

Abdullah Adnan Alali

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KAUST, Thuwal, Saudi Arabia, 23955.

SUMMARY OF QUALIFICATION

- A researcher in **machine learning** applications in **geophysical exploration**, mainly seismic imaging, inversion, processing, and velocity analysis.
- Excellent **soft skills** obtained by writing scientific papers and presenting in international conferences.

EXPERIENCE

Saudi Aramco, KSA

Machine learning geophysicist

Summer 2021

Developed machine learning models to invert rock properties, specifically acoustic impedance, V_p/V_s and density from field seismic data.

King Abdullah University of Science and Technology (KAUST), KSA

Full-waveform inversion (FWI) teaching assistant (TA)

Spring 2022

Prepared assignments and provided hands-on tutorials on practical aspects in implementing FWI.

Seismic imaging teaching assistant (TA)

Fall 2020

Assisted students to better understand the material along with grading their assignments and exams.

EDUCATION

King Abdullah University of Science and Technology (KAUST)

Ph.D. Earth Science & Engineering

2018-Present

Advisor: Tariq Alkhalifah.

Relevant Courses: Seismic Inversion, Computational Geophysics, Machine learning.

M.S. Earth Science & Engineering

May 2018

Thesis title: “*Seismic Imaging and Velocity Analysis Using a Pseudo Inverse to the Extended Born Approximation.*”

Advisor: Tariq Alkhalifah.

Relevant Courses: Seismology, Seismic Imaging, Inverse Problem, Data analysis in geoscience.

King Fahd University of Petroleum and Mineral (KFUPM)

B.S Geophysics

May 2016

Relevant Courses: Seismic Exploration I, Seismic Exploration II, Seismic Processing, Potential Field Methods.

Colorado School of Mines

International Exchange Program

Fall 2014

Relevant Courses: Sedimentology and Stratigraphy, Well Logging.

PROJECTS

- **Salt Inversion** *2019-Present*
 - Utilized full-waveform inversion and machine learning to invert for salt velocity models.
- **Time-lapse data matching** *2019-Present*
 - Applied neural network models to match base data with monitor data to enhance the 4D seismic signal.
- **Imaging and velocity analysis** *2018*
 - Implemented an approximate inverse formula for imaging and analyze it in a heterogeneous medium.
 - Applied an automated velocity analysis to obtain an accurate velocity model for imaging.
- **Travel-time tomography and interferometry** *2018*
 - Acquired refraction data, applied interferometry to increase SNR, and obtained the tomographic model.

PUBLICATIONS

- Deep learning unfloding for robust subsalt waveform inversion, *Geophysical Prospecting*. 2022
- Time-lapse data matching using a recurrent neural network approach, *Geophysics*. 2022
- Time-lapse cross-equalization using temporal convolutional networks, *First International Meeting for Applied Geoscience & Energy*. 2021
- Seismic velocity modeling in the digital transformation era: a review of the role of machine learning, *Journal of Petroleum Exploration and Production*. 2021
- The effectiveness of a pseudo inverse extended born operator to handle lateral heterogeneity for imaging and velocity analysis applications, *Geophysical Prospecting*. 2020

PARTICIPATIONS

EAGE/SEG annual meeting 2018-2022

- Presented posters/oral presentations and attended workshops in the technical program.
- Reviewed abstracts for the acceptance process and chaired technical sessions.

SEG ML workshop for geoscience, Oman 2020&2021

- Presented an oral presentation and attended presentations for three days.

KAUST-Nvidia workshop on accelerating scientific application using GPU 2019&2020

- Hands-on deep learning workshop with presentations on different GPU applications.

Young Professional (YP) Program in GEO Conference 2018

- Participated in YP program in GEO conference held in Bahrain which includes short courses, soft-skills workshop, and engaging with young geoscientists.

VOLUNTEER EXPERIENCE

Workshop assistant 2022

- Assisted in entrepreneurs in greens workshop at the *Inaugural Annual Saudi Youth Sustainability Conference*.

Students Orientation leader 2017&2020&2022

- Guided the new students through their orientation program and assist them with their needs.

Mentor 2021

- Led a team in the *Industry Emerging Challenges Mentorship program* organized by DGS to solve a geoscience challenge using AI tools.

Teaching Assistant 2021

- Assisted in hands-on tutorials on word embedding, active learning, and transformers as part of *KAUST-Iraya unstructured data in geoscience summer school*.

Career fair ambassador 2016&2017&2019

- Volunteered three times in the career fair and has been assigned to assist Sharjah Chamber of Commerce (2016), Schlumberger (2017), and Argas (2019) representatives.

CERTIFICATES & AWARDS

- The best in show award in the 83rd EAGE annual meeting explainable AI hackathon. 2022
- The dean's award for outstanding students in the Earth science program at KAUST. 2022
- Certificate of competency in "Fundamentals of deep learning for multi-GPUs" from NVIDIA. 2021
- The 1st place award in KAUST GPU hackathon for accelerating scientific application. 2020
- The winner award for a reading competition about machine learning in geoscience organized by DGS. 2020
- Certificate of completion of "Fundamentals of deep learning for computer vision" from NVIDIA. 2019
- The 1st place in the SEG/DGS challenge bowl in the middle east and 2nd place in the final round held in the SEG annual meeting in Anaheim, California. 2018
- The 3rd place student-poster presentation award as part of GEO conference in Bahrain. 2018

PROGRAMING

- **Languages:** C/C++, Python, Matlab.
- **HPC computing:** Worked on **Shaheen 2.0 (kaust supercomputer)** where I learned to use parallel programming using OpenMP and MPI.
- **Machine learning:** Tensorflow and Pytorch.