Oleg Ovcharenko, PhD.

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EXPERIENCE

ExxonMobil Sep 2020 – Dec 2020
Geoscience and Machine Learning Intern (NextGen processing team) *Spring, TX*

- Conducted research of a machine learning method for surface-related multiple elimination. Focused on acoustic waveform separation methods from natural language processing field. Completed the feasibility study and submitted a technical report to the SEG 2021 annual meeting.
- Implementation in Python using PyTorch framework, featuring several neural networks connected with custom loss functions and focusing on orthogonal embeddings in the latent space.

Advisors: Anatoly Baumstein and Erik Neumann

CGG Aug 2019 – Feb 2020
Machine Learning Engineer Intern (AI lab) *Crawley, United Kingdom*

- Implemented an unsupervised deep learning approach from a computer vision research paper. The solution addressed the image restoration task by a Generative Adversarial Network (GAN). Demonstrated an application on field data and published a technical report to the EAGE Digital 2020.
- Developed a module for image data augmentations and pre-processing using Python and PyTorch, which was used in future software development.

Advisor: Song Hou

MedSeis Feb 2018 – Mar 2019
Co-Founder *Thuwal, Saudi Arabia*

- Led a biotech start-up to create a radiation-free dental imaging device empowered by full-waveform inversion. Orchestrated the teamwork and pitched to investors. Raised funding of $30,000 for proof-of-concept study.
- Built a high-profile team of 5 bright minds including a medical imaging expert, electrical engineer, physicist, and marketing professional. The hardware solution appeared to be immature for deploying at a commercial scale.

KAUST Innovation Fund Sep 2017– Mar 2018
Venture Capital Intern *Thuwal, Saudi Arabia*

- Assisted managers in evaluating the university-based start-ups, which included the research of the technology, markets, and financials. Learned a lot by watching tens of pitches and understanding the following decisions.

The Schmidt Institute of Physics of the Earth Jun 2013– Jul 2014
Engineer (Tectonophysics lab) *Moscow, Russia*

- Research of stress state in the crust of Western Europe. Applied the Method of Cataclastic Analysis of Discontinuous Displacements to focal mechanisms data for that region. Published a journal paper.

EDUCATION

King Abdullah University of Science and Technology Sep 2021
PhD, Geophysics and Machine Learning. *Thuwal, Saudi Arabia*

- Variance-based salt flooding and deep learning methods for bandwidth extrapolation of seismic data.

Advisor: Daniel Peter

Paris Diderot University (Institut de Physique du Globe de Paris) Jul 2015
Master, Exploration Geophysics. *Paris, France*

- Accurate operators for 2D elastic seismogram calculation under geological discontinuities with regular meshing.

Advisors: Nobuaki Fuji and Roland Martin

Lomonosov Moscow State University Dec 2014
Master, Physics. *Moscow, Russia*

- Analytical analytical solutions for viscous flow in the lithosphere subject to exogenous processes and isostasy.

Advisor: Yuriy L. Rebetsky

SELECTED HONORS & AWARDS

SEG ExxonMobil Upstream Research Company Scholarship	2019
NVIDIA-KAUST GPU Hackathon, won 1st award out of 7 teams	2018
Cornell Graduate School of Management, Certificate in Entrepreneurship	2018
EAGE GeoQuiz, won 3rd award out of 37 teams worldwide	2017
KAUST PhD Scholarship, Saudi Arabia	2016
GPX Master Scholarship, France	2014
MSU Master Scholarship, Russia	2009

PUBLICATIONS

ALL Conference & Journal Articles (in reverse chronological order)

[1] Ovcharenko, O., A. Baumstein, and E. Neumann, *Surface-related multiple elimination through orthogonal encoding in the latent space of convolutional autoencoder*, in *SEG Technical Program Expanded Abstracts 2021*. 2021, Society of Exploration Geophysicists.

[2] Ovcharenko, O., V. Kazei, D. Peter, and T. Alkhalifah. *Transferring elastic low frequency extrapolation from synthetic to field data*. in *83th EAGE Conference and Exhibition 2021*. 2021. European Association of Geoscientists & Engineers.

[3] Kazei, V., O. Ovcharenko, and T. Alkhalifah, *Velocity model building by deep learning: From general synthetics to field data application*, in *SEG Technical Program Expanded Abstracts 2020*. 2020, Society of Exploration Geophysicists. p. 1561-1565.

[4] Kazei, V., O. Ovcharenko, P. Plotnitskii, D. Peter, T. Alkhalifah, I. Silvestrov, A. Bakulin, and P. Zwartjes, *Elastic near-surface model estimation from full waveforms by deep learning*, in *SEG Technical Program Expanded Abstracts 2020*. 2020, Society of Exploration Geophysicists. p. 3872-3876.

[5] Kazei, V., O. Ovcharenko, P. Plotnitskii, D. Peter, X. Zhang, and T. Alkhalifah. *Deep learning tomography by mapping full seismic waveforms to vertical velocity profiles*. in *82nd EAGE Annual Conference & Exhibition*. 2020. European Association of Geoscientists & Engineers.

[6] Kazei, V., O. Ovcharenko, P. Plotnitskii, D. Peter, X. Zhang, and T.A. Alkhalifah, *Mapping full seismic waveforms to vertical velocity profiles by deep learning.* 2020.

[7] Ovcharenko, O. and S. Hou. *Deep Learning for Seismic Data Reconstruction: Opportunities and Challenges*. in *First EAGE Digitalization Conference and Exhibition*. 2020. European Association of Geoscientists & Engineers.

[8] Ovcharenko, O., V. Kazei, P. Plotnitskiy, D. Peter, I. Silvestrov, A. Bakulin, and T. Alkhalifah, *Extrapolating low-frequency prestack land data with deep learning*, in *SEG Technical Program Expanded Abstracts 2020*. 2020, Society of Exploration Geophysicists. p. 1546-1550.

[9] Plotnitskii, P., V. Kazei, O. Ovcharenko, D. Peter, and T. Alkhalifah. *Extrapolation of Low Wavenumbers in FWI Gradients by a Deep Convolutional Neural Network*. in *82nd EAGE Annual Conference & Exhibition*. 2020. European Association of Geoscientists & Engineers.

[10] Kazei, V., O. Ovcharenko, T. Alkhalifah, and F. Simons. *Realistically textured random velocity models for deep learning applications*. in *81st EAGE Conference and Exhibition 2019*. 2019. European Association of Geoscientists & Engineers.

[11] Kazei, V., O. Ovcharenko, P. Plotnitskii, D. Peter, X. Zhang, and T.A. Alkhalifah, *Mapping seismic data cubes to vertical velocity profiles by deep learning: New full-waveform inversion paradigm?* 2019.

[12] Ovcharenko, O., V. Kazei, M. Kalita, D. Peter, and T.A. Alkhalifah, *Deep learning for low-frequency extrapolation from multi-offset seismic data.* GEOPHYSICS, 2019. 84(6): p. R1001-R1013.

[13] Ovcharenko, O., V. Kazei, D. Peter, and T. Alkhalifah, *Style transfer for generation of realistically textured subsurface models*, in *SEG Technical Program Expanded Abstracts 2019*. 2019, Society of Exploration Geophysicists. p. 2393-2397.
[14] Ovcharenko, O., V. Kazei, D. Peter, and T. Alkhalifah. *Transfer learning for low frequency extrapolation from shot gathers for FWI applications*. in *81st EAGE Conference and Exhibition 2019*. 2019. European Association of Geoscientists & Engineers.
[15] Peter, D., F. Chen, O. Ovcharenko, A.E. Carmona, and Q. Liu. *Improving full-waveform inversions using spectral-element seismic wave propagation on emerging HPC architectures*. in *Geophysical Research Abstracts*. 2019.
[16] Plotnitskii, P., T. Alkhalifah, O. Ovcharenko, and V. Kazei, *Seismic model low wavenumber extrapolation by a deep convolutional neural network.* ASEG Extended Abstracts, 2019. 2019(1): p. 1-5.
[17] Ovcharenko, O., J. Akram, and D. Peter. *Feasibility of moment tensor inversion from a single borehole data using Artificial Neural Networks*. in *GEO Bahrain 2018*. 2018. Search and Discovery.
[18] Ovcharenko, O., V. Kazei, D. Peter, and T. Alkhalifah, *Variance-based model interpolation for improved full-waveform inversion in the presence of salt bodies.* Geophysics, 2018. 83(5): p. R541-R551.
[19] Ovcharenko, O., V. Kazei, D. Peter, and T. Alkhalifah, *Variance-based salt body reconstruction for improved full-waveform inversion.* Geophysics, 2018. 83: p. R541-R551.
[20] Ovcharenko, O., V. Kazei, D. Peter, X. Zhang, and T. Alkhalifah. *Low-frequency data extrapolation using a feed-forward ANN*. in *80th EAGE Conference and Exhibition 2018*. 2018. European Association of Geoscientists & Engineers.
[21] Akram, J., O. Ovcharenko, and D. Peter, *A robust neural network-based approach for microseismic event detection*, in *SEG Technical Program Expanded Abstracts 2017*. 2017, Society of Exploration Geophysicists. p. 2929-2933.
[22] Ovcharenko, O., V. Kazei, D. Peter, and T. Alkhalifah. *Neural network based low-frequency data extrapolation*. in *3rd SEG FWI workshop: What are we getting*. 2017.
[23] Ovcharenko, O., V. Kazei, D.B. Peter, and T. Alkhalifah. *Super-resolution Time-Lapse Seismic Waveform Inversion*. in *AGU Fall Meeting Abstracts*. 2017.
[24] Ovcharenko, O.O., V.V. Kazei, D. Peter, and T. Alkhalifah. *Variance-based salt body reconstruction*. in *79th EAGE Conference and Exhibition 2017*. 2017. European Association of Geoscientists & Engineers.
[25] Fuji, N., O. Ovcharenko, R. Martin, and C. Cuvilliez. *Simple and accurate operators based on taylor expansion for 2D elastic seismogram calculation under geological discontinuities with regular cartesian grids*. in *78th EAGE Conference and Exhibition 2016*. 2016. European Association of Geoscientists & Engineers.
[26] Rebetsky, Y.L., O. Ovcharenko, and P. Savvychev, *Present stress field of the crust in South-West Europe and the Mediterranean sea.* BULLETIN OF KAMCHATKA REGIONAL ASSOCIATION "EDUCATIONAL-SCIENTIFIC CENTER". EARTH SCIENCES, 2014. 2(24): p. 68-84.

LEADERSHIP & SERVICES

Reviewer 2018
Geophysics, Geophysical Journal International

SEG Student Chapter 2017
President of the KAUST SEG Student Chapter.

SKILLS & INTERESTS

Programming: Python, C/C++, CUDA, MATLAB
Cloud: Amazon Web Services (AWS)
Frameworks and libraries: PyTorch, Keras, Pandas + standard data science stack
Languages: Russian – native, English – fluent, French – intermediate, Arabic – basic
Interests: BJJ, golfing, finance, investing, watching sumo