4:00 PM

Abstract: Canada's largest integrated oil and gas producer set out to apply the latest artificial intelligence (AI) and data science methodologies to improve production optimization within their upstream operations facilities. The goal of the project was to optimize across siloes, flag upsets early for timely response and identify and action opportunities in real-time. Over one hundred machine learning models in a multi-layered approach where applied to bring value to the complex problem in both Normal and Upset conditions. This 'systems of systems' approach included advanced AI models for a predictive systems layer - including predictive and adaptive mass balance models - an optimization layer with end-to-end optimization models and an opportunities and process layer for opportunity identification including 58 variations of process upset flagging models.

Dariusz Piotrowski, MBA
Director, Global Solutions
IBM Industrial Sector
IBM

Mr. Piotrowski leads the development of global solutions in Industrial sector focusing on data, advanced analytics and AI solutions for Natural resources industries (oil & gas and mining). He is the executive sponsor of IBM OSDU initiative and specializes in optimization, machine learning and cognitive analytics. Dariusz has over 20 years of analytics, management and systems experience. He has led several transformation programs and implementations of innovative technologies working with senior executives to improved business performance within their companies.

DSC 2021 Poster Competition

Title	Presenter	Affiliation	DSC Participation
Machine Learning Workflow to Identify Brittle, Fracable and Producible Rock in Horizontal Wells Using Surface Drilling Data	Ngoc Tran	University of Oklahoma	In-person
Seismic feature extraction by attribute-assisted convolutional neural networks	Fan Jiang	Halliburton	In-person
Hybrid NMR Data Processing using a Novel Blind Source Separation Algorithm	Naveen Krishnaraj	University of Houston	In-person
Unlocking Hidden Meaning in Machine Learning Results: A Case Study on the Eagleford and Haynesville	Huy Nguyen	IHSMarkit	In-person
A.I. Surface Measurements While Drilling	Evgeniya Dontsova	Enovate.ai	In-person
Evaluating Frac and Wireline performance using Real-Time detection and Analytics on demand	Juan Hurtado	Restreamsolutions	In-person
SDG (Synthetic Data Generation) Encoder for Holistic Rig Sensor Data Quality Control	Jose N. Suarez	University of Houston	In-person
Intelligent Cement Database Design	Cameron Devers	University of Oklahoma	In-person
Accelerating Deep Learning Inference on 3D Seismic Data	Ravi Panchumarthy	Intel	Virtual
Diverter pressure response recognition and automation on time series frac data	Alberto Ramirez	Welldatalabs	Virtual
A Gaussian Process-Based Proxy Model for Simulating Acid Reaction in the Rotating Disk Apparatus	Abdelrahman Kotb	Texas A&M University	Virtual

Poster Judges:

Siddharth Misra, Associate Professor of Petroleum Engineering, Geology and Geophysics at Texas A&M University,

Curtis Cheatham, Senior Drilling Advisor at Corva.ai, and

Kyra Masters, Data Science Manager at Accenture

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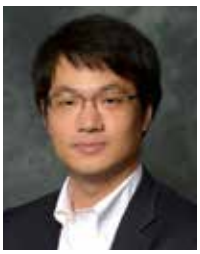

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We thank our sponsors, exhibitors, speakers, poster presenters and poster judges for supporting and participating in our convention.
All proceeds go towards scholarship funds for students. We look forward to meeting you at our exciting events in 2021!

SPE International

Gulf Coast Section
Data Analytics Study Group

Data Science Convention

Norris Conference Center, CityCenter Houston

July 8, 2021