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JYOTSNA SHARMA

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RESEARCH INTERESTS

• Enhanced Oil Recovery • Fiber Optic Sensing • Machine Learning and Data Mining

EDUCATION

Ph.D., Petroleum Engineering, **University of Calgary**, Canada 2012
B.Tech., Electrical Engineering (Power), **Indian Institute of Technology Delhi**, India 2006
Exchange Program, Electrical Engineering, **University of British Columbia**, Canada 2004

WORK / RESEARCH EXPERIENCE

- Assistant Professor, **Louisiana State University**, Baton Rouge, LA (USA) 2019-Present
- Research Engineer, **Chevron**, Bakersfield, CA (USA) 2014-2018
- Reservoir Engineer, **Chevron**, Houston, TX (USA) 2013-2014
- Simulation Engineer, **Chevron**, Calgary, AB (Canada) 2012-2013
- Visiting Scholar, **Stanford University**, CA (USA) 2010
- Research Intern, **Shell**, Calgary, AB (Canada) 2009
- Field Engineer, **Schlumberger**, Whitecourt, AB (Canada) 2006-2007
- Research Intern, **Technische Universität Dresden**, Dresden (Germany) 2005

TEACHING EXPERIENCE

Courses taught at LSU

- **Graduate Reservoir Engineering**, PETE-7041 (Graduate course) 2021
- **Petroleum Economics**, PETE-3025 (Undergraduate course) 2020-2021
- **Well Logging**, PETE-3036 (Undergraduate course) 2019
- **Formation Evaluation**, PETE-4088 (Graduate and Undergraduate Course) 2019, 2021

Courses taught at Chevron in Bakersfield (USA) and Rumbai (Indonesia)

- **Basic Thermal Engineering** 2015-2018
- **Applied Heat Management** 2015-2018
- **Steamflood Forecasting** 2015-2018
- **Petrophysics for Heat Management** 2015-2018

AWARDS & RECOGNITIONS

- ***Industrial Ties Research Subprogram (ITRS) grant,*** Louisiana Board of Regents 2021
- ***LINKS with Industry and National Labs grant,*** Louisiana Board of Regents and NSF 2021
- ***NASA Research Enhancement Award,*** NASA LaSPACE 2020
- ***DOE grant*** for Quantum Enhanced Fiber Optic Sensing for Oil and Gas Applications 2020
- ***Faculty Research Grant*** for creating an Analytics Center of Excellence, LSU 2019
- ***Emerging Faculty Travel Award,*** NSF EPSCoR 2019
- ***Digital Scholarship*** for novel data science project awarded, LSU Library 2019
- ***Certificate of Digital Innovation***, Chevron 2018
- Selected for Chevron's ***Data Science Development Program*** for Data Analytics initiatives 2018
- Selected for Chevron's ***Mentoring Excellence in Technology*** for technical achievements 2017
- ***SPE Outstanding Service Award***, given to 0.1% of over 110,000 members worldwide 2016
- Consistently ranked as "***Top Performer***" at Chevron (99th percentile) 2015-2018
- 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

STUDENT MENTORING

- **Faculty Advisor**: LSU SPE Student Chapter 2019-Present
- **Mentor**: Halliburton Scholar Program at LSU College of Engineering 2019-2020
- **Faculty Mentor**: NSF Research Experience for Undergraduates 2019-2020
- **Research Mentor:** LSU President's Future Leaders in Research program 2019

PROFESSIONAL ACTIVITIES

- **Technical Committee Member,** SPE Fiber Optics Workshop 2020-2021
- **Technical Review Board,** Sensors Journal 2020-Present
- **National Science Foundation** Review Panelist 2019
- **Executive**, SPE Distinguished Lecture Committee 2016-2018
- **Technical Committee Member,** 2018 SPE Western Regional Conference 2017-2018
- **Corporate Secretary,** Chevron Asian Employee Network 2017-2018
- **PetroTech Lead and Board Executive,** Chevron Women's Network 2014−2016
- **Editorial Activity:** Sensors, SPE Journal, SPE Reservoir Evaluation & Engineering Journal, SPE Production & Operations Journal, SPE Economics and Management, Materials Journal 2013-Present
  The Natural Sciences and Engineering Research Council of Canada 2012-Present
- **Management Summer School:** Handelshochschule Leipzig (HHL)– Germany Summer 2005

CURRENTLY FUNDED PROJECTS

Project Title	Grant Title, Sponsor	Period	Role
Fiber Optic Sensing for Sand Detection in Offshore Production **(collaborators: Shell, Derrick Equipment)**	Industrial Ties Research Subprogram ***Board of Regents (BoR)***	2021-2024	PI
Application of Satellite-borne Quantum Gravimetry Data for Geophysical Exploration	Research Enhancement Award, ***NASA & BoR***	2020-2021	PI
Nanomaterial Enhanced Fiber-Optic Distributed Pressure and CO_2 Sensor for Nuclear & Petroleum Engineering Applications **(Collaborators: Oakridge National Lab)**	LINK EPSCoR, ***National Science Foundation***	2020-2021	PI
Quantum Enhanced Fiber Optic Sensing for Oil and Gas Applications **(Collaborators: Oakridge National Lab, University of Oklahoma)**	***U.S. Department of Energy (DOE)***	2020-2022	Co-PI
Safe, sustainable and resilient development of offshore reservoirs through innovative technology **(Key Collaborators: Tulane University, Israel Institute of Tech., Argonne National Lab)**	US-Israel Center of Excellence, ***BIRD, DOE***	2020-2025	Co-PI
In-situ combustion in Bellevue field in Louisiana – History, current state and future strategies **(Collaborators: Bayou State Corp.)**	Faculty Travel Grant, ***LSU***	2020	PI
Creation of Analytics Center of Excellence for Data-Driven Research in Energy, Environment & Earth Science	Faculty Research Grant, ***LSU***	2019-2022	PI
Experiments on Multiphase Flow of Live Muds in a Full-Scale Wellbore with Distributed Sensing for Kick and Gas-in-riser **(Collaborators: Texas A&M University, Schlumberger)**	Gulf Research Project, ***National Academy of Science***	2018-2020	Co-PI
Online Portal to View Domestic Oil and Gas Production Data and Maps, to Aid Student Research and Learning **(Collaborators: Department of Natural Resources, Louisiana)**	Digital Scholarship Grant, **LSU**	2019	PI
Distributed Fiber Optic Sensing Technology in Offshore Environments – Current State and Future Directions **(Collaborators: Vaquero Energy)**	Emerging Faculty Travel Grant, ***BoR***	2019	PI
Application of Fiber-Optic Sensors to Improve Safety in Oil & Gas Industry	Halliburton Scholars Program, ***LSU***	2019, 2020	PI

PEER-REVIEWED JOURNAL PUBLICATIONS

(***** *indicates corresponding author*)

1. Ekechukwu, G.K., **Sharma, J.*** 2021. "*Well-scale demonstration of distributed pressure sensing using fiber-optic DAS and DTS*". **Scientific Reports (Nature)** 11:12505 (2021).
2. **Sharma, J.***, Dean, J., 2021. "*In-situ combustion in Bellevue field in Louisiana – History, current state and future strategies".* **Fuel** 284: 118992.
3. **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.
4. Wang, B., **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.
5. Rezk, M.Y., **Sharma, J.***, Gartia, M.R. 2020. "*Nanomaterial-Based CO_2 Sensors"*. **Nanomaterials** 2020, 10(11), 2251.
6. **Sharma, J.***, Cuny, T., Ogunsanwo, T., Santos, O. 2020. "*Low-Frequency Distributed Acoustic Sensing for Early Gas Detection in a Wellbore*." **IEEE Sensors** DOI: 10.1109/JSEN.2020.3038738
7. **Sharma, J.,** Santos, O., Feo, G., Ogunsanwo, O., Williams, W. 2020. "*Well-Scale Multiphase Flow Characterization & Validation Using Distributed Fiber Optic Sensors for Gas Kick Monitoring.*" **Optics Express** 28(26):38773.
8. Feo, G., **Sharma, J.***, Cunningham, S. 2020. "*Integrating Fiber Optic Data in Numerical Reservoir Simulation Using Intelligent Optimization Workflow*". **Sensors** 20(11): 3075.
9. Feo, G., **Sharma, J.*,** Kortukov, D., Ogunsanwo, T. Williams, W. 2020. "*Distributed Fiber Optic Sensing for Real-Time Monitoring of Gas in Riser during Offshore Drilling*". **Sensors** 20(1): 267.
10. **Sharma, J**.*, Inwood, S. B., and Kovscek, A. R. 2012. "*Experiments and Analysis of Multi-scale Viscous Fingering during Imbibition.*" **Society of Petroleum Engineers Journal** 17(4):1142-1159.
11. **Sharma, J.***, Moore, G. R., and Mehta, S.A.2012. "*Effect of Methane Co-injection in SAGD−Analytical and Simulation Study.*" **Society of Petroleum Engineers Journal** 17(3):687.
12. **Sharma, J.***, and Gates, I.D. 2011. "*Interfacial Stability and Displacement Efficiency in Steam Solvent Processes.*" **Society of Petroleum Engineers Journal** 16(1):55-64.
13. **Sharma, J.***, and Gates, I.D. 2011. "*Convection at the Edge of SAGD Steam Chamber.*" **Society of Petroleum Engineers Journal** 16(3): 503-512.
14. **Sharma, J.***, and Gates, I.D. 2010. "*Multiphase Flow at the Edge of Steam Chamber.*" **Canadian Journal of Chemical Engineering** 88(3):312-332.

CONFERENCE PRESENTATIONS

1. 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**, March 2021 (paper # SPE-204115).
2. Williams, W. C.*, Taylor, C. E., Almeida, M. A., **Sharma, J.**, Waltrich, P. J., Chen, Y., Feo, G., Kortukov, D. 2020. "*Distributed Sensing and Real Time Visualization of Gas Kick Dynamics in a Full-Scale Wellbore*", **SPE Annual Technical Conference and Exhibition**, 26-29 October, 2020. https://doi.org/10.2118/201539-MS.
3. **Sharma, J.** 2020. "Tutorial - *Distributed Fiber Optic Sensors.*" **2020 International Conference on Optical Fiber Sensors**, Alexandria, Virginia, USA, June.
4. Feo, G.**, Sharma, J.*,** Santos, O., Toba, O., Williams, W. 2020. "*Multiphase Flow Characterization and Modeling Using Distributed Fiber Optic Sensors to Prevent Well Blowout.*" in **Optical Sensors and Sensing Congress**, OSA Technical Digest (Optical Society of America, 2020), paper EM3C.5. https://doi.org/10.1364/ES.2020.EM3C.5
5. Zhou, X.*, 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.
6. Feo, G., **Sharma, J.***, Cunningham, S. 2020, "*Machine Learning Assisted History Matching to Integrate Fiber Optic Data with Reservoir Simulation.*" **SPE Canadian Heavy Oil and Unconventional Resources Conference**, Calgary, Canada, March. SPE-199919-MS.
7. Feo, G., **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
8. **Sharma, J**., Feo, G. 2019, "*Application of Distributed Fiber Optics Sensing in Offshore Environments*." **Deepwater Technical Symposium**, New Orleans, USA, August.
9. **Sharma, J**., Feo, G. 2019, "*Distributed Fiber Optics Sensing Application for Gas-in-riser Detection and Mitigation for Offshore Well Control*." **SPE Fiber Optics Workshop**, Denver, USA, August.
10. 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.

11. **Sharma, J**., Nzegaing S., 2018 "*Application of Data Analytics for Selecting Chemical Stimulation Candidates in Venezuela*." **Chevron Data Analytics Forum, San Ramon**, **USA**, October.
12. **Sharma, J**., Gede, A., Barnes, D. 2017 "*Advanced Topics on Temperature Log Interpretation*." **Chevron Reservoir Management Forum, Bakersfield, USA**, April.
13. **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.
14. **Sharma, J**., Munoz, J., Seiler, W., 2016 "*San Ardo Strategy for Optimized Injection and Drainage*." **Chevron San Joaquin Valley Reservoir Management Forum, Bakersfield, USA**, October.
15. **Sharma, J**., Popa, A., 2015 "*Application of Voronoi for Production Increase Opportunities*." **Chevron San Joaquin Valley Reservoir Management Forum, Bakersfield, USA**, September.
16. Bourda, N., **Sharma, J**., Seiler, W., Angelo, C., 2015 "*San Ardo Field Geology: Barriers vs Baffles."* **Chevron San Joaquin Valley Reservoir Management Forum, Bakersfield, USA**, September.
17. Bourda, N., **Sharma, J**., Seiler, W., Angelo, C., 2015 "*San Ardo Optimization Project."* **Chevron San Joaquin Valley Reservoir Management Forum, Bakersfield, USA**, September.
18. **Sharma, J**., Tardio, A., Nguyen, T. 2015 "*Injection Strategy During Steam Constraints.*" **Chevron Lean Sigma Poster Session, Lost Hills, USA**, March.
19. **Sharma, J**., Benson, I., Lolley, C, 2014 "*Improved Analytical Modeling of Steam-Aided Steam Assisted Gravity Drainage Process.*" **Chevron Heavy Oil Forum, Bakersfield, USA**, August.
20. **Sharma, J**., Izgec, O., Lolley, C, 2014 "*Inferring Reservoir Continuity, Reservoir Pressure and Drainage Volume Using an In-house Analytical Method.*" **Chevron Heavy Oil Forum, Bakersfield, USA**, August.
21. **Sharma, J**., Nguyen, T., and Munoz, J.D., 2014 "*West Central California Drainage Review Process.*" **Chevron San Joaquin Valley Reservoir Management Forum, Bakersfield, USA**, September.
22. Kumar, R., **Sharma, J**., Rubin, E., Lolley, C, 2014 "*Dynamic Modeling of N.Boscan Leads to New Insights into Reservoir Behavior."* **Chevron Heavy Oil Forum, Bakersfield, USA**, August.
23. **Sharma, J.**, Moore, G. R., and Mehta, S.A.2011. "*Effect of Methane Co-injection in SAGD−Analytical and Simulation Study*." **Canadian Unconventional Resource Conference, Calgary, Canada**, November.
24. **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.
25. **Sharma, J.**, and Gates, I.D. 2010. "*Interfacial Stability and Displacement Efficiency in Steam Solvent Processes.*" **Improved Oil Recovery Symposium, Tulsa, USA**, April.
26. **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 Conference, Mumbai, India**, January.
27. **Sharma, J.**, and Gates, I.D. 2009. "*Convection at the Edge of SAGD Steam Chamber*." **8th World Congress of Chemical Engineering, Montreal, Canada**, August.
28. **Sharma, J**., and Gates, I.D. 2009. "*Multiphase Analytical Modelling of Steam Assisted Gravity Drainage."* **Canadian International Petroleum Conference, Calgary, Canada**, June.

INVITED TALKS

1. **Sharma, J. 2021.** "*Wellbore Monitoring with Fiber Optic Sensing*." **SPE Erbil (Iraq)**, 10 February.
2. **Sharma, J.** 2020. "*Application of Distributed Fiber Optic Sensing in Oil and Gas Industry*." **University of Wyoming**, 15 October.
3. **Sharma, J.** 2019. "*Distributed Fiber Optic Sensing Technology in Offshore Environments – Current State and Future Directions.*" **Stanford University - SPE Golden Gate Section**, Stanford (CA), 14 November.
4. **Sharma, J.** 2019. "*Application of Distributed Fiber Optic Sensing for Gas Kick Detection.*" **Shell Digitalization & Innovation Team**, New Orleans (LA), 26 September.
5. **Sharma, J.** 2014. "*Steamflood for Heavy Oil Recovery in San Joaquin Valley*." **California State University SPE Student Section**, Bakersfield (CA), 27 November.
6. **Sharma, J.** 2012. "*Improved Understanding of Thermal Recovery Techniques.*" **BIT's 3rd Annual World Congress of Well Stimulation and EOR**, **Xi'an, China**, 25-27 April.
7. **Sharma, J.** 2011. "*Modelling of Steam-Solvent Hybrid Processes.*" **Saskatchewan Research Council**, Regina, **Canada**, 6 December.
8. **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.
9. **Sharma, J.** 2011. "*Application of SAGD for Heavy Oil Recovery*." **2nd Annual Global Heavy Oil Praxis Interactive Technology Workshop**, Istanbul, Turkey, 19-22 September.