

Year	Title	Doi	First Author	Affiliation	Platform	Application	Type of ML	Method	Architecture	Type of training data	Synthetic Model	Type of data applied to:	Input Data	Loss Function			
				Academia	Company	Research center	Main	Note	Supervised		Synthetic	Model 1	Raw seismic Data	Attributes			
				Conference										Variable			
2018	Automatic fault detection with Convolutional Neural Networks	<a href="https://doi.org/10.1190/segam2018-192">https://doi.org/10.1190/segam2018-192</a>	Ma		X	SEG	International Geophysical Conference, Qingdao, China	Fault detection		Supervised	CNN	Synthetic		Both	Post stack migrated	Log loss	
2018	Seismic fault detection using deep learning technology	<a href="https://doi.org/10.1190/segam2018-434">https://doi.org/10.1190/segam2018-434</a>	Chang		X	SEG	International Geophysical Conference, Beijing, China	Fault detection		Supervised	CNN	U-Net	Synthetic		Both	Post stack migrated	MSE
2018	Automatic fault detection based on the unsupervised seismic attributes clustering	<a href="https://doi.org/10.1190/aim2018-15.1">https://doi.org/10.1190/aim2018-15.1</a>	Liu	X		SEG	SEG Maximizing Asset Value Through Artificial Intelligence and Machine Learning, Beijing, China	Fault detection		Unsupervised	Multiple (Mean Shift, Brich)		Real	Real	Attributes	Manually selected	
2018	Application of deep learning in seismic data fault recognition	<a href="https://doi.org/10.1190/segam2018-431">https://doi.org/10.1190/segam2018-431</a>	Liang	X		SEG	International Geophysical Conference, Beijing, China	Fault detection		Supervised	CNN						
2018	3D seismic waveform of channels extraction by artificial intelligence	<a href="https://doi.org/10.1190/segam2019-3216216.1">https://doi.org/10.1190/segam2019-3216216.1</a>	Liu		X	SEG	SEG Technical Program	Channel detection		Supervised	CNN		Real	Real		Wasserstein	
2019	FaultNet: A deep CNN model for 3D automated fault picking	<a href="https://doi.org/10.1190/segam2019-3215930.1">https://doi.org/10.1190/segam2019-3215930.1</a>	Zhang	X		SEG	SEG Technical Program	Fault detection		Supervised	CNN	FaultNet	Synthetic		Both	Post stack migrated	
2017	Seismic-fault detection based on multiattribute support vector machine analysis	<a href="https://doi.org/10.1190/segam2017-17748277.1">https://doi.org/10.1190/segam2017-17748277.1</a>	Di	X	X	SEG	SEG Technical Program	Fault detection		Supervised	SVM		Real	Real	Attributes	Manual selection	
2019	3D convolutional neural networks for efficient fault detection and orientation estimation	<a href="https://doi.org/10.1190/segam2019-3216307.1">https://doi.org/10.1190/segam2019-3216307.1</a>	Zhao		X	SEG	SEG Technical Program	Fault detection		Supervised	CNN		Synthetic		Both	Attributes	Manual selection
2019	Building realistic structure models to train convolutional neural networks for seismic structural in-terpretation	<a href="https://library.seg.org/doi/10.1190/segam2019-3214282.1#">https://library.seg.org/doi/10.1190/segam2019-3214282.1#</a>	Wu	X		SEG	SEG Technical Program	Fault detection		Supervised	CNN		Synthetic		Synthetic	Post stack migrated	
2018	Patch-level MLP classification for improved fault detection	<a href="https://doi.org/10.1190/segam2018-2996921.1">https://doi.org/10.1190/segam2018-2996921.1</a>	Di	X	X	SEG	SEG Technical Program	Fault detection		Supervised	MLP		Real	Real	Attributes	Manually selected	
2018	A deep-learning method for automatic fault detection	<a href="https://doi.org/10.1190/segam2018-2984932.1">https://doi.org/10.1190/segam2018-2984932.1</a>	MA		X	SEG	SEG Technical Program	Fault detection		Supervised	CNN		Real	Both	Post-stack migrated	Log loss	
2018	A fault-detection workflow using deep learning and image processing	<a href="https://doi.org/10.1190/segam2018-2997005.1">https://doi.org/10.1190/segam2018-2997005.1</a>	Zhao		X	SEG	SEG Technical Program	Fault detection		Supervised	CNN		Synthetic	SEAM	Both	Post stack migrated	
2018	Statistical imaging of faults in 3D seismic volumes using a machine learning approach	<a href="https://doi.org/10.1190/segam2017-27589633.1">https://doi.org/10.1190/segam2017-27589633.1</a>	Guittton	X		SEG	SEG Technical Program	Fault detection		Supervised	SVM		Synthetic		Both	Post stack migrated	
2018	Machine-learning methods in geoscience	<a href="https://doi.org/10.1190/segam2018-2997218.1">https://doi.org/10.1190/segam2018-2997218.1</a>	Maniar		X	SEG	SEG Technical Program	Fault detection		Supervised	CNN		Real	Real	Post-stack migrated		
2017	Automated fault detection without seismic processing	<a href="https://doi.org/10.1190/segam2017-27589633.1">https://doi.org/10.1190/segam2017-27589633.1</a>	Araya-polo	X	X	SEG	TLE	Fault detection		Supervised	CNN		Synthetic	Synthetic	Raw Data	Wasserstein	
2017	Ascalable deep learning platform for identifying geologic features from seismic attributes	<a href="https://doi.org/10.1190/segam2017-27589633.1">https://doi.org/10.1190/segam2017-27589633.1</a>	Huang	X	X	SEG	TLE	Fault detection		Supervised	Multiple (CNN, SVM)		Synthetic	Synthetic	Attributes	Manually selected	Log loss
2018	Using generative adversarial networks to improve deep-learning fault interpretation networks	<a href="https://doi.org/10.1190/segam2018-2997218.1">https://doi.org/10.1190/segam2018-2997218.1</a>	Lu		X	SEG	TLE	Fault detection		Semi-supervised	GAN		REAL	Real	Post-stack migrated		
2019	Applications of supervised deep learning for seismic interpretation and inversion	<a href="https://doi.org/10.1190/segam2019-3216307.1">https://doi.org/10.1190/segam2019-3216307.1</a>	Zheng		X	SEG	TLE	Fault detection		Supervised	CNN		Synthetic		Both	Post stack migrated	
2019	Improving seismic fault detection by super-attribute-based classification	<a href="https://doi.org/10.1190/INT-2018-0188.1">https://doi.org/10.1190/INT-2018-0188.1</a>	Di	X	X	SEG	Interpretation	Fault detection		Supervised	Multiple (SVM, MLP)		Real	Real	Attributes	Not specified	
2019	Seismic structure interpretation based on machine learning: A case study in coal mining	<a href="https://doi.org/10.1190/INT-2018-0208.1">https://doi.org/10.1190/INT-2018-0208.1</a>	Li		X	SEG	Interpretation	Fault detection		Supervised	Random Forest		Both	Both	Post stack migrated		
2020	Common-azimuth seismic data fault analysis using residual Unet	<a href="https://doi.org/10.1190/INT-2019-0173.1">https://doi.org/10.1190/INT-2019-0173.1</a>	Liu	X		SEG	Interpretation	Fault detection		Supervised	FCN	U-net	Synthetic		Both	Post stack migrated	Log loss
2020	Comparing convolutional neural networking and image processing seismic fault detection methods	<a href="https://doi.org/10.1190/segam2020-3428171.1">https://doi.org/10.1190/segam2020-3428171.1</a>	Qi	X		SEG	SEG Technical Program	Fault detection		Supervised	CNN		Synthetic		Both	Post stack migrated	
2020	Seismic fault detection based on 3D Unet++ model	<a href="https://doi.org/10.1190/segam2020-3426516.1">https://doi.org/10.1190/segam2020-3426516.1</a>	Yang	X	X	SEG	SEG Technical Program	Fault detection		Supervised	CNN		Synthetic		Synthetic	Post stack migrated	
2020	Channel simulation and deep learning for channel interpretation in 3D seismic images	<a href="https://doi.org/10.1190/segam2020-3426477.1">https://doi.org/10.1190/segam2020-3426477.1</a>	Gao	X		SEG	SEG Technical Program	Channel detection		Supervised	CNN		Synthetic		Synthetic	Post stack migrated	Log Loss
2020	Structure enhanced least-squares migration by deep learning based structural preconditioning	<a href="https://doi.org/10.1190/segam2020-3426676.1">https://doi.org/10.1190/segam2020-3426676.1</a>	Cheng		X	SEG	SEG Technical Program	Fault detection		Supervised	CNN		Real	REal	Post stack migrated		
2020	Uncertainty estimation using Bayesian convolutional neural network for automatic channel detection	<a href="https://doi.org/10.1190/segam2020-3427239.1">https://doi.org/10.1190/segam2020-3427239.1</a>	Pham	X		SEG	SEG Technical Program	Channel detection		Supervised	Bayesian-CNN	U-net	Synthetic		Real	Post stack migrated	
2021	Uncertainty and interpretability analysis of encoder-decoder architecture for channel detection	<a href="https://doi.org/10.1190/geo2020-0409.1">https://doi.org/10.1190/geo2020-0409.1</a>	Pham	X		SEG	Geophysics	Channel detection		Supervised	Bayesian-CNN	U-Net	Synthetic		Both	Post-stack Depth Migrated	
2021	Uncertainty quantification in fault detection using convolutional neural networks	<a href="https://doi.org/10.1190/geo2020-0424.1">https://doi.org/10.1190/geo2020-0424.1</a>	Feng	X		SEG	Geophysics	Fault detection		Supervised	CNN	U-Net	Synthetic		Synthetic	Post stack migrated	
2021	3D scattering wavelet transform CNN for seismic fault detection	<a href="https://doi.org/10.1190/segam2021-3594177.1">https://doi.org/10.1190/segam2021-3594177.1</a>	Shen	X	X	SEG	First International Meeting for Applied Geoscience & Energy	Fault detection		Supervised	CNN	U-Net	Synthetic		Real	Post stack migrated	
2021	Generative models for the transfer of knowledge in seismic interpretation with deep learning	<a href="https://doi.org/10.1190/geo2020-0409.1">https://doi.org/10.1190/geo2020-0409.1</a>	Durali	X		X	SEG	TLE	Fault detection	Semi-supervised	GAN		Synthetic		Real	Post stack migrated	multiple (Adversarial, Translation, Cyclic, Identity)
2019	FaultSeg3D: Using synthetic data sets to train an end-to-end convolutional neural network for 3D seismic fault segmentation	<a href="https://doi.org/10.1190/segam2018-0646.1">https://doi.org/10.1190/segam2018-0646.1</a>	Wu	X	X	SEG	Geophysics	Fault detection		Supervised	CNN	U-Net	Synthetic		Both	Post stack migrated	LOG
2021	Fault interpretation of listric faults in the Gulf of Mexico to train CNN fault prediction – A case study of human interpretation vs automatic fault interpretation	<a href="https://doi.org/10.1190/segam2021-3594958.1">https://doi.org/10.1190/segam2021-3594958.1</a>	Vera-Arroyo	X		SEG	First International Meeting for Applied Geoscience & Energy	Fault detection		Supervised	CNN	U-Net		Real	Post stack migrated		

2021	Improved 3D neural network architecture for fault interpretation on field data	<a href="https://doi.org/10.1190/segam2021-3583602.1">https://doi.org/10.1190/segam2021-3583602.1</a>	Wang	X		SEG	First International Meeting for Applied Geoscience & Energy	Fault detection	Supervised	CNN	U-Net	Synthetic	Both	Post stack migrated	
2021	Focusing unfocused faults with deep learning and residual migration	<a href="https://doi.org/10.1190/segam2021-3593317.1">https://doi.org/10.1190/segam2021-3593317.1</a>	Jennings	X	X	SEG	First International Meeting for Applied Geoscience & Energy	Fault detection	Supervised	CNN	U-Net	Synthetic	Both	Angle stacks	
2021	Assisted fault identification and surface extraction by machine learning – A case study from Oman	<a href="https://doi.org/10.1190/segam2021-3581804.1">https://doi.org/10.1190/segam2021-3581804.1</a>	Jiang	X		SEG	First International Meeting for Applied Geoscience & Energy	Fault detection	Supervised	CNN		Both	Real	Attributes	Manually selected
2021	Fault detection from 3D seismic data using Artificial Intelligence	<a href="https://doi.org/10.3979/2214-4609.202032013">https://doi.org/10.3979/2214-4609.202032013</a>	Lowell	X		EAGE	Workshop on Machine Learning	Fault detection				Real	Real	Post stack migrated	
2020	Robust Evaluation of Fault Prediction Results: Machine Learning Using Synthetic Seismic	<a href="https://doi.org/10.3979/2214-4609.202032015">https://doi.org/10.3979/2214-4609.202032015</a>	Sarajaervi	X		EAGE	Digitalization conference	Fault detection	Supervised	CNN	U-Net	Synthetic	Real	Post stack migrated	
2020	Unsupervised Machine Learning Techniques for Subtle Fault Detection	<a href="https://doi.org/10.3979/2214-4609.202010597">https://doi.org/10.3979/2214-4609.202010597</a>	Hussein	X		EAGE	EAGE (annual)	Fault detection	Unsupervised	Multiple (SOM, PCA)		Real	Attributes	Manually selected	
2020	Interpretational applications of artificial intelligence-based seismic fault delineation	<a href="https://doi.org/10.3979/2214-4609.202002020">https://doi.org/10.3979/2214-4609.202002020</a>	Han	X		EAGE	First Break	Fault detection							
2018	SEISMIC FAULT DETECTION WITH CONVOLUTIONAL NEURAL NETWORK	<a href="https://doi.org/10.1190/geo2017-0666.1">https://doi.org/10.1190/geo2017-0666.1</a>	Xiong	X		EAGE	Geophysics	Fault detection	Supervised	CNN	user defined	Real	Both		LOG
2020	Seismic Attribute-Guided Automatic Fault Prediction by Deep Learning	<a href="https://doi.org/10.3979/2214-4609.202010542">https://doi.org/10.3979/2214-4609.202010542</a>	Jiang	X		EAGE	EAGE (annual)	Fault detection	Supervised	multiple (CNN, GAN)	U-Net	Real	Real	Attributes	Random Forest
2020	Least Squares Migration with Deep Learning Based Structural Constraints	<a href="https://doi.org/10.3979/2214-4609.202011134">https://doi.org/10.3979/2214-4609.202011134</a>	Cheng	X		EAGE	EAGE (annual)	Fault detection	Supervised	CNN	U-Net	Synthetic	Both	Pre-stack pre-migrated	
2020	Enhancing Fault Interpretation Efficiency and Accuracy with Deep Convolutional Neural Network and Elastic Cloud Compute	<a href="https://doi.org/10.3979/2214-4609.202032100">https://doi.org/10.3979/2214-4609.202032100</a>	Manral	X		EAGE	Digitalization conference	Fault detection	Supervised	CNN	U-Net	Real		Post stack migrated	
2020	Deep Bayesian Neural Networks for Fault Identification and Uncertainty Quantification	<a href="https://doi.org/10.3979/2214-4609.202032036">https://doi.org/10.3979/2214-4609.202032036</a>	Mosser	X		EAGE	Digitalization conference	Fault detection	Supervised	Bayesian-CNN	U-Net	Synthetic	Real	Post stack migrated	LOG
2020	Deep Bayesian Neural Networks for Fault Identification and Uncertainty Quantification	<a href="https://doi.org/10.3979/2214-4609.202011775">https://doi.org/10.3979/2214-4609.202011775</a>	Mosser	X		EAGE	EAGE (annual)	Fault detection	Supervised	Bayesian-CNN	U-Net	Synthetic	Both	Post stack migrated	
2019	Aspects of automated seismic interpretation using supervised and unsupervised machine learning	<a href="https://doi.org/10.3979/2214-4609.2019X610101">https://doi.org/10.3979/2214-4609.2019X610101</a>	Bugge	X		EAGE	Subsurface Intelligence workshop	Fault detection	Semi-Supervised/U unsupervised	Multiple (DBSCAN; GAN)		Real	Real	Post stack migrated	
2019	Micro-Fault System Detection by Machine Learning	<a href="https://doi.org/10.3979/2214-4609.201901330">https://doi.org/10.3979/2214-4609.201901330</a>	Du	X		EAGE	EAGE (annual)	Fault detection	Supervised	SVM	user defined	Real	Real	Attributes	Manually selected
2019	Deep Neural Networks: Ready for a Day to Day Use in Seismic Interpretation?	<a href="https://doi.org/10.3979/2214-4609.201901388">https://doi.org/10.3979/2214-4609.201901388</a>	Guillon	X		EAGE	EAGE (annual)	Fault detection	Supervised	CNN		Both	Real	Post stack migrated	
2019	Automatic fault interpretation from seismic data via convolutional neural networks	<a href="https://doi.org/10.3979/2214-4609.2019X610105">https://doi.org/10.3979/2214-4609.2019X610105</a>	Egorov	X		EAGE	Subsurface Intelligence workshop	Fault detection	Supervised	CNN	V-net	Synthetic	Synthetic	Post stack migrated	LOG
2019	U-Net & Residual Neural Networks for Seismic Fault Interpretation	<a href="https://doi.org/10.3979/2214-4609.201901387">https://doi.org/10.3979/2214-4609.201901387</a>	Chang	X		EAGE	EAGE (annual)	Fault detection	Supervised	CNN	U-Net	Real	Real	Post stack migrated	Normalized squared difference
2018	Fast 3D Seismic Interpretation with Unsupervised Deep Learning: Application to a Potash Network in the North Sea	<a href="https://doi.org/10.3979/2214-4609.201800738">https://doi.org/10.3979/2214-4609.201800738</a>	Veillard	X		EAGE	EAGE (annual)	Fault detection							
2018	Seismic Fault Detection from Post-Stack Amplitude by Convolutional Neural Networks	<a href="https://doi.org/10.3979/2214-4609.201800733">https://doi.org/10.3979/2214-4609.201800733</a>	Di	X		EAGE	EAGE (annual)	Fault detection	Supervised	CNN	user defined	Real	Real	Post stack migrated	
2012	Detecting Faults by Integration of Seismic Attributes Using Neural Networks in One of Iranian Oil Fields	<a href="https://doi.org/10.3979/2214-4609.20148890">https://doi.org/10.3979/2214-4609.20148890</a>	Al Sadat Mirkamali	X		EAGE	EAGE (annual)	Fault detection	Unsupervised			Real	Real		
2012	Fracture and Carbonate Reservoir Characterization using Sequential Hybrid Seismic Rock Physics, Statistic and Artificial Neural Network: Case Study of North Tiaka Field	<a href="https://doi.org/10.3979/2214-4609.20180851">https://doi.org/10.3979/2214-4609.20180851</a>	Hasanusi	X		EAGE	Geo 2012	Fault detection	Supervised						
2013	Seismic data conditioning and neural network-based attribute selection for enhanced fault detection	<a href="https://doi.org/10.1190/petgeo2011-001">https://doi.org/10.1190/petgeo2011-001</a>	Chehrati	X		SEG	Petroleum Geoscience	Fault detection	Supervised	MLP					
2014	Machine-learning Based Automated Fault Detection in Seismic Traces	<a href="https://doi.org/10.3979/2214-4609.20141500">https://doi.org/10.3979/2214-4609.20141500</a>	Zhang	X	X	EAGE	EAGE (annual)	Fault detection	Supervised			Synthetic	Synthetic		
2017	Machine Learning Based Workflows in Exploration and Production	<a href="https://doi.org/10.3979/2214-4609.201701656">https://doi.org/10.3979/2214-4609.201701656</a>	Limbeck	X		SEG	SEG (annual)	Fault detection	Supervised						
2018	3D Convolutional Neural Networks for Fault Interpretation	<a href="https://doi.org/10.3979/2214-4609.201800732">https://doi.org/10.3979/2214-4609.201800732</a>	Guittou	X	X	EAGE	EAGE (annual)	Fault detection	Supervised	CNN	VGG 16	Real	Real	Post stack migrated	
2019	Constrained automatic top picking using convolutional neural networks	<a href="https://doi.org/10.1190/segam2019-3215174.1">https://doi.org/10.1190/segam2019-3215174.1</a>	Godwin	X		SEG	SEG Technical Program	Horizon tracking	Supervised	CNN					
2019	Semi-automated seismic horizon interpretation using encoder-decoder convolutional neural network	<a href="https://doi.org/10.1190/segam2019-3215818.1">https://doi.org/10.1190/segam2019-3215818.1</a>	Wu	X		SEG	SEG Technical Program	Horizon tracking	Supervised	CNN	U-Net	Real	Real	Post stack migrated	
2018	Application of deep learning for seismic horizon interpretation	<a href="https://doi.org/10.1190/segam2018-2998176.1">https://doi.org/10.1190/segam2018-2998176.1</a>	Lowell	X		SEG	SEG Technical Program	Horizon tracking	Supervised	DAG		Real	Real	Post stack migrated	
2019	Multiresolution neural networks for tracking seismic horizons from few training images	<a href="https://doi.org/10.1190/ni-2018-0725.1">https://doi.org/10.1190/ni-2018-0725.1</a>	Peters	X	X	SEG	Interpretation	Horizon tracking	Supervised	CNN	U-Net	Real	Real	Post stack migrated	MSE
2019	Semiautomated seismic horizon interpretation using the encoder-decoder convolutional neural network	<a href="https://doi.org/10.1190/geo2018-0672.1">https://doi.org/10.1190/geo2018-0672.1</a>	Wu	X	X	SEG	Geophysics	Horizon tracking	Supervised	CNN		Real	Real	Post stack migrated	Log loss

2020	Uncertainty quantification in imaging and automatic horizon tracking – A Bayesian deep-prior based approach	<a href="https://doi.org/10.1190/seagm2020-3417560.1">https://doi.org/10.1190/seagm2020-3417560.1</a>	Shahkoobi	X		SEG	SEG Technical Program	Horizon tracking	Supervised	Bayesian-CNN	Real		Real	Post stack migrated	
2020	Waveform embedding: Automatic horizon picking with unsupervised deep learning	<a href="https://doi.org/10.1190/geo2019-0438.1">https://doi.org/10.1190/geo2019-0438.1</a>	Shi	X		SEG	Geophysics	Horizon tracking	Unsupervised	Auto-encoder				Post stack migrated	
2021	Seismic horizon identification using semisupervised learning with virtual adversarial training	<a href="https://doi.org/10.1190/seagm2021-3594274.1">https://doi.org/10.1190/seagm2021-3594274.1</a>	Wang	X		SEG	First International Meeting for Applied Geoscience & Energy	Horizon tracking	Semi-supervised	Virtual adversarial learning (VAT)	Real		Real	Post stack migrated	
2021	Machine learning assisted seismic interpretation of top and base carbonate for Earth model building: A case study of carbonate platforms from southern Gulf of Mexico	<a href="https://doi.org/10.1190/seagm2021-3592749.1">https://doi.org/10.1190/seagm2021-3592749.1</a>	Fernandez		X	SEG	First International Meeting for Applied Geoscience & Energy	Horizon tracking	Supervised	CNN	U-Net	Real		Real	
2020	Fully Reversible Neural Networks for Large-Scale 3D Seismic Horizon Tracking	<a href="https://doi.org/10.3997/2214-4609.202012019">https://doi.org/10.3997/2214-4609.202012019</a>	Peters	X	X	EAGE	EAGE (annual)	Horizon tracking	Supervised			Real		Real	MSE
2019	Can Machines Learn to Pick Horizons in Post Stack Data?	<a href="https://doi.org/10.3997/2214-4609.201901975">https://doi.org/10.3997/2214-4609.201901975</a>	Yalcinoglu		X	EAGE	EAGE (annual)	Horizon tracking	Supervised	DBN		Real		Real	Post stack migrated Manually selected
2018	Deep Learning Based Horizon Interpretation	<a href="https://doi.org/10.3997/2214-4609.201800923">https://doi.org/10.3997/2214-4609.201800923</a>	Lowell		X	EAGE	EAGE (annual)	Horizon tracking	Supervised	DAG		Real		Real	Post stack migrated
2019	Multivariate attribute selection in seismic facies classification	<a href="https://doi.org/10.1190/seagm2019-3216101.1">https://doi.org/10.1190/seagm2019-3216101.1</a>	Kim	X		SEG	SEG Technical Program	Salt/Geo-body identification	Attributes without seismic section (attribute selection)			Real		Real	Attributes Wrapper analysis
2019	Interactive tracking of seismic geobodies using deep learning flood-filling network	<a href="https://doi.org/10.1190/seagm2019-3214810.1">https://doi.org/10.1190/seagm2019-3214810.1</a>	Shi	X		SEG	SEG Technical Program	Salt/Geo-body identification	Supervised	CNN	U-Net				
2019	Bayesian deep learning for seismic facies classification and its uncertainty estimation	<a href="https://doi.org/10.1190/seagm2019-3216870.1">https://doi.org/10.1190/seagm2019-3216870.1</a>	Mukhopadhyay	X		SEG	SEG Technical Program	Salt/Geo-body identification	Seismic Section	Supervised	Bayesian-CNN	SegNet	Real		Post stack migrated Log Loss
2019	Supervised seismic facies classification using probabilistic neural networks: Which attributes should the interpreter use?	<a href="https://doi.org/10.1190/seagm2019-3216841.1">https://doi.org/10.1190/seagm2019-3216841.1</a>	Lubo-Robles	X		SEG	SEG Technical Program	Salt/Geo-body identification	Attributes without seismic section	Supervised	PNN		Real		Real Attributes PNN (probabilistic NN)
2019	Multi-channel convolutional neural network workflow for automatic salt interpretation	<a href="https://doi.org/10.1190/seagm2019-3216596.1">https://doi.org/10.1190/seagm2019-3216596.1</a>	Ye		X	SEG	SEG Technical Program	Salt/Geo-body identification	Semi-supervised	CNN		Real		Real	Post stack migrated
2017	Geobody interpretation through multiattribute surveys, natural clusters, and machine learning	<a href="https://doi.org/10.1190/seagm2017-17790202.1">https://doi.org/10.1190/seagm2017-17790202.1</a>	Smith		X	SEG	SEG Technical Program	Salt/Geo-body identification	Unsupervised	SOM		Synthetic		Synthetic	Attributes Not specified
2020	Deep learning for salt body detection applied to 3D Gulf of Mexico data	<a href="https://doi.org/10.1190/seagm2020-3417484.1">https://doi.org/10.1190/seagm2020-3417484.1</a>	Consolvo		X	SEG	SEG Technical Program	Salt/Geo-body identification	Supervised	CNN	U-Net	Real		Real	Post stack migrated
2020	Enrich the interpretation of seismic image segmentation by estimating epistemic uncertainty	<a href="https://doi.org/10.1190/seagm2020-3424987.1">https://doi.org/10.1190/seagm2020-3424987.1</a>	Zhao		X	SEG	SEG Technical Program	Salt/Geo-body identification	Supervised	Bayesian-CNN	U-Net	Synthetic	SEAM	Synthetic	Post stack migrated
2021	Subsurface salt recognition via deep learning – An iterative semisupervised approach	<a href="https://doi.org/10.1190/seagm2021-3583057.1">https://doi.org/10.1190/seagm2021-3583057.1</a>	Jia	X	X	SEG	First International Meeting for Applied Geoscience & Energy	Salt/Geo-body identification	Self-learning	CNN	U-Net	Real		Real	Post stack migrated
2021	Deep learning for probabilistic salt segmentation using Bayesian inference machines	<a href="https://doi.org/10.1190/seagm2021-3594897.1">https://doi.org/10.1190/seagm2021-3594897.1</a>	Konuk	X	X	SEG	First International Meeting for Applied Geoscience & Energy	Salt/Geo-body identification	Supervised	CNN	U-Net	Synthetic	BP 2004	Synthetic	Post stack migrated Not specified
2021	Pseudo three-dimensional deep learning approach for top and bottom of salt detection	<a href="https://doi.org/10.1190/seagm2021-3594858.1">https://doi.org/10.1190/seagm2021-3594858.1</a>	Kaul		X	SEG	First International Meeting for Applied Geoscience & Energy	Salt/Geo-body identification	Supervised	CNN	U-Net	Real		Real	LOG
2021	Iterative Salt Model Building Using Machine Learning	<a href="https://doi.org/10.3997/2214-4609.202181011">https://doi.org/10.3997/2214-4609.202181011</a>	Warren		X	EAGE	Digital Subsurface Conference in Latin America	Salt/Geo-body identification	Supervised	CNN	SaltNet	Real		Real	Post stack migrated
2021	Deep Learning Techniques Revolutionize E&P – Two practical applications	<a href="https://doi.org/10.3997/2214-4609.202130009">https://doi.org/10.3997/2214-4609.202130009</a>	Jaikla	X	X	EAGE	EAGE (annual)	Salt/Geo-body identification	Supervised	CNN	U-Net	Real		Real	Post stack migrated
2020	Deep Learning for Salt Body Detection: A Practical Approach	<a href="https://doi.org/10.3997/2214-4609.202010270">https://doi.org/10.3997/2214-4609.202010270</a>	Naeini		X	EAGE	EAGE (annual)	Salt/Geo-body identification	Supervised	CNN	U-Net	Real			Post stack migrated
2020	Analysis of Seismic Attributes to Assist in the Classification of Salt by Multi-channel Convolutional Neural Networks	<a href="https://doi.org/10.3997/2214-4609.202037049">https://doi.org/10.3997/2214-4609.202037049</a>	Jiang		X	EAGE	Digitalization conference	Salt/Geo-body identification	Supervised	CNN	U-Net	Synthetic	SEAM	Synthetic	Attributes Not specified
2020	Enhanced Automatic Segmentation of Salt Bodies from Seismic Images Using Wavelet Convolutional Neural Networks	<a href="https://doi.org/10.3997/2214-4609.202011987">https://doi.org/10.3997/2214-4609.202011987</a>	Zhou		X	EAGE	EAGE (annual)	Salt/Geo-body identification	Supervised	CNN	U-Net	Real			Post stack migrated
2020	A comparison of seismic saltbody interpretation via neural networks at sample and pattern levels	<a href="https://doi.org/10.1190/1365-2478.12865">https://doi.org/10.1190/1365-2478.12865</a>	Di	X	X	EAGE	GP	Salt/Geo-body identification	Supervised	Multiple (CNN, MLP)		Synthetic		Synthetic	Attributes Not specified LOG
2020	U-SaltNet: A Neural Network for Salt Interpretation	<a href="https://doi.org/10.3997/2214-4609.202011847">https://doi.org/10.3997/2214-4609.202011847</a>	Zhou		X	EAGE	EAGE (annual)	Salt/Geo-body identification	Supervised	CNN	U-Net	Real		Real	Post-stack Depth Migrated Lovasz hinge
2019	Augmented Adversarial Training: Improving Robustness of Neural Network Based Geologic Interpretation	<a href="https://doi.org/10.3997/2214-4609.201901507">https://doi.org/10.3997/2214-4609.201901507</a>	Sen		X	EAGE	EAGE (annual)	Salt/Geo-body identification	Supervised	CNN-resnet		Real		Real	Post stack migrated
2018	Automatic Salt Detection with Machine Learning	<a href="https://doi.org/10.3997/2214-4609.201800917">https://doi.org/10.3997/2214-4609.201800917</a>	Wang	X		EAGE	EAGE (annual)	Salt/Geo-body identification	Supervised	FCNN	U-Net	Synthetic		Synthetic	pre-stack migrated Attenuation LOG
2017	Salt Classification Using Deep Learning	<a href="https://doi.org/10.3997/2214-4609.201700918">https://doi.org/10.3997/2214-4609.201700918</a>	Waldeland		X	EAGE	EAGE (annual)	Salt/Geo-body identification	Supervised	CNN	user defined	Real		Real	Post stack migrated LOG
2017	Seismic Lithofacies Computation Method Based on Deep Learning	<a href="https://doi.org/10.1190/GC2017-165">https://doi.org/10.1190/GC2017-165</a>	Liu		X	SEG	International Geophysical Conference, Qingdao, China	Lithofacies	Attribute without seismic section	Supervised	MLP		Real		Real Post stack migrated
2017	Automated input attribute weighting for unsupervised seismic facies analysis	<a href="https://doi.org/10.1190/seagm2017-17740318.1">https://doi.org/10.1190/seagm2017-17740318.1</a>	Zhao	X		SEG	SEG Technical Program	Lithofacies	Attributes without seismic section	Unsupervised	SOM		Real		Real Attributes Manual weighting

2019	Seismic facies analysis based on 3D-CNN and seismic stratigraphic facies classification with weak and strong supervision: A comparative study	<a href="https://doi.org/10.1190/seam2019-3215951.1">https://doi.org/10.1190/seam2019-3215951.1</a>	Wang	X	SEG	SEG Technical Program	LithoFacies	Seismic Section	Supervised	CNN		Real	Real	Attributes	Root mean square amplitude	
2019	Convolutional recurrent neural networks based waveform classification in seismic facies analysis	<a href="https://doi.org/10.1190/seam2019-3216766.1">https://doi.org/10.1190/seam2019-3216766.1</a>	Alaudah	X	SEG	SEG Technical Program	LithoFacies	Seismic section	Supervised	CNN	SegNet	Real	Real	Post stack migrated		
2019	3D seismic facies classification using convolutional neural network and semi-supervised generative adversarial network	<a href="https://doi.org/10.1190/seam2019-3216797.1">https://doi.org/10.1190/seam2019-3216797.1</a>	Liu	X	SEG	SEG Technical Program	LithoFacies	Seismic section	Supervised/Semi-supervised	Multiple (CNN, GAN, PSVM)		Synthetic	Synthetic	Post stack migrated		
2018	Machine-learning based technique for lithology and fluid content prediction: Case study from offshore West Africa	<a href="https://doi.org/10.1190/seam2018-2996428.1">https://doi.org/10.1190/seam2018-2996428.1</a>	Zhang	X	SEG	SEG Technical Program	LithoFacies	Attributes with seismic section	Supervised	Random Forest		Synthetic	Both	Post stack migrated	Not specified	
2018	Machine learning approaches for seismic-facies prediction and reservoir-property inversion	<a href="https://doi.org/10.1190/seam2018-2996374.1">https://doi.org/10.1190/seam2018-2996374.1</a>	Jin	X	SEG	SEG Technical Program	LithoFacies	Impedance (P- and S-)	Supervised	Multiple (KNN, SVM, Random Forest, DNN)		Real	Real	S- and P-impedance		
2018	Seismic facies classification using some unsupervised machine-learning methods	<a href="https://doi.org/10.1190/seam2018-2997356.1">https://doi.org/10.1190/seam2018-2997356.1</a>	Chopra	X	SEG	SEG Technical Program	LithoFacies	Attributes without seismic section	Unsupervised	Multiple (SOM, GTM, K-means, PCA)		Real	Real	Attributes	Manually selected	
2015	A comparison of classification techniques for seismic facies recognition	<a href="https://doi.org/10.1190/INT-2015-0044.1">https://doi.org/10.1190/INT-2015-0044.1</a>	Zhao	X	SEG	Interpretation	LithoFacies	Attributes without seismic section	Supervised/Unsupervised	Multiple (K-means, SOM, GTM, ANN, SVM)		Real	Real	Attributes	Manually selected	
2018	Unsupervised seismic facies analysis via deep convolutional autoencoders	<a href="https://doi.org/10.1190/geo2017-0524.1">https://doi.org/10.1190/geo2017-0524.1</a>	Qian	X	SEG	Geophysics	LithoFacies	Seismic section	Unsupervised	Autoencoder		Both	Both	Pre-stack migrated		
2019	Convolutional neural networks as aid in core lithofacies classification	<a href="https://doi.org/10.1190/INT-2018-0245.1">https://doi.org/10.1190/INT-2018-0245.1</a>	de Lima	X	SEG	Interpretation	LithoFacies	Seismic section	Supervised	CNN	ResNetV2	Real	Real	Post stack migrated		
2019	A seismic facies classification method based on the convolutional neural network and the probabilistic framework for seismic attributes and spatial classification	<a href="https://doi.org/10.1190/INT-2018-0238.1">https://doi.org/10.1190/INT-2018-0238.1</a>	Liu	X	SEG	Interpretation	LithoFacies	Attributes without seismic section	Supervised	Multiple (CNN, MLP, SVM, KNN)		Real	Real	Attributes	MIC (maximal information coefficient)	
2019	A machine-learning benchmark for facies classification	<a href="https://doi.org/10.1190/INT-2018-0249.1">https://doi.org/10.1190/INT-2018-0249.1</a>	Alaudah	X	SEG	Interpretation	LithoFacies	Seismic section	Supervised	CNN		Real	Real	Post stack migrated		
2020	Rotation invariant CNN using scattering transform for seismic facies classification	<a href="https://doi.org/10.1190/seam2020-3427911.1">https://doi.org/10.1190/seam2020-3427911.1</a>	Wang	X	SEG	SEG Technical Program	LithoFacies	Seismic Section	Supervised	CNN		Real	Real	Post stack migrated		
2020	Unsupervised seismic facies analysis based on waveform Agglomerative hierarchical clustering	<a href="https://doi.org/10.1190/wmsu2019-06.1">https://doi.org/10.1190/wmsu2019-06.1</a>	Liu	X	SEG	SEG Technical Program	LithoFacies	Seismic section	Unsupervised	Agglomerative		Synthetic	Synthetic	Post stack migrated		
2020	Data augmentation using CycleGAN for overcoming the imbalance problem in petrophysical facies classification	<a href="https://doi.org/10.1190/seam2020-3427510.1">https://doi.org/10.1190/seam2020-3427510.1</a>	Kim	X	SEG	SEG Technical Program	LithoFacies	Attributes with seismic section	Semi-supervised	Cycle-Gan		Real	Real	Attributes	Manually selected	
2020	A comparison of deep machine learning and Monte Carlo methods for facies classification from seismic data	<a href="https://doi.org/10.1190/geo2019-0405.1">https://doi.org/10.1190/geo2019-0405.1</a>	Grana	X	SEG	Geophysics	LithoFacies	Seismic section	Supervised	RNN-LSTM		Synthetic	Synthetic	Pre-stack migrated		
2020	Creating probabilistic 3D models of lithofluid facies using machine-learning algorithms	<a href="https://doi.org/10.1190/INT-2019-0249.1">https://doi.org/10.1190/INT-2019-0249.1</a>	Keynejad	X	SEG	Interpretation	LithoFacies	Attributes without seismic section	Supervised	Multiple (PNN, BT)		Real	Real	Attributes	step-wise regression method	
2020	Applications of machine learning techniques on angle stacks to enhance carbonate reservoir characterization	<a href="https://doi.org/10.1190/seam2020-3428250.1">https://doi.org/10.1190/seam2020-3428250.1</a>	Silver	X	SEG	SEG Technical Program	LithoFacies	Attributes without seismic section	Unsupervised	SOM		Real	Real	Attributes	Manually selected	
2021	Lithofacies prediction from core images using Bayesian neural networks	<a href="https://doi.org/10.1190/seam2021-3582611.1">https://doi.org/10.1190/seam2021-3582611.1</a>	Xie	X	SEG	First International Meeting for Applied Geoscience & Energy	LithoFacies	Seismic section	Supervised	Bayesian-CNN	U-Net	Real	Real	Post stack migrated	MSE	
2021	Deep learning network optimization and hyperparameter tuning for seismic lithofacies classification	<a href="https://doi.org/10.1190/tle0070514.1">https://doi.org/10.1190/tle0070514.1</a>	Jervis	X	SEG	TLE	LithoFacies	Seismic section	Supervised	CNN	VGG 16	Synthetic	Synthetic	Post stack migrated		
2021	Semisupervised facies classification with reconstruction cooperation	<a href="https://doi.org/10.1190/seam2021-3594315.1">https://doi.org/10.1190/seam2021-3594315.1</a>	Asghar	X	SEG	First International Meeting for Applied Geoscience & Energy	LithoFacies	Attributes without seismic section	Semi-supervised	CNN		Real	Real	Attributes	Not specified	
2021	Automatic seismic facies interpretation using supervised deep learning	<a href="https://doi.org/10.1190/geo2019-0425.1">https://doi.org/10.1190/geo2019-0425.1</a>	Zhang	X	SEG	Geophysics	LithoFacies	Seismic section	Supervised	CNN		Real	Real	Post stack migrated		
2021	Deep-learning-based lithofacies prediction for a complex clastic reservoir using multiscale information	<a href="https://doi.org/10.1190/seam2021-3580622.1">https://doi.org/10.1190/seam2021-3580622.1</a>	Xu	X	SEG	First International Meeting for Applied Geoscience & Energy	LithoFacies	Attributes with seismic section	Supervised	CNN		Real	Real	pre-stack migrated	Manually selected	
2021	Facies prediction with Bayesian inference using supervised and semisupervised deep learning	<a href="https://doi.org/10.1190/seam2021-3579316.1">https://doi.org/10.1190/seam2021-3579316.1</a>	Singh	X	SEG	First International Meeting for Applied Geoscience & Energy	LithoFacies	Seismic section	Supervised/Semi-supervised	multiple (CNN, GAN)	U-Net	Real	Real	Post stack migrated	Variational	
2021	Are seismic attributes still helpful for deep learning?	<a href="https://doi.org/10.1190/seam2021-3579734.1">https://doi.org/10.1190/seam2021-3579734.1</a>	Dunham	X	SEG	First International Meeting for Applied Geoscience & Energy	LithoFacies	Attributes without seismic section	Supervised	RNN		Synthetic	SEAM	Synthetic	Angle stacks/attributes	
2021	Impact of sedimentary facies on machine learning of acoustic impedance from seismic data: Lessons from a geologically realistic 3D model	<a href="https://doi.org/10.1190/INT-2021-0035.1">https://doi.org/10.1190/INT-2021-0035.1</a>	Zeng	X	SEG	Interpretation	LithoFacies	Attributes without seismic section	Supervised	Random Forest		Synthetic	Synthetic	Post stack migrated	Not specified	
2021	Unsupervised machine learning using 3D seismic data applied to reservoir evaluation and rock type identification	<a href="https://doi.org/10.1190/INT-2020-0108.1">https://doi.org/10.1190/INT-2020-0108.1</a>	Hussein	X	SEG	Interpretation	LithoFacies	Attributes without seismic section	Unsupervised	SOM		Real	Real	Attributes	PCA	
2021	Unsupervised machine learning for time-lapse seismic studies and reservoir monitoring	<a href="https://doi.org/10.1190/INT-2020-0176.1">https://doi.org/10.1190/INT-2020-0176.1</a>	Hussein	X	SEG	Geophysics	LithoFacies	4D data	Unsupervised	SOM		Real	Real	4D	PCA	
2021	Seismic classification: A Thalweg tracking/machine learning approach	<a href="https://doi.org/10.3907/b2021020">https://doi.org/10.3907/b2021020</a>	de Groot	X	EAGE	First Break	LithoFacies	Attributes without seismic section	Supervised	CNN						
2020	Toward a Semisupervised Machine Learning Application to Seismic Facies Classification	<a href="https://doi.org/10.1190/INT-2020-0144.1">https://doi.org/10.1190/INT-2020-0144.1</a>	Dunham	X	EAGE	EAGE (annual)	LithoFacies	Attributes without seismic section	Semi-supervised			Synthetic	SEAM	Synthetic	Attributes	Not specified
2020	Deep Machine Learning Application for Supervised Facies Classification	<a href="https://doi.org/10.1190/INT-2020-0176.1">https://doi.org/10.1190/INT-2020-0176.1</a>	Amarullah	X	EAGE	EAGE (annual)	LithoFacies	Attributes without seismic section	Supervised	DFNN (Deep Forward NN)		Real	Real	Attributes	Manually selected	MSE

2020	Interactive Deep Learning Assisted Seismic Interpretation Technology Applied to Reservoir Characterization: A Case Study from Offshore Santos Basin in Brazil	<a href="https://doi.org/10.3972/2214-4609.202084012">https://doi.org/10.3972/2214-4609.202084012</a>	Krueger	X		EAGE	EAGE (annual)	LithoFacies	Attributes with Seismic section			Real				Post stack migrated	
2020	Application of Fuzzy System with Deep Learning in Seismic Facies Analysis	<a href="https://doi.org/10.3972/2214-4609.202010742">https://doi.org/10.3972/2214-4609.202010742</a>	Zhang	X		EAGE	EAGE (annual)	LithoFacies	Seismic section	Supervised	CNN	U-Net	Synthetic	Dutch Nlog	Synthetic	Post stack migrated	LOG
2020	DeepSeismic: A Deep Learning Library for Seismic Interpretation	<a href="https://doi.org/10.3972/2214-4609.202032086">https://doi.org/10.3972/2214-4609.202032086</a>	Salvaris	X		EAGE	Digitalization conference	LithoFacies	Seismic section	Supervised	CNN	multiple (U-Net, Resnet, Hrnet)	Real		Real	Post stack migrated	
2020	Comparing Bayesian and neural network supported lithotype prediction from seismic data	<a href="https://doi.org/10.3972/2214-2397.82020053">https://doi.org/10.3972/2214-2397.82020053</a>	Klärner	X		EAGE	First Break	LithoFacies	Attributes without seismic section	Supervised			Real		Real		
2019	Comparison of Seismic Traces Clustering Efficiency of Different Unsupervised Machine Learning Algorithms in Forward Seismic Models	<a href="https://doi.org/10.3972/2214-4609.201901390">https://doi.org/10.3972/2214-4609.201901390</a>	Churochkin	X	X	EAGE	EAGE (annual)	LithoFacies	Seismic section	Unsupervised	Multiple (K-means, DBSCAN, Agglomerative)		Synthetic		Synthetic	Acoustic Impedance	Acoustic Impedance
2019	Investigating the AVO Signature of a North Sea Oil-Field Using Pseudo-Wells and Unsupervised Deep Learning	<a href="https://doi.org/10.3972/2214-4609.201901146">https://doi.org/10.3972/2214-4609.201901146</a>	Mosser	X	X	EAGE	EAGE (annual)	LithoFacies	Attributes without seismic section								
2019	Elastic impedance-based facies classification using support vector machine and deep learning	<a href="https://doi.org/10.1111/1365-2478.12682">https://doi.org/10.1111/1365-2478.12682</a>	Nishitsuji	X	X	EAGE	GP	LithoFacies	Attributes without seismic section	Supervised	Multiple (SVM, DNN)		Synthetic		Both	elastic impedance	elastic impedance
2019	Seismic waveform classification based on Kohonen 3D neural networks with RGB visualization	<a href="https://doi.org/10.3972/2214-2397.2019012">https://doi.org/10.3972/2214-2397.2019012</a>	Priezehev	X	X	EAGE	First Break	LithoFacies	Attributes without seismic section	Supervised/Unsupervised	SOM		Synthetic		Real	pre-stack migrated	
2019	Seismic Facies Recognition and Stratigraphic Traps Characterisation Based on Neural Network	<a href="https://doi.org/10.2523/IPTC-19503-M5">https://doi.org/10.2523/IPTC-19503-M5</a>	Zhang	X		EAGE	IPTC	LithoFacies	Attributes without seismic section	Supervised/Unsupervised	multiple (SLP, MLP)		Real		Real		
2019	Probabilistic Seismic Interpretation Using Bayesian Neural Networks	<a href="https://doi.org/10.3972/2214-4609.201901510">https://doi.org/10.3972/2214-4609.201901510</a>	Mosser	X		EAGE	EAGE (annual)	LithoFacies	Attributes with or without seismic section	Supervised	Bayesian-CNN	Bayesian SegNet	Real		Real	Post stack migrated	
2019	Stratigraphic Segmentation Using Convolutional Neural Networks	<a href="https://doi.org/10.3972/2214-4609.201901968">https://doi.org/10.3972/2214-4609.201901968</a>	Civitaresse	X		EAGE	EAGE (annual)	LithoFacies	Attributes with or without seismic section	Supervised	CNN	user defined	Real		Real	Post stack migrated	
2018	Multi-Modal Machine Learning Fusion for Characterizing Complex Fluvio-Deltaic Tertiary Deposits of North Eastern China	<a href="https://doi.org/10.3972/2214-4609.201801714">https://doi.org/10.3972/2214-4609.201801714</a>	Boateng	X		EAGE	EAGE (annual)	LithoFacies	Attributes with or without seismic section	Supervised	MLP		Real		Real	Post stack migrated	Manually selected
2018	Solving exploration problems with machine learning	<a href="https://doi.org/10.3972/2214-2397.20180100">https://doi.org/10.3972/2214-2397.20180100</a>	Sarcey	X		EAGE	First Break	LithoFacies	Attributes with or without seismic section	Unsupervised	SOM		Real			Attributes	Manually selected
2018	How Machine Learning Is Replacing Conventional Interpretation	<a href="https://doi.org/10.3972/2214-4609.201803011">https://doi.org/10.3972/2214-4609.201803011</a>	Sarcey	X		EAGE	PESGB	LithoFacies	Attributes with or without seismic section	Unsupervised	SOM		Real		Real	Attributes	PCA
2018	Deep Learning Applied to Seismic Facies Classification: a Methodology for Training	<a href="https://doi.org/10.3972/2214-4609.201800237">https://doi.org/10.3972/2214-4609.201800237</a>	Chevitaresse	X		EAGE	SAINT PETERSBURG	LithoFacies	Attributes with or without seismic section	Supervised	CNN	multiple (VGG 16, AlexNET)	Real		Real	Post stack migrated	LOG
2018	Application of Deep Learning Along Directional Image Gathers for High-Definition Classification of Subsurface Features	<a href="https://doi.org/10.3972/2214-4609.201800633">https://doi.org/10.3972/2214-4609.201800633</a>	Serfaty	X		EAGE	EAGE (annual)	LithoFacies									
2018	Semi-Supervised Deep-Learning Applied To UK North Sea Well And Seismic Data	<a href="https://doi.org/10.3972/2214-4609.201803013">https://doi.org/10.3972/2214-4609.201803013</a>	Nishitsuji	X	X	EAGE	PESGB	LithoFacies	Attributes with or without seismic section	Self-learning	SELF-LEARNING		Real		Real	elastic impedance	elastic impedance
2018	Lithologic mapping using Random Forests applied to geophysical and remote-sensing data: A demonstration study from the Eastern Goldfields of Australia	<a href="https://doi.org/10.1190/geo2017-0590.1">https://doi.org/10.1190/geo2017-0590.1</a>	Kuhn	X		SEG	Geophysics	LithoFacies	Attributes with or without seismic section	Supervised	Random Forest		Real		Real		
2015	From Prestack to Rock-type, a Neural Network Facies Inversion	<a href="https://doi.org/10.3972/2214-4609.201526170">https://doi.org/10.3972/2214-4609.201526170</a>	Hami-Eddine	X		EAGE	APGCE	LithoFacies	Attributes with or without seismic section	Supervised	DNNa (Democratic neural network association)		Real		Real		
2019	Machine Learning Applied to 3D Seismic Data from the Denver-Julesburg Basin Improves Stratigraphic Resolution in the Niobrara	<a href="https://doi.org/10.15530/jurtec-2019-337">https://doi.org/10.15530/jurtec-2019-337</a>	Laudon	X		SEG	Unconventional Resources Technology Conference	Stratigraphic sequence	Attributes	Unsupervised	SOM		Real		Real	Attributes	PCA
2018	Seismic data prediction lithology sequence model based on machine learning	<a href="https://doi.org/10.1190/REG2018-64.1">https://doi.org/10.1190/REG2018-64.1</a>	Li	X		SEG	Reservoir Geophysics, Daqing, China, 5-7 August 2018	Stratigraphic sequence		Supervised	RNN-LSTM		Real		Real	Post stack migrated	
2019	Seismic stratigraphy Interpretation via deep convolutional neural networks	<a href="https://doi.org/10.1190/seam2019-3214745.1">https://doi.org/10.1190/seam2019-3214745.1</a>	Di	X		SEG	SEG Technical Program	Stratigraphic sequence		Supervised	CNN		Real		Real	Post stack migrated	
2019	Analysis of seismic and texture attributes for stratigraphic segmentation	<a href="https://doi.org/10.1190/seam2019-3216339.1">https://doi.org/10.1190/seam2019-3216339.1</a>	Ferreira	X		SEG	SEG Technical Program	Stratigraphic sequence		Supervised/Unsupervised	Multiple (K-means, GMM, Random Forest, SVM)						
2019	Stratigraphy estimation from seismic data using deep learning	<a href="https://doi.org/10.1190/seam2019-3215869.1">https://doi.org/10.1190/seam2019-3215869.1</a>	Huot	X	X	SEG	SEG Technical Program	Stratigraphic sequence		Supervised	CNN		Synthetic		Synthetic	Post stack migrated	Log loss
2020	Seismic stratigraphy interpretation by deep convolutional neural networks: A semisupervised workflow	<a href="https://doi.org/10.1190/geo2019-0433.1">https://doi.org/10.1190/geo2019-0433.1</a>	Di	X		SEG	Geophysics	Stratigraphic sequence		Supervised	CNN		Real		Real	Post stack migrated	
2020	Turbidite Fan Interpretation in 3D Seismic Data by Point Cloud Segmentation Using Machine Learning	<a href="https://doi.org/10.3972/2214-4609.202012020">https://doi.org/10.3972/2214-4609.202012020</a>	Corlay	X	X	EAGE	EAGE (annual)	Stratigraphic sequence		Unsupervised	DBSCAN		Real		Real	Post stack migrated	
2019	A New Data-Driven Seismic Interpretation Workflow Using Unsupervised Machine Learning and Non-Local Trace Matching	<a href="https://doi.org/10.3972/2214-4609.201901509">https://doi.org/10.3972/2214-4609.201901509</a>	Bugge	X	X	EAGE	EAGE (annual)	Stratigraphic sequence		Unsupervised	DBSCAN		Real		Real	Attributes	Fixed manually
2019	Semi-Supervised DeepMachine Learning Assisted Seismic Image Segmentation and Stratigraphic Sequence Interpretation	<a href="https://doi.org/10.3972/2214-4609.201901389">https://doi.org/10.3972/2214-4609.201901389</a>	Li	X		EAGE	EAGE (annual)	Stratigraphic sequence		Supervised	CNN		Real		Real	Post stack migrated	

2019	Petrophysical properties prediction from pre-stack seismic data using convolutional neural networks	<a href="https://doi.org/10.1190/seam2019-3215122.1">https://doi.org/10.1190/seam2019-3215122.1</a>	Das	X		SEG	SEG Technical Program	Petrophysical properties	PP: Porosity, water content, Vclay, density, VS, VP	Supervised	CNN	Synthetic	Both	Post stack migrated		
2018	Multiattribute reservoir parameter estimation on based on a machine learning technique	<a href="https://doi.org/10.1190/seam2018-2992296.1">https://doi.org/10.1190/seam2018-2992296.1</a>	Yuan	X	X	SEG	SEG Technical Program	Petrophysical properties	PP: Brittleness	Supervised	SVR	Real	Real	Attributes	Manually selected	
2018	Validated artificial neural networks in determining petrophysical properties: A case study from Colombia	<a href="https://doi.org/10.1190/nt-2018-0011.1">https://doi.org/10.1190/nt-2018-0011.1</a>	Iturraran-Veveros	X	X	SEG	Interpretation	Petrophysical properties	PP: density, Vclay	Supervised	ANN	Real	Real	Attributes	Manually selected	
2020	Joint seismic and electromagnetic inversion for reservoir mapping using a deep learning aided feature-oriented approach	<a href="https://doi.org/10.1190/seam2020-3425261.1">https://doi.org/10.1190/seam2020-3425261.1</a>	Zhang	X	X	SEG	SEG Technical Program	Petrophysical properties	PP: Porosity, permeability, water saturation	Supervised	CNN	Synthetic	Synthetic	Post stack migrated		
2020	An unsupervised deep-learning method for porosity estimation based on poststack seismic data	<a href="https://doi.org/10.1190/geo2020-0121.1">https://doi.org/10.1190/geo2020-0121.1</a>	Feng	X		SEG		Petrophysical properties	PP: Porosity	Unsupervised	CNN	Synthetic	Both	Post stack migrated		
2020	A new approach to improve reservoir modeling via machine learning	<a href="https://doi.org/10.1190/ta39030170.1">https://doi.org/10.1190/ta39030170.1</a>	A. Mohammad	X	X	SEG	TLE	Petrophysical properties	PP: Porosity, water saturation	Supervised	PNN	Real	Real	Post-stack Depth Migrated	Multi-linear regression	
2020	Machine learning for geophysical characterization of brittleness: Tuscaloosa Marine Shale case study	<a href="https://doi.org/10.1190/nt-2019-0194.1">https://doi.org/10.1190/nt-2019-0194.1</a>	Miella	X		SEG	Interpretation	Petrophysical properties	PP: Brittleness	Supervised	ANN	Real	Real	Attributes	Manually selected	
2020	Porosity prediction using machine learning	<a href="https://doi.org/10.1190/seam2020-w13-04.1">https://doi.org/10.1190/seam2020-w13-04.1</a>	Jiang	X	X	SEG	SEG Technical Program	Petrophysical properties	PP: Porosity	Supervised	Multiple (MLP, SVR, Random Forest)	Synthetic	Both	Attributes	Not specified	
2021	Building large-scale density model via a deep-learning-based data-driven method	<a href="https://doi.org/10.1190/geo2019-0332.1">https://doi.org/10.1190/geo2019-0332.1</a>	Gao	X	X	SEG	Geophysics	Petrophysical properties	PP: Density	Supervised	RNN-LSTM	Synthetic	Marmousi II	Both	Post stack migrated	
2021	A random forest regressor based uncertainty quantification of porosity estimation from multiple seismic attributes	<a href="https://doi.org/10.1190/seam2021-3592868.1">https://doi.org/10.1190/seam2021-3592868.1</a>	Zou	X		SEG	First International Meeting for Applied Geoscience & Energy	Petrophysical properties	PP: Porosity	Supervised	Random Forest	Real	Real	Attributes	Not specified	
2021	Supervised machine learning to predict brittleness using well logs and seismic signal attributes: Methods and application in an unconventional reservoir	<a href="https://doi.org/10.1190/seam2021-3594773.1">https://doi.org/10.1190/seam2021-3594773.1</a>	Ore	X		SEG	First International Meeting for Applied Geoscience & Energy	Petrophysical properties	PP: Brittleness		Multiple (MLP, GB, SVR)		Real	Attributes	Not specified	
2020	New Age, Kolmogorov Full Functional Neural Network Usage for Nonlinear Predictive Seismic Inversion	<a href="https://doi.org/10.3937/2214-4609.2019053084">https://doi.org/10.3937/2214-4609.2019053084</a>	Priezzhev	X		EAGE	SAINT PETERSBURG	Petrophysical properties	PP: Porosity, density, VP/VS, Vclay	Supervised	Kolmogorov neural network	Real	Real	Angle stacks		
2020	Reservoir characterization utilizing pre-stack inversion and artificial neural network techniques, Offshore Nile Delta, Egypt	<a href="https://doi.org/10.3937/2214-4609.2019020086">https://doi.org/10.3937/2214-4609.2019020086</a>	Othman	X	X	EAGE	First Break	Petrophysical properties	PP: Porosity, water saturation	Supervised	PNN	Real	Real	Attributes	Manually selected	
2019	Integrating facies-based Bayesian inversion and supervised machine learning for petro-facies characterization in the Snadd Formation of the Goliat Field, south-western Barents Sea	<a href="https://doi.org/10.1190/nt-2019-01365-2397.tb2020086">https://doi.org/10.1190/nt-2019-01365-2397.tb2020086</a>	Yenwongfal	X	X	X	EAGE	GP	Petrophysical properties	PP: Porosity	Supervised	Linear Regression	Real	Real	Attributes	Not specified
2019	APPLICATION OF MACHINE LEARNING FOR POROSITY PREDICTION USING 3D SEISMIC DATA	<a href="https://doi.org/10.3937/2214-4609.201903385">https://doi.org/10.3937/2214-4609.201903385</a>	Malik	X		EAGE	APGCE	Petrophysical properties	PP: Porosity	Supervised	Multiple (DNN, PNN)	Real	Real	Attributes	Not specified	
2019	Machine Learning from Core to Seismic: Porosity Prediction in the Norwegian North Sea	<a href="https://doi.org/10.3937/2214-4609.201901619">https://doi.org/10.3937/2214-4609.201901619</a>	Purves	X		EAGE	EAGE (annual)	Petrophysical properties	PP: Porosity	Supervised	CNN	Real	Real	Post stack migrated	MSE	
2019	Enhanced AVA Inversion for Flow Model Generation Using Convolutional Neural Networks (CNN) and Seismic Data to Predict Gas Content in Shales Gas Reservoirs	<a href="https://doi.org/10.3937/2214-4609.201901611">https://doi.org/10.3937/2214-4609.201901611</a>	Hoversten	X		EAGE	EAGE (annual)	Petrophysical properties	PP: Permeability	Semi-supervised	GAN	U-Net	Synthetic	Both	AVA	AVA
2019	Integrated Geophysics and Machine Learning for Risk Mitigation in Exploration Geosciences	<a href="https://doi.org/10.3937/2214-4609.201900766">https://doi.org/10.3937/2214-4609.201900766</a>	Sheng	X		EAGE	EAGE (annual)	Petrophysical properties	PP: Gas content	Supervised	CNN	Real	Real	pre-stack migrated attributes	Instantaneous amplitude	
2018	Hybrid Strategy for Porosity Distribution Mapping on a Heterogeneous Reservoir Using Artificial Intelligence Method	<a href="https://doi.org/10.3937/2214-4609.201803052">https://doi.org/10.3937/2214-4609.201803052</a>	Singh	X		EAGE	EAGE (annual)	Petrophysical properties	PP: Exploration risk mitigation (reservoir detection)	Supervised	SVM	Real	Real	Post stack migrated		
2018	Application of spectral decomposition and neural networks to characterise deep turbidite systems in the outer fold and thrust belt of the Niger Delta	<a href="https://doi.org/10.1190/nt-2018-01365-2478.12659">https://doi.org/10.1190/nt-2018-01365-2478.12659</a>	Maminu	X		EAGE	GP	Petrophysical properties	PP: Porosity, resistivity	Supervised	MLP	Real	Real	Post stack migrated	Manually selected	
2013	Neural Network Applications of Seismic Attributes for Predicting Porosity and Production	<a href="https://doi.org/10.3937/2214-4609-pdb.380.3">https://doi.org/10.3937/2214-4609-pdb.380.3</a>	Celik	X		EAGE	IPETGAS	Petrophysical properties	PP: Porosity	Supervised		Real	Real			
2016	Identifying Unconventional Potential Using Seismic Inversion and Neural Networks - An Eagle Ford Shale Study	<a href="https://doi.org/10.3937/2214-4609.201600769">https://doi.org/10.3937/2214-4609.201600769</a>	Refunjol	X	X	EAGE	EAGE (annual)	Petrophysical properties	PP: Porosity, TOC	Supervised		Real	Real			
2017	Application Of Artificial Neural Networks As A Tool For Properties Prediction Using Seismic Data	<a href="https://doi.org/10.3937/2214-4609.201702628">https://doi.org/10.3937/2214-4609.201702628</a>	Muradov	X		EAGE	AMGE	Petrophysical properties	PP: Vshale	Supervised	MLP	Real	Real	Attributes	Manually selected	
2018	Comparative Study Of Deep Feed Forward Neural Network Application For Seismic Reservoir Characterization	<a href="https://doi.org/10.3937/2214-4609.201803009">https://doi.org/10.3937/2214-4609.201803009</a>	Colwell	X		EAGE	PESGB	Petrophysical properties	PP: Porosity, Vshale, water saturation	Supervised	DFNN (Deep Forward NN)	Real	Real	Post stack migrated		
2018	Effect of rock physics modeling in impedance inversion from seismic data using convolutional neural network	<a href="https://doi.org/10.1190/seam2018-135.1">https://doi.org/10.1190/seam2018-135.1</a>	Das	X		SEG	Proceedings of the 13th SEGJ International Symposium, Tokyo, Japan	Impedance	Acoustic	Supervised	CNN	Synthetic	Synthetic	Post stack migrated		

2019	Estimation of acoustic impedance from seismic data using temporal convolutional network	<a href="https://doi.org/10.1190/segam2019-3216840.1">https://doi.org/10.1190/segam2019-3216840.1</a>	Mustafa	X	X	SEG	SEG Technical Program	Impedance	Acoustic	Supervised	TCN	Synthetic	Synthetic	Post stack migrated			
2019	Semi-supervised learning for acoustic impedance inversion	<a href="https://doi.org/10.1190/segam2019-3215902.1">https://doi.org/10.1190/segam2019-3215902.1</a>	Alfarraj	X	X	SEG	SEG Technical Program	Impedance	Acoustic	Semi-supervised	Multiple (CNN, RNN)	Synthetic	Marmousi 2	Synthetic			
2019	Deep learning with cross-shape deep Boltzmann machine for pre-stack inversion problem	<a href="https://doi.org/10.1190/segam2019-3215696.1">https://doi.org/10.1190/segam2019-3215696.1</a>	Phan	X		SEG	SEG Technical Program	Impedance	Acoustic	Supervised	CDBM(Cross-shape Deep Boltzmann Machin)						
2019	Seismic impedance inversion based on cycle-consistent generative adversarial network	<a href="https://doi.org/10.1190/segam2019-3203757.1">https://doi.org/10.1190/segam2019-3203757.1</a>	Wang		X	SEG	SEG Technical Program	Impedance		Supervised/Semi-supervised	cGAN	Synthetic	Both	Both	Post-stack migrated		
2019	Semisupervised sequence modeling for elastic impedance inversion	<a href="https://doi.org/10.1190/INT-2018-0250.1">https://doi.org/10.1190/INT-2018-0250.1</a>	Alfarraj	X		SEG	Interpretation	Impedance	Elastic	Semi-supervised	Multiple (CNN, RNN)	Synthetic	Marmousi 2	Synthetic	MSE		
2019	Convolutional neural network for seismic impedance inversion	<a href="https://doi.org/10.1190/geo2018-0838.1">https://doi.org/10.1190/geo2018-0838.1</a>	Das	X		SEG	Geophysics	Impedance	Acoustic	Supervised	Bayesian-CNN	Synthetic	Both	Both	Post stack migrated	MSE	
2020	Wasserstein cycle-consistent generative adversarial network for improved seismic impedance inversion: Example on 3D SEAM model	<a href="https://doi.org/10.1190/segam2020-3425785.1">https://doi.org/10.1190/segam2020-3425785.1</a>	Cai		X	SEG	SEG Technical Program	Impedance	Acoustic	Semi-supervised	cGan	Alex-net	Synthetic	SEAM	Synthetic	Post stack migrated	
2020	Spatiotemporal modeling of seismic images for acoustic impedance estimation	<a href="https://doi.org/10.1190/segam2020-3428298.1">https://doi.org/10.1190/segam2020-3428298.1</a>	Mustafa	X		SEG	SEG Technical Program	Impedance	Acoustic	Supervised	TCN (Temporal convolution al network)	Synthetic		Synthetic	Post stack migrated		
2020	Joint learning for seismic inversion: An acoustic impedance estimation case study	<a href="https://doi.org/10.1190/segam2020-3428378.1">https://doi.org/10.1190/segam2020-3428378.1</a>	Mustafa	X	X	SEG	SEG Technical Program	Impedance		Supervised	TCN (Temporal convolution al network)	Synthetic	Multiple (SEAM, MARMOUSI)	Synthetic	Post stack migrated	L2 norm	
2021	Deep learning for multidimensional seismic impedance inversion	<a href="https://doi.org/10.1190/geo2020-0564.1">https://doi.org/10.1190/geo2020-0564.1</a>	Wu	X	X	SEG	Geophysics	Impedance		Supervised	CNN	Both	SEAM	Both	Both	Post stack migrated	MSE
2021	Joint learning for spatial context-based seismic inversion of multiple data sets for improved generalizability and robustness	<a href="https://doi.org/10.1190/geo2020-0432.1">https://doi.org/10.1190/geo2020-0432.1</a>	Mustafa	X		SEG	Geophysics	Impedance		Supervised	TCN	Synthetic	Multiple (SEAM, MARMOUSI 2)	Synthetic	Post stack migrated	MSE	
2021	Facies control on machine learning of acoustic impedance	<a href="https://doi.org/10.1190/segam2021-3574779.1">https://doi.org/10.1190/segam2021-3574779.1</a>	Zeng	X		SEG	First International Meeting for Applied Geoscience & Energy	Impedance		Supervised	Random Forest	Synthetic		Synthetic			
2020	Theory-Guided Deep Learning for Reservoir Characterization	<a href="https://doi.org/10.3937/2214-4609.202011797">https://doi.org/10.3937/2214-4609.202011797</a>	Downton		X	EAGE	EAGE (annual)	Impedance		Supervised		Synthetic	Both	Both	pre-stack migrated		
2020	Acoustic Impedance Inversion of High Resolution Marine Seismic Data with Deep Neural Network	<a href="https://doi.org/10.3937/2214-4609.202020169">https://doi.org/10.3937/2214-4609.202020169</a>	Dujardin		X	EAGE	NSG	Impedance		Supervised	DNN	user defined	Synthetic	Marmousi	Synthetic	Post stack migrated	
2020	Seismic Acoustic Impedance Estimation by Learning from Sparse Wells via Deep Neural Networks	<a href="https://doi.org/10.3937/2214-4609.202010486">https://doi.org/10.3937/2214-4609.202010486</a>	Di		X	EAGE	EAGE (annual)	Impedance		Semi-supervised	CNN	user defined	Synthetic	SEAM	Synthetic	Post stack migrated	MSE
2020	Seismic Impedance Inversion via Combining Convolutional Neural Network and Geostatistics: An Example from Songliao Basin, China	<a href="https://doi.org/10.3937/2214-4609.202011022">https://doi.org/10.3937/2214-4609.202011022</a>	Ge	X	X	EAGE	EAGE (annual)	Impedance		Supervised	CNN	U-Net	Real	Real	Post stack migrated	L2 norm	
2019	Rock-physics based Augmented Machine Learning for Reservoir Characterization	<a href="https://doi.org/10.3937/2214-4609.2019X610102">https://doi.org/10.3937/2214-4609.2019X610102</a>	Downton		X	EAGE	Subsurface Intelligence workshop	Impedance		Supervised	DNN	Synthetic	Real	Real	Angle stacks		
2019	Seismic Impedance Inversion Based on Sub-Image and Convolutional Neural Network	<a href="https://doi.org/10.3937/2214-4609.201901391">https://doi.org/10.3937/2214-4609.201901391</a>	Li	X		EAGE	EAGE (annual)	Impedance		Supervised	CNN	Synthetic	Marmousi II	Synthetic	Post stack migrated		
2019	Application of Bi-directional Long Short-Term Memory Recurrent Neural Network for Seismic Impedance Inversion	<a href="https://doi.org/10.3937/2214-4609.201901386">https://doi.org/10.3937/2214-4609.201901386</a>	Guo		X	EAGE	EAGE (annual)	Impedance		Supervised	Multiple (CNN, RNN)	Real		Real	Post stack migrated		
2018	Geophysical inversion versus machine learning in inverse problems	<a href="https://doi.org/10.1190/1e37120894.1">https://doi.org/10.1190/1e37120894.1</a>	Kim	X		SEG	TLE	Reflectivity inversion		Supervised	DNN	Synthetic	Both	Both	Post stack migrated		
2019	Unsupervised physics-based neural networks for seismic migration	<a href="https://doi.org/10.1190/INT-2018-0230.1">https://doi.org/10.1190/INT-2018-0230.1</a>	Vamaraju	X		SEG	Interpretation	Reflectivity inversion	RTM, Kirchhoff	Supervised	RNN	Synthetic	Multiple (SEG/EAGE overthrust model, Marmousi)	Synthetic	Synthetic		
2019	Seismic image processing through the generative adversarial network	<a href="https://doi.org/10.1190/INT-2018-0232.1">https://doi.org/10.1190/INT-2018-0232.1</a>	Picetti	X		SEG	Interpretation	Reflectivity inversion		Semi-supervised	GAN	Synthetic	SEG/EAGE overthrust model	Synthetic	Synthetic		
2020	Reflectivity Inversion of Nonstationary Seismic Data with Deep Learning Based Data Correction	<a href="https://doi.org/10.3937/2214-4609.202011195">https://doi.org/10.3937/2214-4609.202011195</a>	Gao	X		EAGE	EAGE (annual)	Reflectivity inversion		Supervised	DNN	Both	Both	Both	Post stack migrated		
2019	Time-lapse seismic inversion for reservoir changes in the Norne Field, North Sea	<a href="https://doi.org/10.1190/segam2019-3216321.1">https://doi.org/10.1190/segam2019-3216321.1</a>	BaBalola	X		SEG	SEG Technical Program	4D	pressure, saturation, p-impedance, S-impedance	Supervised	MDN (mixture density NN)	Synthetic	Both	Both	Attributes		
2018	Machine learning to reduce cycle time for time-lapse seismic data assimilation into reservoir management	<a href="https://doi.org/10.1190/segam2018-2997250.1">https://doi.org/10.1190/segam2018-2997250.1</a>	Xue		X	SEG	SEG Technical Program	4D	Water content	Supervised	Multiple (MLP, Random Forest)	Synthetic	Both	Both	4D data		
2019	Machine learning to reduce cycle time for time-lapse seismic data assimilation into reservoir management	<a href="https://doi.org/10.1190/INT-2018-0206.1">https://doi.org/10.1190/INT-2018-0206.1</a>	Zue		X	SEG	Interpretation	4D	Water content	Supervised	ANN	Synthetic	Both	Both	Post stack migrated		
2020	Time-lapse seismic data inversion for estimating reservoir parameters using deep learning	<a href="https://doi.org/10.1190/segam2020-3419749.1">https://doi.org/10.1190/segam2020-3419749.1</a>	Kaur	X		SEG	SEG Technical Program	4D	CO2 saturation	Semi-supervised	GAN	Synthetic		Synthetic	4D data		
2020	Cross-equalization of time-lapse seismic data using recurrent neural networks	<a href="https://doi.org/10.1190/segam2020-3424773.1">https://doi.org/10.1190/segam2020-3424773.1</a>	Alali	X	X	SEG	SEG Technical Program	4D	AI	Supervised	RNN-LSTM	Synthetic		Synthetic	Raw		
2020	Ground-truth uncertainty-aware metrics for machine learning applications on seismic image interpretation: Application to faults and horizon extraction	<a href="https://doi.org/10.1190/1e39100734.1">https://doi.org/10.1190/1e39100734.1</a>	Guillon		X	SEG	TLE	Multiple (Fault detection,Horizon tracking)		Supervised	CNN	U-Net	Real	Real	Post stack migrated	MSE	
2018	Seismic-facies analysis based on deep-encoder clustering	<a href="https://doi.org/10.1190/segam2018-2997763.1">https://doi.org/10.1190/segam2018-2997763.1</a>	Duan	X		SEG	SEG Technical Program	multiple (Channel detection,LithoFacies)	Seismic Section	Unsupervised	Encoder Deep network	Real	Real	Attributes	Amplitude spectra	Log loss	
2018	Automated Interpretation of top and base salt using deep-convolutional networks	<a href="https://doi.org/10.1190/segam2018-2996306.1">https://doi.org/10.1190/segam2018-2996306.1</a>	Gramstad		X	SEG	SEG Technical Program	Multiple (Salt/Geobody identification, Horizon tracking)		Supervised	CNN	Real	Real	Real	Post stack migrated		

2018	Petrophysical-property estimation from seismic data using recurrent neural networks	<a href="https://doi.org/10.1190/seam2018-2995752.1">https://doi.org/10.1190/seam2018-2995752.1</a>	Alfarraj	X	X	SEG	SEG Technical Program	multiplePetrophysical properties, Impedance)	PP: Density	Supervised	RNN-GRU	Real	Real	Post stack migrated	MSE	
2015	Supervised and unsupervised learning: how machines can assist quantitative seismic interpretation	<a href="https://doi.org/10.1190/seam2015-5924540.1">https://doi.org/10.1190/seam2015-5924540.1</a>	Zhao	X		SEG	SEG Technical Program	Multiple (LithoFacies, Petrophysical properties)	Attributes without seismic section, PP: Brittleness	Supervised/Unsupervised	SOM	Real	Real	Attributes	Manually selected	
2015	Geologic pattern recognition from seismic attributes: Principal component analysis and self-organizing maps	<a href="https://doi.org/10.1190/INT-2015-0037.1">https://doi.org/10.1190/INT-2015-0037.1</a>	Roden		X	SEG	Interpretation	Multiple (LithoFacies, DHI interpretation)	Attributes without seismic section	Unsupervised	SOM	Real	Real	Attributes	PCA	
2016	Analysis of porosity, stratigraphy, and structural delineation of a Brazilian carbonate field by machine learning techniques: A case study	<a href="https://doi.org/10.1190/INT-2016-0024.1">https://doi.org/10.1190/INT-2016-0024.1</a>	Chaves Kuroda	X		SEG	Interpretation	Multiple (LithoFacies, Stratigraphic sequence, Petrophysical properties)	Attributes without seismic section, PP: Porosity	Supervised	MLP	Real	Real	Attributes	Genetic Algorithm	
2019	Prestack and poststack inversion using a physics-guided convolutional neural network	<a href="https://doi.org/10.1190/INT-2018-0236.1">https://doi.org/10.1190/INT-2018-0236.1</a>	Biswas	X		SEG	Interpretation	multiplePetrophysical properties, Impedance)	Elastic, PP: Density	Supervised	CNN	Synthetic	Both	Angle stacks		
2020	Theory-guided data science-based reservoir prediction of a North Sea oil field	<a href="https://doi.org/10.1190/INT-2019-0074.1">https://doi.org/10.1190/INT-2019-0074.1</a>	Downton		X	SEG	TLE	multiplePetrophysical properties, Impedance)	Elastic, PP: Porosity	Supervised	DNN	Synthetic	Both	Post stack migrated		
2020	Petrophysical properties prediction from prestack seismic data using convolutional neural networks	<a href="https://doi.org/10.1190/geo2019-0650.1">https://doi.org/10.1190/geo2019-0650.1</a>	Das	X	X	SEG	Geophysics	multiplePetrophysical properties, Impedance)	Acoustic, PP: Porosity, Vclay	Supervised	CNN	Real	Real	Pre-stack migrated		
2020	Accelerating seismic fault and stratigraphy interpretation with deep CNNs: A case study of the Taranaki Basin, New Zealand	<a href="https://doi.org/10.1190/INT-2019-0277.1">https://doi.org/10.1190/INT-2019-0277.1</a>	Di		X	SEG	The Leading Edge	Multiple (Fault detection, Stratigraphic sequence)		Supervised	CNN	Real	Real	Post stack migrated		
2020	Uncertainty estimation in impedance inversion using Bayesian deep learning	<a href="https://doi.org/10.1190/seam2020-3428098.1">https://doi.org/10.1190/seam2020-3428098.1</a>	Choi	X	X	SEG	SEG Technical Program	multiplePetrophysical properties, Impedance)	Elastic, PP: Density	Supervised	Bayesian-CNN	Real	Real	Angle stacks		
2020	Seismic attribute selection for machine-learning-based facies analysis	<a href="https://doi.org/10.1190/geo2019-0223.1">https://doi.org/10.1190/geo2019-0223.1</a>	Qi	X		SEG	Geophysics	Multiple (Salt/Geobody identification, LithoFacies)	Attributes without seismic section	Unsupervised	GTN	Real	Real	Attributes	Gaussian mixture model (GMM)	
2020	Machine learning assisted seismic inversion	<a href="https://doi.org/10.1190/seam2020-3425889.1">https://doi.org/10.1190/seam2020-3425889.1</a>	Roy		X	SEG	SEG Technical Program	Multiple (DHI interpretation, Petrophysical properties)	PP: Porosity	Supervised		Synthetic	SEAM	Both	Attributes	
2021	Estimating subsurface properties using a semi-supervised neural networks approach	<a href="https://doi.org/10.1190/geo2021-0192.1">https://doi.org/10.1190/geo2021-0192.1</a>	Di		X	SEG	Geophysics	multiplePetrophysical properties, Impedance)	PP: Porosity	Supervised/Unsupervised	CNN	Synthetic	Synthetic	Post stack migrated	MSE	
2021	Interactively tracking seismic geobodies with a deep-learning flood-filling network	<a href="https://doi.org/10.1190/geo2020-0042.1">https://doi.org/10.1190/geo2020-0042.1</a>	Shi	X		SEG	Geophysics	Multiple (Fault detection, Salt/Geo-body identification)		Supervised	CNN	U-Net	Synthetic	Synthetic	Post stack migrated	
2021	Integrating deep learning insights for complex geological features: A case study from the Santos Basin, offshore Brazil	<a href="https://doi.org/10.1190/seam2021-3594718.1">https://doi.org/10.1190/seam2021-3594718.1</a>	Chenin		X	SEG	First International Meeting for Applied Geoscience & Energy	Multiple (Fault detection, Salt/Geo-body identification)		Supervised	CNN	Real	Real	Post-stack Depth Migrated		
2021	Multiparameter geophysical reservoir characterization augmented by generative networks	<a href="https://doi.org/10.1190/seam2021-3583673.1">https://doi.org/10.1190/seam2021-3583673.1</a>	Li		X	SEG	First International Meeting for Applied Geoscience & Energy	multiplePetrophysical properties, Impedance)	PP: VP/VS	Semi-supervised	GAN	Synthetic	Synthetic	AVO	AVO	
2021	Channel facies and faults multisegmentation in seismic volumes	<a href="https://doi.org/10.1190/seam2021-3584046.1">https://doi.org/10.1190/seam2021-3584046.1</a>	Pham	X		SEG	First International Meeting for Applied Geoscience & Energy	Multiple (Fault detection, LithoFacies)	Attributes without seismic section	Supervised	CNN	Real	Real		Dice	
2021	3D seismic interpretation with deep learning: A brief introduction	<a href="https://doi.org/10.1190/INT-2020-0054.1">https://doi.org/10.1190/INT-2020-0054.1</a>	Wrona	X	X	SEG	TLE	Multiple (Fault detection, Salt/Geo-body identification, Horizon tracking)		Supervised	CNN	U-Net	Real	Real	Post stack migrated	LOG
2021	Imposing Interpretational constraints on a seismic interpretation convolutional neural network	<a href="https://doi.org/10.1190/geo2020-0449.1">https://doi.org/10.1190/geo2020-0449.1</a>	Di		X	SEG	Geophysics	Multiple (Fault detection, LithoFacies, Stratigraphic sequence)	Seismic section	Supervised	CNN	U-Net	Real	Real	Post stack migrated	LOG
2021	An in-depth analysis of logarithmic data transformation and per-class normalization in machine learning: Application to unsupervised classification of a turbidite system in the Canterbury Basin, New Zealand, and supervised classification of salt in the Eugene Island minibasin, Gulf of Mexico	<a href="https://doi.org/10.1190/INT-2021-0008.1">https://doi.org/10.1190/INT-2021-0008.1</a>	Ha	X	X	SEG	Interpretation	Multiple (Salt/Geobody identification, LithoFacies)	Attributes without seismic section	Supervised/Unsupervised	SOM	Real	Real	Post stack migrated	PCA	
2021	Using machine learning to detect horizons, alluvial fans and fluvial channels, as well as vertical faults	<a href="https://doi.org/10.3907/2214-2397.B2021052">https://doi.org/10.3907/2214-2397.B2021052</a>	Sergey		X	SEG	First Break	Multiple (Fault detection, Horizon tracking)		Supervised		Real	Real			
2020	A New Era in Geoscience Data Interpretation - Artificial Intelligence Based Solutions	<a href="https://doi.org/10.3907/2214-4609.202011568">https://doi.org/10.3907/2214-4609.202011568</a>	Gorlov		X	EAGE	EAGE (annual)	Multiple (Fault detection, Horizon tracking, LithoFacies)	Seismic section	Supervised	CNN	U-Net	Synthetic	Both	Post stack migrated	
2020	Uncertainty quantification for deep learning in geoscience applications	<a href="https://doi.org/10.3907/2214-4609.202075015">https://doi.org/10.3907/2214-4609.202075015</a>	Mosser		X	EAGE	AAPG digital subsurface for Asia Pacific Conference	Multiple (Fault detection, Petrophysical properties)	PP: VP/VS	Supervised	Bayesian-CNN	Real	Real	pre-stack migrated		
2019	Pseudo-Wells based HitCube 'trace-matching' and Machine Learning Inversions: Seismic Reservoir Characterization in a Challenging Environment	<a href="https://doi.org/10.3907/2214-4609.20190510104">https://doi.org/10.3907/2214-4609.20190510104</a>	Kocis		X	EAGE	Subsurface Intelligence workshop	multiplePetrophysical properties, Impedance)	PP: Porosity, V shale, VP/VS	Supervised	Random Forest	Synthetic	Synthetic	pre-stack migrated		
2020	3D Seismic Based Reservoir Property Prediction Using Deep Convolutional Neural Networks	<a href="https://doi.org/10.3907/2214-4609.202011954">https://doi.org/10.3907/2214-4609.202011954</a>	Purves		X	EAGE	EAGE (annual)	multiplePetrophysical properties, Impedance)	PP: Porosity, density, VP/VS, Vclay	Supervised	CNN	Real	Real	Post stack migrated		



2020	Experiences with Machine Learning and Deep Learning Algorithms for Seismic Wells and Seismic-to-Well Applications	<a href="https://doi.org/10.3972/2214-4609.202010990">https://doi.org/10.3972/2214-4609.202010990</a>	Jaglan	X		EAGE	EAGE (annual)	Multiple (Fault identification, Petrophysical properties)	PP: Chimney volume	Supervised	CNN	multiple (U-Net, Le-Net)	Both	Real	Post stack migrated	
2019	Combining Machine Learning and a Knowledge Base for Seismic Data Intelligence Expansion	<a href="https://doi.org/10.3972/2214-4609.2019011393">https://doi.org/10.3972/2214-4609.2019011393</a>	Vital Brazil	X	X	EAGE	EAGE (annual)	Multiple (Salt/Geobody identification, DHI interpretation)		Supervised	KNN		Real	Real	Post stack migrated	
2018	Application of Machine Learning Algorithms Using Seismic Data and Well Logs to Predict Reservoir Properties	<a href="https://doi.org/10.3972/2214-4609.20180920">https://doi.org/10.3972/2214-4609.20180920</a>	priezhev	X		EAGE	EAGE (annual)	multiple Petrophysical properties, Impedance	PP: density	Supervised	Multiple (Random Forest, Linear regression)		Real	Real	Post stack migrated	
2010	Estimation of Reservoir Properties from Seismic Attributes and Well Log Data using Artificial Neural Networks	<a href="https://doi.org/10.3972/2214-4609.20145507">https://doi.org/10.3972/2214-4609.20145507</a>	Sitouah	X		EAGE	EAGE (annual)	Multiple (Lithofacies, Petrophysical properties)	Attributes with or without seismic section, PP: Porosity, permeability	Supervised	multiple (MLP, GRNN)		Real	Real		
2015	The Application of Probabilistic Neural Network Analysis Technique in the Prediction of Sedimentary Tuff Reservoir	<a href="https://doi.org/10.3972/2214-4609.201413381">https://doi.org/10.3972/2214-4609.201413381</a>	Li	X		EAGE	EAGE (annual)	Multiple (Lithofacies, Petrophysical properties)	Attributes with or without seismic section, PP: Porosity	Supervised			Real			
2017	Reducing the risk of hydrocarbon exploration and lithology characterization – using a neural network approach in the West Delta Deep Marine Concession Area, Offshore Nile Delta, Egypt	<a href="https://doi.org/10.3972/2214-4609.2017016">https://doi.org/10.3972/2214-4609.2017016</a>	Abd-Elfattah	X	X	EAGE	First Break	Multiple (Lithofacies, Petrophysical properties)	Attributes with or without seismic section, PP: Chimney volume	Supervised	PNN		Real	Real	Attributes	PCA
2018	Sweet Spot Interpretation from Multiple Attributes: Machine Learning and Neural Networks Technologies	<a href="https://doi.org/10.1190/GC2018-387">https://doi.org/10.1190/GC2018-387</a>	Guo	X		SEG	International Geophysical Conference, Beijing, China	DHI interpretation		Unsupervised	Multiple (SOM, PCA, K-means)		Real	Real	Attributes	PCA
2020	3D relative geologic time estimation with deep learning	<a href="https://doi.org/10.1190/seam2020-3427388.1">https://doi.org/10.1190/seam2020-3427388.1</a>	Bi	x	X	SEG	SEG Technical Program	RGT volume		Supervised	CNN	U-Net	Synthetic	Synthetic	Post stack migrated	MSE
2021	A deep-learning method for latent space analysis of multiple seismic attributes	<a href="https://doi.org/10.1190/INT-2020-0194.1">https://doi.org/10.1190/INT-2020-0194.1</a>	Wallet	X	X	SEG	Interpretation	Latent space of the attributes		Unsupervised	Auto-encoder		Real	Real	Attributes	Not specified
2021	Automatic computation of relative geologic time volume using self-supervised learning	<a href="https://doi.org/10.1190/seam2021-3581832.1">https://doi.org/10.1190/seam2021-3581832.1</a>	Kim	X	X	SEG	First International Meeting for Applied Geoscience & Energy	RGT volume							Partial stacked migrated	
2021	Evaluating proxies for the drivers of natural gas productivity using machine-learning models	<a href="https://doi.org/10.1190/INT-2020-0200.1">https://doi.org/10.1190/INT-2020-0200.1</a>	Kumar	X	X	X	SEG	Interpretation	Gas Productivity	Supervised	Multiple (Random Forest, Linear regression, DNN)		Real	Real	Attributes	Not specified
2020	Prestack AVO Attributes Inversion Using Convolutional Neural Network	<a href="https://doi.org/10.3972/2214-4609.202011622">https://doi.org/10.3972/2214-4609.202011622</a>	Sun	X		EAGE	EAGE (annual)	AVO inversion		Supervised	CNN		Synthetic	Both		MSE
2020	Automatic Detection and Classification of Unconformities on Seismic Data Using Machine Learning	<a href="https://doi.org/10.3972/2214-4609.202032084">https://doi.org/10.3972/2214-4609.202032084</a>	Alberts	X	X	EAGE	Digitalization conference	Unconformities		Supervised	CNN		Synthetic	Both	Post stack migrated	
2020	Seismic Inversion Through the Application of Machine Learning Algorithms	<a href="https://doi.org/10.3972/2214-4609.202053123">https://doi.org/10.3972/2214-4609.202053123</a>	Smorodin	X		EAGE	SAINT PETERSBURG	Log estimation	Sonic and density	Supervised						
2020	Principal Component Analysis and Deep Learning along Directional Image Gathers for High-Definition Classification of Subsurface Features	<a href="https://doi.org/10.3972/2214-4609.202032023">https://doi.org/10.3972/2214-4609.202032023</a>	De Rebit	X		EAGE	Digitalization conference	Diffraction imaging								
2019	Traditional Feature Based vs Direct Machine Learning Based AVO Classification	<a href="https://doi.org/10.3972/2214-4609.201901148">https://doi.org/10.3972/2214-4609.201901148</a>	Das	X		EAGE	EAGE (annual)	AVO classification		Supervised	CNN		Synthetic	Synthetic	pre-stack migrated	LOG
2019	Estimation of groundwater storage from seismic data using deep learning	<a href="https://doi.org/10.1190/1365-2478.12831">https://doi.org/10.1190/1365-2478.12831</a>	Timo Lähivaara	X		EAGE	GP	Ground Water Storage		Supervised	CNN	AlexNET	Synthetic	Synthetic	Raw seismic Data	Normalized squared difference
2010	Carbonate Seismic Geopressure Prediction Using Neural Networks	<a href="https://doi.org/10.3972/2214-4609.201400796">https://doi.org/10.3972/2214-4609.201400796</a>	AlbinHassan	X		EAGE	EAGE (annual)	Geo-Pressure		Unsupervised	SOM		Real	Real		MSE
2013	Application of Probabilistic Neural Network on Complex Carbonate Reservoir Prediction	<a href="https://doi.org/10.2523/IPTC-16952-MS">https://doi.org/10.2523/IPTC-16952-MS</a>	Sun	X	X	EAGE	IPTC	Risk mitigation (reservoir prediction)		Supervised		user defined	Real	Real		
2017	Sweet Spot Interpretation from Multiple Attributes: Machine Learning and Neural Networks Technologies	<a href="https://doi.org/10.3972/2214-4609.201702564">https://doi.org/10.3972/2214-4609.201702564</a>	Guo	X		EAGE	AMGE	DHI interpretation		Unsupervised	SOM		Real	Real	Attributes	Manually selected
2017	Interpretation of DHI characteristics with machine learning	<a href="https://doi.org/10.3972/2214-4609.2017355.88069">https://doi.org/10.3972/2214-4609.2017355.88069</a>	Roden	X		EAGE	First Break	DHI interpretation		Unsupervised	SOM		Real	Real	Attributes	Manually selected
2017	A growing machine learning approach to optimize use of prestack and poststack seismic data	<a href="https://doi.org/10.1190/seam2017-17767532.1">https://doi.org/10.1190/seam2017-17767532.1</a>	Hami-Eddine	X		SEG	SEG Technical Program	Review article (Fault detection, Salt/Geobody identification, AVO classification)								
2018	Machine learning in the interpreter's toolbox: Unsupervised, supervised, and deep-learning applications	<a href="https://doi.org/10.1190/seam2018-2997015.1">https://doi.org/10.1190/seam2018-2997015.1</a>	Bandura	X		SEG	SEG Technical Program	Review article								
2018	Successful leveraging of image processing and machine learning in seismic structural interpretation: A review	<a href="https://doi.org/10.1190/ite37060451.1">https://doi.org/10.1190/ite37060451.1</a>	Wang	X		SEG	TLE	Review article (Fault detection, Salt/Geobody identification, Horizon tracking)		Supervised	CNN					
2018	Machine learning and learning from machines	<a href="https://doi.org/10.1190/ite37120886.1">https://doi.org/10.1190/ite37120886.1</a>	Naeini	X		SEG	TLE	Review article (Fault detection)								
2020	Domain Expertise, Deep Learning and Cloud: How to Build Powerful Workflows for Exploration	<a href="https://doi.org/10.3972/2214-4609.202032063">https://doi.org/10.3972/2214-4609.202032063</a>	Vynnytska	X		EAGE	Digitalization conference	Review article								

2019	Drivers of imbalance in machine learning uptake across geology and geophysics	<a href="https://doi.org/10.3997/1365-2397.n0056">https://doi.org/10.3997/1365-2397.n0056</a>	Samuel R.	X	EAGE	First Break	Review article
2018	Is Machine Learning taking productivity in petroleum geoscience on a Moore's Law trajectory?	<a href="https://doi.org/10.3997/1365-2397.n0145">https://doi.org/10.3997/1365-2397.n0145</a>	Larsen	X	EAGE	First Break	Review article