JYOTSNA SHARMA

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EDUCATION

Ph.D., Petroleum Eng., **University of Calgary**, Canada	2012
B.Tech., Electrical Eng. (Power), **Indian Institute of Technology Delhi**, India	2006
Summer Management School, **Handelshochschule Leipzig**, Germany	2005
Exchange Program, Electrical Eng., **University of British Columbia**, Canada	2004

CERTIFICATIONS

- **Professional Engineer (PE) License**, Louisiana — 2024
- **Global Energy and Climate Policy Certificate**, University of London — 2024
- **Project Management Certificate**, Google — 2024
- **Machine Learning**, Stanford University — 2017
- **Lean Six Sigma in Project Management**, IASSC — 2014
- **Chevron's Project Management, Capital Stewardship, and Decision Analysis**, Chevron — 2012

PROFESSIONAL EXPERIENCE

Louisiana State University (LSU) – Baton Rouge (LA), USA   2019−Present
*Assistant Professor, Department of Petroleum Engineering, [**Tenured in 2024**]*
Adjunct Professor, Department of Electrical Engineering

- Secured and managed **26 grants totaling $9.6 MM,** in production optimization, surface and subsurface monitoring, and clean energy technologies from DOE, Nuclear Regulatory Commission, NSF, NASA, National Academy of Sciences, and industry funding from Exxon, Chevron, Shell, and Baker Hughes.
- Received *LSU Rising Faculty Research* award and *NASA Research Enhancement Award*.
- **4 patents** pending, **60 refereed publications** in production optimization, wellbore monitoring, machine learning, enhanced oil recovery, and clean energy technologies (*nuclear, carbon capture and storage*).
- As Principal Investigator (**PI of 16 grants,**) led technical and life-cycle financial management, overseeing interdisciplinary teams with industry, national labs, government stakeholders and collaborators. Developed and executed strategic and technical plans, managed budgets, and delivered oral/written reports.
- As **Consultant for the Bureau of Safety and Environmental Enforcement** (BSEE) reviewed policy documents, participated in technical peer-reviews, and prepared recommendations for senior management.
- Supervised and trained 4 postdoctoral associates, 6 graduate students advised & graduated, and 12 undergrad researchers from Petroleum, Electrical, Computer Engineering, Physics, and Mathematics Departments.
- Taught and developed new/existing graduate and undergraduate courses: Petroleum Economics, Well Logging, Formation Evaluation, Senior Design/Capstone Project, Reservoir Engineering.

Chevron – Houston (TX), Bakersfield (CA), USA; Duri, Indonesia; Calgary, Canada   2012−2018
Subject Matter Expert (SME) / Research Engineer

- Advised upper management on optimum recovery and monitoring strategies for onshore/offshore assets in the **U.S., Venezuela, Indonesia, Canada,** and **Kuwait**. Developed life-cycle production and economic forecasts, SME for field-wide monitoring programs to ensure safety, efficiency, and regulatory compliance.
- Lean Sigma-certified **Project Manager** for 18 projects totaling >**15MM**, supervised teams of 3−7 engineers and geologists. Project e.g.: monitoring of **world's largest steamflood** in Duri (Indonesia), digital transformation of Coalinga (US), monitoring in Hamaca (Venezuela), EOR optimization in Ells River (Canada).
- Awarded *Certificate of Digital Innovation* for applying machine learning for improving safety & efficiency.
- Consistently ranked as "*1−Top Performer*" at Chevron (**99th percentile**) three years in a row.
- Awarded *Chevron's Mentoring Excellence in Technology* for technical achievements.
- Selected for Chevron's *Data Science Development Program* for machine learning achievements.
- **Taught** advanced petrophysics and reservoir surveillance classes in **Chevron** in **Indonesia** and U.S.

Stanford University – Stanford (CA), USA
Visiting Scholar   Summer 2010

- Performed dynamic **optimization** of water-oil displacement and modeled results using **novel fractal theory**.
- Published experimental and modeling results in peer-reviewed journal paper and presented at a conference.

Shell Canada – Calgary (AB), Canada
Research Intern   Summer 2009

- Designed simulation model for Canadian field to **optimize production and reduce environmental footprint**.
- Utilized **machine learning optimization** algorithm for life-cycle production and economic forecast.

Schlumberger – Whitecourt (AB), Canada, Training in Malaysia   2006-2007
Field Engineer
- Responsible for subsurface monitoring and interpretation using logging techniques. **Supervised** field crew of 2−3 operators and technicians. Ensured safe operating procedures, policy compliance, nuclear safety.
- Completed **8 weeks of training in Canada and Malaysia,** performed 60+ logging jobs in Canada.

Technische Universität Dresden – Dresden, Germany
Research Intern   Summer 2005
- Designed **computational model** and **control system** for optimal performance of the crystal growth process.
- Developed a flatness-based control system that was implemented at the **Crystal Growth Laboratory, Berlin**.

AWARDS AND RECOGNITIONS

- Selected for **Speaking of Science** program by LA EPSCoR that showcases research excellence   2024
- Nominated for the *Faculty Excellence Award* by the LSU College of Engineering   2024
- *LSU Alumni Association Rising Faculty Research Award*   2023
- Nominated for the *Rainmaker Award* by the LSU College of Engineering   2021
- *NASA Research Enhancement Award,* NASA, LaSPACE   2020
- *Emerging Faculty Travel Award*, NSF EPSCoR   2019
- *2019 Digital Scholarship* for novel data science project awarded by LSU Library   2019
- *Certificate of Digital Innovation*, Chevron   2018
- Consistently ranked as "*1−Top Performer*" at Chevron (99th percentile)   2015-2018
- Selected for Chevron's *Data Science Development Program* for Data Analytics initiatives   2018
- *Mentoring Excellence in Technology* recognition at Chevron for technical achievements   2017
- *SPE Outstanding Service Award*, given to 0.1% of over 110,000 members worldwide   2016
- Lean Sigma Green Belt Certification - lead 15 Lean Sigma projects saving over $5 MM   2016
- *SPE Technical Editor Recognition* for excellence as a Technical Editor of SPE's journals   2015
- Stanford University Graduate Travel Award, Stanford University   2011
- Penn West Energy Graduate Scholarship, University of Calgary   2011
- Dr. Roger Butler Memorial Graduate Scholarship, University of Calgary   2010−2011
- "*Best Technical Presentation*" at the Improved Oil Recovery Conference, Tulsa, USA   2010
- Society of Petroleum Engineers (SPE) of Canada Graduate Scholarship   2010−2011
- "*Best Graduate Paper*" at the Canadian International Petroleum Conference, Calgary   2009
- Zandmer and Ursula Graduate Scholarship, University of Calgary   2009−2010
- Elnova Award for the "*Best Undergraduate Project"* in Power Engineering at IIT−Delhi   2006
- *Director's Merit Certificate* for being amongst the top 7% students in IIT−Delhi   2004, 2005
- Jawaharlal Nehru National Merit Scholarship by the Steel Authority of India Ltd.   2002−2006

LEADERSHIP & PROFESSIONAL SERVICE

- **Faculty Advisor**: Society of Petroleum Eng. (SPE) Student Chapter: *largest student organization in petroleum*
  Key Achievements during Dr. Sharma's tenure as the Faculty Advisor for LSU SPE   2019-2023
  - Won the *2022 SPE Student Chapter Excellence Award*
  - Hosted and won *2020 SPE Eastern Regional Paper Contest*
  - Won the *2019 SPE Student Chapter Excellence Award*
  - Won the *2019 International Petrobowl Championship*
- **Associate Editor,** Society of Petroleum Engineers (SPE) Journal   2022-Present
- **Reviewer: DOE, NSF** (Panelist in Alexandria), **Nuclear Regulatory Commission, BSEE**   2019-Present
- **Technical Review Board,** Sensors Journal   2020-Present
- **Technical Committee Member,** SPE Fiber Optics Workshop   2020-Present
- **Committee Member**: College Policy Committee   2022-Present
- **Executive**, SPE Distinguished Lecture Committee   2016-2018
- **Technical Committee Member,** 2018 SPE Western Regional Conference   2017-2018

STUDENT MENTORING

- **Faculty Mentor for Student Research Mentorship Program** at Kenilworth Middle School   2021
- **Mentor**: Halliburton Scholar Program at LSU College of Engineering   2019-2021
- **Faculty Mentor**: NSF Research Experience for Undergraduates   2019-2020
- **Faculty Mentor:** LSU President's Future Leaders in Research program   2019
- **Mentoring Circles Program:** Founder of the program launched through LSU CoE   2019-2020
- **Faculty Mentor for ENGage LSU** program, an annual outreach day to teach middle school kids   2019

TEACHING

Courses taught at LSU

Course Name	Category	Year	Course #
Graduate Seminar	Graduate Core	2024	PETE-7999
Well Logging	Undergraduate Core	2019, 2023	PETE-3036
Senior Design Capstone	Undergraduate Core	2022, 2023	PETE-4999
Reservoir Engineering	Graduate Core	2021, 2022	PETE-7241
Petroleum Economics	Undergraduate Core	2020–2022	PETE-3025
Formation Evaluation	Graduate & Undergrad Elective	2019, 2021	PETE-4088

Courses taught at Chevron in Bakersfield (USA) and Rumbai (Indonesia)   2015-2018
- **Petrophysics and Subsurface Evaluation**
- **Applied Heat Management**
- **Steamflood Forecasting**

RESEARCH FEATURED IN MEDIA

1. **Panel Presentation** featured in **Journal of Petroleum Technology Magazine** (2024): https://jpt.spe.org/first-of-its-kind-at-2024-atce-a-panel-discussion-on-the-current-status-of-distributed-fiber-optic-sensing-in-flow-measurement
2. **Business Report:** Research on pipeline leak detection technology featured (2024) https://www.businessreport.com/newsletters/this-lsu-professors-invention-could-save-energy-companies-millions
3. **Yahoo News**: Research on the detection of nuclear leaks featured (2023) https://finance.yahoo.com/news/lsu-petroleum-engineering-professor-research-150000873.html?guccounter=1
4. **National Public Radio (NPR)** Interview on "All Things Considered" (2021) https://www.wrkf.org/show/louisiana-considered/2021-07-22/louisiana-considered-the-m-j-foster-promise-program-using-fiber-optics-to-detect-oil-pipeline-leaks
5. **Interview on NPR** affiliated WRKF on energy transition (2021) https://www.wrkf.org/show/talk-louisiana/2021-07-15/thursday-july-15th-jyotsna-sharma-jim-gates-mark-ballard
6. **ABC Affiliate KATC News Network** article on fiber optic research (2021) https://www.katc.com/news/covering-louisiana/lsu-professor-developing-way-to-detect-oil-leaks-before-they-cause-ecological-damage
7. **The Advocate** newspaper article featuring quantum sensing research (2021) https://www.katc.com/news/covering-louisiana/lsu-professor-developing-way-to-detect-oil-leaks-before-they-cause-ecological-damage
8. **Business Reports** article featuring leak detection work (2021) https://www.businessreport.com/industry/lsu-engineer-researching-how-to-catch-oil-and-gas-leaks-faster
9. **AP News** featured research article on fiber optic sensing (2021) https://apnews.com/article/business-science-education-ee0193e56fce7e26ccd8b5160ce57ab3
10. **Feature** in **Petroleum Technology Magazine** (2019) https://jpt.spe.org/improving-temperature-logging-accuracy-steamfloods

PATENTS

(***** indicates corresponding author, **[1]** indicates Dr. Sharma's student)

1. Marino, A., **Sharma, J**, Tabjula, J.[1], Kim, S., Jain, U. Enhancing the Sensitivity of Fiber Bragg Grating Sensors Using Squeezed Light, Patent Pending 63/698; 384; Filed Oct. 2024.
2. Tabjula, J.[1] and **Sharma, J**. Systems, Methods, and Devices for Leak Detection and Quantification using FBG, Patent Pending US-221205-8650, 63/461,955; Filed: 26 April, 2023.
3. **Sharma, J.** and Ekechukwu, E.K.[1] Distributed Pressure Sensing using Fiber Optic Distributed Acoustic Sensor and Distributed Temperature Sensor, Patent Pending US-20220364943-A; Filed 17 May, 2022.
4. **Sharma, J.**, Almeida, M., Santos, O., Chen, Y., Kunju, M. Distributed Fiber Optic Sensing for Improved Well Control, Patent Pending 63/253,726; Filed: Oct., 2022.
5. **Sharma, J.**, Li, S., Oluwafemi, A.[1], Zhang, L. Super-Resolution of Satellite Data for Geophysical Exploration and Other Applications, Invention Disclosure # LSU-2022-021; Filed: Feb., 2022.
6. **Sharma, J**., Ekechukwu, G.K.[1]. Optical Fiber Based Distributed Pressure Sensing to Improve Safety and Productivity in the Oil & Gas Industry, Invention Disclosure # LSU-2021-069; Filed: July, 2021.

PEER-REVIEWED JOURNAL PUBLICATIONS

1. Shetty, R., **Sharma, J.**, Tyagi, M*. 2024. Study of Sand Transport in a Horizontal Pipeline Using Validated Computational Fluid Dynamics Simulations with Experimental Fiber Optic Distributed Acoustic Sensing Data. **SPE Journal**. SPE-223953-PA.
2. Fan Z, Zhong S, Zhao K, Wang Q, Li Y, Zhang G, Ma G, Zhao J, Yan H, Huang Z, **Sharma, J.**, Chen, K. 2024. A Hermetic Package Technique for Multi-Functional Fiber Sensors through Pressure Boundary of Energy Systems Based on Glass Sealants. **Photonics**. 2024; 11(9):792, https://doi.org/10.3390/photonics11090792.
3. Khan, T., Sviatoslav , B., Gartia, M.R., Wang, J. and **Sharma, J.** 2024. Mapping and Characterization of Local Structures of CsPbBr3. **ACS Omega journal**, 9(33): 35789–35797, https://doi.org/10.1021/acsomega.4c04354

4. Gietz, H., **Sharma, J.*,** Tyagi, M. 2024. Machine Learning for Automated Sand Transport Monitoring in a Pipeline Using Distributed Acoustic Sensor Data. **IEEE Sensors,** 24(14): 22444-22457 https://doi.org/10.1109/JSEN.2024.3408140.

5. Wei, C., Adeyemi, T.[1], **Sharma, J.**, Chen, Y*. 2024. Improved Gas Influx Distribution Estimation using Interfacial Area Transport Equation Enabled Two-Fluid Model: An Advanced Modeling and Full-Scale Experimental Study. **International Journal of Multiphase Flow**, 172 (104706). https://doi.org/10.1016/j.ijmultiphaseflow.2023.104706.

6. Adeyemi, T.[1], Wei, C., **Sharma, J.***, Chen, Y. 2024. Comparison of Gas Signature and Void Fraction in Water and Oil-based Muds using Fiber-Optic DAS, DTS, DSS. **SPE Journal**, 1-22. https://doi.org/10.2118/219753-PA.

7. Gemeinhardt, H.[1] and **Sharma, J.*** 2024. Machine Learning-Assisted Leak Detection using Distributed Temperature and Acoustic Sensors. **IEEE Sensors Journal**, 24(2):1520-1531, https://doi.org/10.1109/JSEN.2023.3337284.

8. Shetty, R.[1], **Sharma, J.***, Tyagi, M. 2023. Experimental Study on Sand Detection and Monitoring Using Distributed Acoustic Sensing for Multiphase Flow in Horizontal Pipes. **SPE Journal**, 29 (02): 1045–1060, SPE-218005-PA**.** https://doi.org/10.2118/218005-PA.

9. Ekechukwu, G.K.[1], **Sharma, J.***, William, M.J. A Novel Velocity Band Energy Workflow for Fiber-Optic DAS Interpretation and Multiphase Flow Characterization. **Scientific Reports** (**Nature Publication**), 13, 15142 (2023), https://doi.org/10.1038/s41598-023-42211-0.

10. Adeyemi, T.[1], **Sharma, J.***, Tabjula, J. 2023. Monitoring and Characterization of Gas Migration in Oil-Based Mud using Fiber-Optic DAS & DTS. **SPE Journal**, 1-15. SPE-217433-PA. https://doi.org/10.2118/217433-PA.

11. Kunju, M.R.*, Adeyemi, T.[1], **Sharma, J.**, Almeida, M. A. 2023. Fixed Choke Constant Outflow Circulation Method for Riser Gas Handling: Full-Scale Tests in Water and Synthetic-Based Mud With Gauges and Distributed Fiber Optic Sensors. **SPE Journal**, 1-19, SPE-217444-PA. https://doi.org/10.2118/217444-PA.

12. Wei, C., Tabjula, J.[1], **Sharma, J.**, Chen, Y*. 2023. The Modeling of Two-way Coupled Transient Multiphase Flow & Heat Transfer during Gas Influx Management using Fiber Optic Distributed Temperature Sensing. **Int. Journal of Heat and Mass Transfer**, 214(01):124447, https://doi.org/10.1016/j.ijheatmasstransfer.2023.124447.

13. Tabjula, J.[1], Shetty, R.[1], Adeyemi, T.[1], **Sharma, J.***. 2023. Empirical Correlations for Predicting Flow Rates Using Distributed Acoustic Sensor Measurements, Validated with Wellbore and Flow Loop Data Sets. **SPE Production and Operations**, 1–16, SPE-215834-PA. https://doi.org/10.2118/215834-PA.

14. Tabjula, J.[1], **Sharma, J.***. 2023. Feature Extraction Techniques for Noisy Distributed Acoustic Sensor Data Acquired in a Wellbore. **Applied Optics**, 62(16), E51-E61. https://doi.org/10.1364/AO.483253.

15. Wei, C., Tabjula, J.[1], **Sharma, J.**, Chen, Y*. 2023. A Novel Data Assimilation-Based Real-Time State Estimation Method for Gas Influx Profiling During Riser Gas Events. **Journal of Energy Resources Technology**, 145(06). https://doi.org/10.1115/1.4056724.

16. Tabjula, J.[1], Wei, C., **Sharma, J.***, Santos, O., Chen, Y., Kunju, M., et al. 2023. Well-Scale Experimental and Numerical Modeling Studies of Gas Bullheading Using Fiber-Optic DAS and DTS. **Journal of Petroleum Science and Engineering**, 225: 211662, June 2023. https://doi.org/10.1016/j.geoen.2023.211662.

17. Ekechukwu, G.K.[1], **Sharma, J.*** 2023. Degradation Analysis of Single-mode and Multimode Fibers in a Full-scale Wellbore and its Impact on DAS and DTS Measurements. **IEEE Sensors**, 23(9): 9287-9300. https://doi.org/10.1109/JSEN.2023.3257264.

18. **Sharma, J.***, Santos, O.L., Ogunsanwo, O., Ekechukwu, G.K[1]., Almeida, M., Chen, Y. 2022. Fiber-Optic DAS and DTS for Monitoring Riser Gas Migration. **Journal of Petroleum Science and Engineering**, 220 (Part B): 111157. https://doi.org/10.1016/j.petrol.2022.111157.

19. Santos, O.*, Almeida, A., **Sharma, J.**, et al. 2022. New Experimental Results Show the Application of Fiber Optic to Detect and to Track Gas Position in Marine Risers and Shed Lights on the Gas Migration Phenomenon Inside a Closed Well. **SPE Drilling and Completions**, 38 (01): 34–51. https://doi.org/10.2118/208682-PA.

20. Ekechukwu, G.K.[1], **Sharma, J.*** 2021. Well-scale Demonstration of Distributed Pressure Sensing using Fiber-optic DAS and DTS. **Nature - Scientific Reports** (Nature Publication), 11:12505 (2021). https://doi.org/10.1038/s41598-021-91916-7.

21. **Sharma, J.***, Dean, J., Aljaberia F[1]., Altememee, N.[1] 2021. In-situ Combustion in Bellevue Field in Louisiana – History, Current State and Future Strategies. **Fuel**, 284: 118992. https://doi.org/10.1016/j.fuel.2020.118992.

22. **Sharma, J**.*, Gede, A., Mims, D, Barnes, D. 2021. Temperature Logging Guidelines and Factors that Affect Measurement Accuracy in Steamfloods. **Journal of Petroleum Science and Engineering**, 196: 107727. https://doi.org/10.1016/j.petrol.2020.107727.

23. Wang, B.[1], **Sharma, J.***, Chen, J., Persaud, P. 2021. Ensemble Machine Learning Assisted Reservoir Characterization using Field Production Data - an Offshore Field Case Study. **Energies**, 2021, 14(4), 1052. https://doi.org/10.3390/en14041052.

24. Santos, O.*, Williams, W., **Sharma, J.**, Almeida, M., Kunju, M., Taylor, C. 2021. Use of Fiber-Optic Information To Detect and Investigate Gas-in-Riser. **SPE Drilling and Completions**, 36(04): 798–815. https://doi.org/10.2118/204115-PA.

25. Rezk, M.Y.[1], **Sharma, J.***, Gartia, M.R. 2020. Nanomaterial-Based CO_2 Sensors. **Nanomaterials**, 2020, 10(11), 2251. https://doi.org/10.3390/nano10112251.

26. **Sharma, J.***, Cuny, T., Ogunsanwo, T., Santos, O. 2020. Low-Frequency Distributed Acoustic Sensing for Early Gas Detection in a Wellbore. **IEEE Sensors**, 21(5): 6158-6169. https://doi.org/10.1109/JSEN.2020.3038738.

27. **Sharma, J.***, Santos, O., Feo, G.[1], et al. 2020. Well-Scale Multiphase Flow Characterization and Validation Using Distributed Fiber Optic Sensors for Gas Kick Monitoring. **Optics Express**, 28(26):38773. https://doi.org/10.1364/OE.404981.

28. Feo, G.[1], **Sharma, J.***, Cunningham, S. 2020. Integrating Fiber Optic Data in Numerical Reservoir Simulation Using Intelligent Optimization Workflow. **Sensors**, 20(11): 3075. https://doi.org/10.3390/s20113075.

29. Feo, G.[1], **Sharma, J.***, Kortukov, D., et al. 2020. Distributed Fiber Optic Sensing for Real-Time Monitoring of Gas in Riser during Offshore Drilling. **Sensors**, 20(1): 267. https://doi.org/10.3390/s20010267.

30. **Sharma, J.***, Inwood, S. B., and Kovscek, A. R. 2012. Experiments and Analysis of Multi-scale Viscous Fingering during Imbibition. **SPE Journal**, 17(4):1142-1159. https://doi.org/10.2118/143946-PA.

31. **Sharma, J.***, Moore, G. R., and Mehta, S.A.2012. Effect of Methane Co-injection in SAGD−Analytical and Simulation Study. **SPE Journal**, 17(3):687. https://doi.org/10.2118/148917-PA**.**

32. **Sharma, J.***, and Gates, I.D. 2011. Interfacial Stability and Displacement Efficiency in Steam Solvent Processes. **SPE Journal**, 16(1):55-64. https://doi.org/10.2118/130050-PA.

33. **Sharma, J.***, and Gates, I.D. 2011. Convection at the Edge of SAGD Steam Chamber. **SPE Journal**, 16(3): 503-512. https://doi.org/10.2118/142432-PA.

34. **Sharma, J.***, and Gates, I.D. 2010. Multiphase Flow at the Edge of Steam Chamber. **Canadian Journal of Chemical Engineering**, 88(3):312-332. https://doi.org/10.1002/cjce.20280.

REFEREED CONFERENCE PUBLICATIONS

1. Shetty, R.[1], Tyagi, M., **Sharma, J***. 2024. Experimental and Numerical Investigation of Solids Transport in a Wellbore using Gauge Measurements Complemented with Fiber-Optic DTS. 2024 SPE ATCE, 23-25 September 2024, New Orleans, Louisiana, SPE-221382-MS. https://doi.org/10.2118/220233-MS

2. Jyoti[1], Mishra, S., Gartia, M., **Sharma, J***. 2024. Analytical and numerical modeling framework for nanomaterial-enhanced fiber-optic CO_2 sensors. Paper at the SPIE Optical Engineering and Applications conference, 18-22 August, San Diego, United States. https://doi.org/10.1117/12.3031981

3. Adeyemi, T.[1], **Sharma, J.***, Williams, M. J. 2024. Minnaert resonance analysis and Poincaré maps to detect gas in wellbore using fiber-optic sensor data. Paper at the SPIE Optical Engineering and Applications conference, 18-22 August, San Diego, United States. https://doi.org/10.1117/12.3031883

4. **Sharma, J.***, Mills, H. 2024. Deep-learning-assisted automated detection of gas influx signature in wellbore using DAS. SPIE Optical Engineering & Applications conf, April, Maryland, https://doi.org/10.1117/12.3014939

5. Zhong, S., **Sharma, J.***, Chen, K. 2023. Optical Fiber-based Novel Quasi-Distributed Pressure Sensing. Presented at Society of Photo-Optical Instrumentation Engineers (SPIE) Optical Engineering and Applications conference. 20-24 August, San Diego, California, USA. https://doi.org/10.1117/12.2677901.

6. Wei, C., Adeyemi, T.[1], **Sharma, J**., Mahmud, S., Chen, Y*. 2023. Full-scale Experimental And Modeling Studies Of Gas Migration & Suspension Behaviors During Wellbore Influx Management Using MPD. **SPE Annual Technical Conf. & Exhibition**, 16-18 Oct. San Antonio, USA. https://doi.org/10.2118/215038-MS.

7. Tabjula, J.[1], **Sharma, J.***. 2023. Comparison of the sensitivity of DAS and FBG for detecting and quantifying small pipeline leaks. **SPIE Defense and Commercial Sensing Conf**, Orlando, Florida, 30 June - 4 May**. INVITED PAPER,** https://doi.org/10.1117/12.2664522**.**

8. Tabjula, J.[1], **Sharma, J.***. 2022. Extraction of Gas Rise Features from a Noisy DAS Data in an Experimental Wellbore. 27th **International Conference on Optical Fiber Sensors**, 28 Aug-2 Sep 2022, Virginia, USA. https://doi.org/10.1364/OFS.2022.Th4.62.

9. Alaofin, O.[1], Zhang, Y., **Sharma, J.***, Li, X. 2022. Cross-Modality Super-Resolution of Satellite Gravity Data for Geophysical Exploration. **IEEE Int. Geoscience and Remote Sensing Symposium**, Kuala Lumpur, July 17-22. https://doi.org/10.1109/IGARSS46834.2022.9883035.

10. Santos, O.*, Almeida, A., **Sharma, J.**, et al,, 2022. New Experimental Results Show the Application of Fiber Optic to Detect and to Track Gas Position in Marine Risers. **SPE/IADC International Drilling Conference and Exhibition**, Galveston, Texas, USA, March 2022. https://doi.org/10.2118/208682-MS.

11. Ekechukwu, G.K.[1], **Sharma, J.*** 2021. Automated Detection & Quantification of Gas Influx Velocity in Wellbore from Fiber-Optic Sensor Data. **Optical Society of America Imaging & Applied Optics Congress**, July 2021, JTh6A.11. https://doi.org/10.1364/AIS.2021.JTh6A.11.

12. Santos, O.*, Williams, W., **Sharma, J.**, Almeida, M., Kunju, M., Taylor, C., 2021. Use of Fiber Optic Information to Detect and Investigate the Gas-in-riser Phenomenon. **2021 SPE/IADC International Drilling Conference and Exhibition**, Virtual, March 2021. https://doi.org/10.2118/204115-MS.

13. Williams, W. C.*, Taylor, C. E., Almeida, M. A., **Sharma, J.**, et al. 2020. Distributed Sensing and Real Time Visualization of Gas Kick Dynamics in a Full-Scale Wellbore, **SPE Annual Technical Conference and Exhibition**, Virtual, 26-29 October, 2020. https://doi.org/10.2118/201539-MS.

14. Feo, G.[1], **Sharma, J.***, Santos, O., Toba, O., Williams, W. 2020. Multiphase Flow Characterization and Modeling Using Distributed Fiber Optic Sensors to Prevent Well Blowout. **Optical Sensors and Sensing Congress**, Optical Society of America, paper EM3C.5, Virtual. https://doi.org/10.1364/ES.2020.EM3C.5.
15. Zhou, X.[1], Tyagi, M.*, **Sharma, J.** 2020. Enhanced Automatic Segmentation of Salt Bodies from Seismic Images Using Wavelet Convolutional Neural Networks. **EAGE Conf.,** Amsterdam, Dec., Vol. 2020, pg 1-5. https://doi.org/10.3997/2214-4609.202011987.
16. Feo, G.[1], **Sharma, J.***, Cunningham, S. 2020. Machine Learning Assisted History Matching to Integrate Fiber Optic Data with Reservoir Simulation. Accepted at **SPE Canadian Heavy Oil and Unconventional Resources** Conference, Calgary, Canada, March. [Conference cancelled due to Covid].
17. Feo, G.[1], **Sharma, J.***, Williams, W., Kortukov, D., Ogunsanwo, T. 2019. Application of Distributed Fiber Optics Sensing Technology for Real-time Gas Kick Detection. **SPE Annual Technical Conference and Exhibition**, Calgary, Canada, September, SPE-196113-MS. https://doi.org/10.2118/196113-MS.
18. Gede, A., **Sharma, J.***, Mims, D, Barnes, D. 2018. Temperature Logging Guidelines and Factors that Affect Measurement Accuracy. **SPE Annual Technical Conference and Exhibition**, Dallas, USA, September. https://doi.org/10.2118/191539-MS.
19. **Sharma, J.***, Popa, A., Cassidy, S. 2017. The Use of Voronoi Mapping for Production Growth in a Heavy Oil Field. **SPE Western Regional Conference**, Bakersfield, USA, April. https://doi.org/10.2118/185676-MS.
20. **Sharma, J.***, Moore, G. R., and Mehta, S.A.2011. Effect of Methane Co-injection in SAGD−Analytical and Simulation Study. **SPE Canadian Unconventional Resource Conference**, Calgary, Canada, November. https://doi.org/10.2118/148917-MS.
21. **Sharma, J.**, and Gates, I.D. 2011. Interfacial Stability in Steam Solvent Recovery Processes. **16th European Symposium on Improved Oil Recovery**, Cambridge, UK, 12-14 April. https://doi.org/10.2118/130050-MS.
22. **Sharma, J.***, Inwood, S.B., and Kovscek, A. R. 2011. Experiments and Analysis of Multiscale Viscous Fingering during Imbibition. **SPE Annual Technical Conference and Exhibition**, Denver, USA October. https://doi.org/10.2118/143946-MS.
23. **Sharma, J.***, and Gates, I.D. 2010. Interfacial Stability and Displacement Efficiency in Steam Solvent Processes**. SPE Improved Oil Recovery Symposium**, Tulsa, USA, April. https://doi.org/10.2118/130050-MS.
24. **Sharma, J.***, and Gates, I.D. 2010. Steam Solvent Coupling at the Chamber Edge in an In-Situ Bitumen Recovery Process. **SPE Oil & Gas India Conf.**, Mumbai, India, January. https://doi.org/10.2118/128045-MS.
25. **Sharma, J.***, and Gates, I.D. 2009. Convection at the Edge of SAGD Steam Chamber. **8th World Congress of Chemical Engineering**, Montreal, Canada, August.
26. **Sharma, J.***, and Gates, I.D. 2009. Multiphase Analytical Modelling of Steam Assisted Gravity Drainage. **SPE Canadian International Petroleum Conference**, Calgary, Canada, June.

INVITED KEYNOTE PRESENTATIONS *(selected from 20+)*

1. **Sharma, J.** 2024. Advancing the current state-of-the-art of Distributed Fiber-Optic Sensing. Panel presentation at the SPE Annual Technical Conf. and Exhibition Special Panel on Distributed Fiber Optic Sensing – Flow Measurement Perspective, 23-25 September 2024, New Orleans, Louisiana.
2. **Sharma, J**. 2024. Applications of Fiber-Optic Sensing for Energy Applications. **National Energy Technology Laboratory Sensor Technology Technical Forum**, 9 Aug. 2024, Pittsburgh, Pennsylvania.
3. **Sharma, J**. 2023. Machine Learning Meets Fiber-Optic Sensing. **3rd European Association of Geoscientists and Engineers** on Fiber-Optic Sensing for Energy Applications, 13-15 Nov. 2023, Chengdu, China.
4. **Sharma, J.** 2021. Wellbore Monitoring with Fiber Optic Sensing. **SPE Erbil Section, Iraq**, 10 February.
5. **Sharma, J.** 2019. Fiber Optic Sensors for Offshore Safety. **Stanford University***, Stanford (CA), November.
6. **Sharma, J**. 2022. Future of Fiber Optic Sensing. **2nd European Association of Geoscientists and Engineers** (EAGE) on Fiber-Optic Sensing for Energy Applications, 5-7 Dec. 2022, Kuala Lumpur, Malaysia.

FUNDED RESEARCH PROJECTS

➢ *Awarded **26** research and travel grants totaling **$9.6 Million** with **16 as the PI**.*

Research Area	Project Title	Grant Sponsor	Duration	PI	co-PI	Collaborators	Total, $
Environmental Safety / Machine Learning	Machine Learning-Assisted Gas Leak Monitoring	NSF Center for Innovation in Structural Integrity Association (CISIA)	1/2024-1/2025	J. Sharma	-	- Baker Hughes - Shell	37,500
Hydrogen / Clean Energy Technology	Center of Excellence for Safety Management of Hydrogen-Induced Degradation of Infrastructure	LSU Office of Research	1/2024-1/2025	M. Khonsari	J. Sharma W. Meng L. Butler		75,000
Clean Energy / Subsurface Analysis	Field Demonstration of Distributed Fiber-Optic CO₂ Sensor for Long-Term Monitoring of Storage Sites	Institute of Energy Innovation	10/2023-10/2025	J. Sharma	M. Gartia	-National Energy Technology Lab - Shell, Air Products	499,974
Environmental Safety / Subsurface Analysis	Developing and Field-Testing a New Framework for Identifying & Integrating Leading Indicators of Offshore Loss of Well Control	Ocean Energy Safety Institute	10/2023-9/2024	Y. Chen	J. Sharma	- Blade Energy - Intellices	499,956

Area	Title	Sponsor	Dates	Role 1	Role 2	Collaborators	Amount
Nuclear / Clean Energy Technology	Nanomaterial-enhanced Multifunctional Automated Radiation Detector	Nuclear Regulatory Commission	1/2023-1/2026	**J. Sharma**	M. Gartia J. Wang	- Southern Univ. - HBK Sensing	499,865
Environmental Safety / Machine Learning	Machine Learning-Assisted Structural Integrity and Leak Monitoring	NSF CISIA	1/2023-1/2024	**J. Sharma**	-	- Baker Hughes - Shell	50,000
Structural Integrity Monitoring	Tentacle-like Robotic System for Structural Integrity Assessment	NSF CISIA	1/2023-1/2024	H. Gilbert	**J. Sharma**	Shape Sensing Company	50,000
Environmental Safety / Structural Integrity Monitoring	Engineering Research Center for Degradation Science and Structural Integrity	Faculty Research Grant, LSU	1/2023-1/2025	D. Nikitopoulos	**J. Sharma** J. Pojman M. Khonsari		250,000
Machine Learning/ Big Data Analytics	Research Project into DAS Machine Learning, Data Optimization, Transmission	SwellFix LLC	1/2022-12/2024	**J. Sharma**	-	- SwellFix LLC	102,454
Environmental Safety / Optimization	Wellbore Gas Migration Studies in Drilling Fluids (Phase-II)	Exxon and Chevron	4/2022-12/2022	M. Almeida	**J. Sharma** O. Santos	- Exxon - Chevron	276,441
Offshore Safety/ Environmental Protection	Offshore Energy Safety Center	Faculty Research Grant, LSU	2/2022-5/2023	Y. Chen	**J. Sharma** L.Ikuma		39,000
Environmental Monitoring	Fully Distributed Pressure Sensing using Side-Hole Fiber	LiFT Grant, LSU	9/2021-9/2022	**J. Sharma**	-	- University of Pittsburgh - InPhoTech	74,988
Offshore Safety/ Environmental Protection	Wellbore Gas Migration Studies in Drilling Fluids (Phase-I)	Exxon and Chevron	9/2021-1/2022	M. Almeida	**J. Sharma** O. Santos Y. Chen	- Exxon - Chevron	183,121
Environmental Safety / Optimization	Application of Distributed Fiber Optic Sensing for Sand Detection in Offshore Production	LA Board of Regents, Shell	6/2021-6/2024	**J. Sharma**	M. Tyagi	- Shell - Derrick Equipment	253,595
Nuclear / Clean Energy Technology	Distributed Fiber Optic Sensors for Helium Leak Detection in High-Temperature/High-Pressure Fusion Reactor Application	LA Board of Regents	3/2021-12/2021	**J. Sharma**	-	Oak Ridge National Lab	6,000
Satellite Monitoring / Machine Learning	Super-Resolution of Gravity Data for Geophysical Exploration	NASA LaSpace	9/2020-8/2022	**J.Sharma**	Xin Li	NASA Goddard Space Center	64,144
Clean Energy Technology and Offshore Safety	Safe, Sustainable and Resilient Development of Offshore Reservoirs and Natural Gas Upgrading through Innovative Technology and Science	DOE and BIRD Foundation	9/2020-9/2025	D. Shantz	**J. Sharma** K.Thompson I. Gupta F. Olorode K. Dooley	- Tulane Univ. Argonne Nat. Lab - Hebrew University of Jerusalem - University of Haifa - Delek Drilling	916,900
Quantum Sensing / Environmental Monitoring	Quantum-Enhanced Fiber Optic Sensing for Oil & Gas Applications	DOE	9/2020-9/2023	A. Marino	**J.Sharma**	Oak Ridge National Lab	750,000
Production Optimization	Drainage Area Investigation for Horizontal Wells	Halliburton Scholars Program, LSU	9/2020-7/2021	**J.Sharma**		CMG	3,750
Nuclear / Clean Energy Technology	Nanomaterial Enhanced Fiber-Optic Distributed Pressure and CO_2 Sensor for Nuclear and Petroleum Engineering	LA Board of Regents	4/2020-1/2021	**J. Sharma**	-	Oak Ridge National Lab	6000
Environmental Safety / Leak Detection	Applications of Distributed Fiber-Optic Sensors for Pipeline Monitoring	Halliburton Scholars Program, LSU	9/2019-7/2020	**J.Sharma**		Halliburton	3,750
Machine Learning/ Big Data Analytics	Analytics Center of Excellence	Faculty Research Grant, LSU	7/2019-7/2021	**J. Sharma**	J. Chen P.Persaud		52,500
Offshore Safety	Experiments on Multiphase Flow of Live Muds in a Full-Scale Wellbore with Distributed Sensing for Kick and Gas-in-riser Detection/Mitigation	National Academy of Sciences, Gulf Research Program	1/2019-3/2021	M. Almeida	**J. Sharma** Y. Chen P. Waltrich A. Cox O. Santos	- Texas A&M University - Schlumberger	4,910,160
Data Analytics	Development of a Public Webportal to Visualize Louisiana Oil & Gas Production	Digital Scholarship Start-up Grant, LSU Libraries	1/2019-7/2019	**J. Sharma**	-	LA Department of Natural Resources	1080
Outreach	Travel Grant for Emerging Faculty	Louisiana EpSCOR,	2019	**J. Sharma**	-		1200
Outreach	Faculty Travel Grant	LSU	2020	**J. Sharma**	-	Bayou State Oil Corp.	750
						TOTAL	**9,608,128**