Abdullah Adnan Alali

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SUMMARY OF QUALIFICATION

- A researcher in **machine learning** applications in solving **geophysical problems**.
- Excellent **soft skills** obtained by writing scientific papers and presenting at international conferences.

EXPERIENCE

Saudi Aramco, KSA

Machine Learning Geophysicist *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), KSA

Full-waveform Inversion (FWI) Teaching Assistant (TA) *2022*

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

Seismic Imaging Teaching Assistant (TA) *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 *2018-2023*

Dissertation title: *Advances of deep learning in solving challenging geophysical problems: 4D seismic processing and salt inversion.*

Advisor: Tariq Alkhalifah.

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

M.S. Earth Science & Engineering *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 *2016*

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

Colorado School of Mines

International Exchange Program *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.

PUBLICATIONS

- Deep learning unflooding for robust subsalt waveform inversion, *Geophysical Prospecting.* *2022*
- Time-lapse data matching using a recurrent neural network approach, *Geophysics.* *2022*
- 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.*

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.