Abdullah Adnan Alali

Email: abdullah.alali.1@kaust.edu.sa
Mobile: +966 564859922,
KAUST,Thuwal, Saudi Arabia.

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, Vp/Vs and density from field seismic data.

King Abdullah University of Science and Technology (KAUST)

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 unflooding 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*
- Time-lapse Cross-equalization by deep learning, *EAGE 2020 Annual Conference & Exhibition Online.* *2020*

PARTICIPATIONS

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.

EAGE annual meeting *2018-2021*
- Presented posters/oral presentations and attended workshops and the technical program.

SEG annual meeting *2018-2021*
- Presented posters/oral presentations and attended workshops and the technical program.

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

King Abdullah University of Science & Technology (KAUST)

Winter enrichment program VIP speaker host
- Hosted and assisted the CEO of Al-Baik restaurant chain during his visit for the WEP program *2022*

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.

Orientation leader *2017&2020*
- Guided the new students through their orientation program and assist them with their needs.

CERTIFICATES & AWARDS

- Certificate of competency in "Fundamentals of deep learning for multi-GPUs" from NVIDIA *2021*
- Won first place in KAUST GPU hackathon for accelerating scientific application by accelerating an FWI code to work on multi-GPU. *2020*
- Won 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*
- Won the first place in the SEG/DGS challenge bowl in the middle east and the second place in the final round held in the SEG annual meeting in Anaheim, California *2018*
- Won third place student-poster presentation 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.
- **Software: Madagascar** for seismic processing and geophysical applications.
- **Machine learning**: Keras and Pytorch.