

October 2017

SPWLA Houston Chapter Newsletter

We hope all of you impacted by Hurricane Harvey are safe and secure. As we recover, let us not forget to lend a helping hand!

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Upcoming Events

Uptown Luncheon | Geomechanical Aspects of Carbonate Rock Acidizing by Reza Safari, Weatherford | October 18th [\[link\]](#)

3-Day Workshop | Bootcamp: Machine Learning for Petrophysics by Lewis Matthews, CrownQuest Operating | U of H main campus | October 23rd–25th [\[link\]](#)

Northside Luncheon | Elastic Anisotropy of VTI Media Revisited by Mehdi E. Far, Halliburton | October 31st [\[link\]](#)

President's Corner

Dear members of the Houston Chapter,

The **Hurricane Harvey** has been devastating for Texas. Many of our friends were affected as lives and property were lost. We know that many of our members were involved in helping during and after the hurricane through volunteering and personal donations. Our chapter would like to step in and support that by matching every donation that was done for the hurricane relief by our members up to \$5000 to be given to American Red Cross.

Please send the confirmation of the qualifying donations made after the hurricane Harvey to our treasurer at treasurer@spwla-houston.org. Qualifying donations are made to non-profit, non-religious organizations for providing support and activities during and after the Hurricane Harvey. You can also submit your donation to the chapter that we'll match and transfer to the American Red Cross using PayPal link. If you have any questions, please contact us at:

president@spwla-houston.org

treasurer@spwla-houston.org

Unfortunately, our traditional westside location at BP got flooded and unavailable for the rest of the year. The chapter team is actively looking for alternative location in the west part of the city.

Our luncheons will continue at other locations as usual and we will be hosting Reza Safari, Weatherford with a talk on Geomechanical Aspects of Carbonate Rock Acidizing on October 18th at the Uptown location in the BHP Billiton building. Also, registration is **full** for the Bootcamp: Machine Learning for Petrophysics by Lewis Matthews, CrownQuest Operating on October 23rd-25th. All registration will go into a waiting list, in case we have a bigger space open up. Students will become familiar with open source python toolboxes, supervised and unsupervised learning and additional algorithms and techniques for increasing accuracy in formation prediction. At the end of the month, Mehdi E. Far, Halliburton will give a talk on Elastic Anisotropy of VTI Media on October 31st at the Northside location. Please see our calendar for locations and registration details.

Our traditional Technology Show is scheduled for beginning of December at Weatherford Labs Saint James location. If you are interested to have a booth please get in touch with our event organizer - Jeff Crawford (events@spwla-houston.org) or myself (president@spwla-houston.org) and for sponsorship opportunities please contact our treasurer Tianmin Jiang (treasurer@spwla-houston.org) or president@spwla-houston.org.

We are looking forward to another interesting season and hope to see you at our events!

Kind regards,

Irina Borovskaya

President

Houston Chapter of SPWLA



Irina Borovskaya
Houston Chapter President
president@spwla-houston.org

Useful links

**Sign up for the
Houston Chapter
Mailing List**
[\[Link\]](#)

[Houston Chapter](#)

[SPWLA International](#)

[Join SPWLA – become a
member](#)

[Houston Chapter
LinkedIn page](#)

Uptown Luncheon

Geomechanical Aspects of Carbonate Rock Acidizing by Reza Safari

Wednesday, October 18th, 2017

Lunch: 11:30 Talk: 12:00-1:00

Register Online, \$20 per person includes lunch

BHP Billiton, 1500 Post Oak Blvd. Houston, TX 77056

Parking is free in both 1360 and 1500 buildings

Attendees need to register in 1500 building 1st floor to receive a badge to access 8th floor



Abstract

One of the sources of damage in stimulated carbonate rock is the loss of near wellbore formation compressive strength which may result in casing collapse under extreme conditions. Field studies have shown that the failure of acidized rock may cause damage and thereby negatively impact production. In this work, an integrated analysis workflow is presented to simulate acid placement in carbonate reservoirs and model stimulated rock behavior during the productive lifetime of the well. The workflow is utilized to design a unique approach to horizontal wellbore acidizing and optimize the strategy to maximize hydrocarbon recovery.

Reza Safari joined Geoscience Development group of Weatherford International in Houston, Texas as a Senior Petroleum Geomechanics Modeler in the fall of 2012. He received a Ph.D. (2012) in petroleum engineering from Texas A&M University. Heretofore, Reza worked as computational mechanics specialist for geotechnical and petroleum industry. He involves in industry associations and initiatives with more than 30 technical publications. His specialties include hydraulic fracture modeling, natural fractures interaction during hydraulic stimulation of unconventional reservoirs, and wellbore stability in multiphysics media.

3 Day Workshop

Bootcamp: Machine Learning for Petrophysics by Lewis Matthews

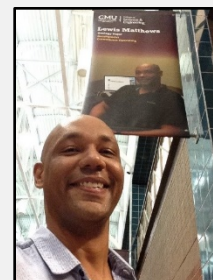
Monday, October 23rd- Wednesday, 25th, 2017

8:00am – 4:00pm

\$350 (includes lunch and coffee breaks)

University of Houston main campus

Requirements: Laptop with administrator rights to be able to install necessary software



Abstract

The three-day class will focus on how to apply machine learning techniques to petrophysical problems.

Students will become familiar with open source python toolboxes. You'll learn about the three main classes of machine learning. The main focus of the first day will be supervised and unsupervised learning. The afternoon will be spent stepping through the code and workflows, showing how to modify the code, and understand the outputs. For supervised learning, you will use logistic regression and support vector machines to pick formations. For unsupervised learning, you will use the K-means algorithm to observe how the formations form natural clusters in the data.

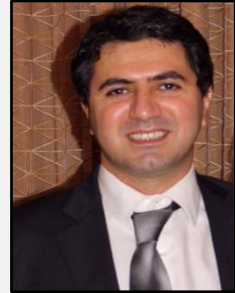
Over the next two days, we'll introduce additional algorithms and techniques: data wrangling (prepping data for analysis), feature engineering (adding information to the data using the data itself), and ensemble methods (machines that vote on the correct answer). The main goal would focus on how we increase accuracy in our formation predictions.

The students will walk away from the class with the actual code they can use to start playing around with problems they have at work. We will also introduce the students to the open source online community that is a huge resource when students and experts get stuck.

Lewis Matthews began machine learning 12 years ago as a pioneer in IPO algorithmic trading. He cut his teeth in the primary and secondary new issue securities markets building successful predictive models in an environment requiring qualified institutional buyer status. While studying geophysics in graduate school Lewis independently discovered fractal clustering in petrophysical data and applied cutting edge machine learning algorithms to predict geologic formation tops. He now works for CrownQuest Operating in research and development where he continues to develop a predictive shale model in the Permian Basin.

Northside Luncheon

Elastic Anisotropy of VTI Media Revisited by Mehdi E. Far



Tuesday, October 31st, 2017

Lunch: 11:30 Talk: 12:00-1:00

Register Online by Monday Oct. 30th 12:00pm

Weatherford Lab, 5200 N. Sam Houston Pkwy West Suite 500

Houston, TX 77086

Visitors are requested to reverse park, note license plate #, sign in at main reception

Abstract

Shale formations, which usually show vertically transverse isotropy (VTI), comprise about 75% of the sedimentary basins. Therefore, VTI is the most common anisotropic model in geosciences, which must be taken into account for more accurate geomechanical modeling and seismic imaging.

C13, which is required for computing anisotropic Poisson's ratios and Young's moduli, is the most challenging parameter to estimate for VTI media. Monte Carlo simulation shows that while computing C13 for VTI media in a conventional way, an error of 1% in velocities can produce completely different results (e.g.; up to about 10 GPa difference in C13 and 0.4 difference in Thomsen δ , and 0.4 in Poisson's ratios). Simulation results show that this sensitivity is mainly due to uncertainties in 45° velocities. Theoretical bounds and relationships between three directions dependent Poisson's ratios in VTI media provide a method for determining physical bounds on C13, without requiring 45° measurements. Anisotropic dynamic to static correction of Young's moduli and Poisson's ratios for VTI media will be discussed as well.

Mehdi E. Far is a principal scientist, working at Halliburton Technology in Houston. He holds a PhD degree in geophysics from the University of Houston, followed by a post-doctoral appointment at The University of Texas at Austin, Bureau of Economic Geology. His research interests include geophysics, rock physics, geomechanics, fracture modeling and elastic anisotropy. Mehdi E. Far is a member of SEG, SPWLA, SPE and he is a member of the SEG research committee.