

MIT Earth Resources Laboratory
Annual Founding Members Meeting 2019
Machine Learning and Inference for Geophysics



Agenda

Date	Start	End	Session	Speaker	Title	Location
Tuesday, 05/21	4:00 PM	6:00 PM	Welcome Reception			54-209
Wednesday, 05/22	9:00 AM	9:10 AM	Introductions	Laurent Demanet	Welcome and Introduction	66-110
	9:10 AM	9:30 AM		Antonio Torralba	The MIT Quest for Intelligence	
	9:30 AM	9:50 AM		Youssef Marzouk	The MIT Schwarzman College of Computing	
	9:50 AM	10:10 AM	Break			
	10:10 AM	10:30 AM	Seismology and Machine Learning	Manuel Florez Torres	A Deep Learning Architecture for Intermediate-Depth Earthquake Detection and Phase Segmentation	
	10:30 AM	10:50 AM		Andrea Scarinci	Robust Bayesian Seismic Inversion	
	10:50 AM	11:10 AM		Chen Gu	Deep learning applied to induced seismicity in the Groningen gas field in the Netherlands -- What do we need for safe AI?	
	11:10 AM	11:25 AM	Student and Postdoc Introductions			
	11:25 AM	1:00 PM	Box Lunch			
	1:00 PM	1:30 PM	Plenary Session	Nori Nakata	Towards high-resolution seismic imaging and monitoring using ambient noise, machine learning, and microseismic events	
	1:30 PM	1:50 PM	Break			
	1:50 PM	2:10 PM	Geophysics and Machine Learning	Matt Li	Machine learning for elimination of nuisance parameters in geophysics	
	2:10 PM	2:30 PM		Charles-Henri Clerget	Seismo-electric measurement for drilling look-ahead	
	2:30 PM	2:50 PM		Meghana Ranganathan	Understanding ice flow through computational methods	

Wednesday, 0522, cont.	2:50 PM	3:10 PM		Justin Montgomery	Understanding shale gas and tight oil productivity with machine learning	66-110
	3:10 PM	3:40 PM	Break			
	3:40 PM	4:00 PM	Fluids in Rocks	Bauyrzhan Primkulov	Signatures of fluid-fluid displacement in porous media	
	4:00 PM	4:20 PM		Yue Meng	DEM modeling of coupled multiphase flow and granular mechanics: Wettability control on fracture patterns	
	4:20 PM	4:40 PM		Wei Li	Pressure behavior during wormhole formation in soluble porous rock	
	6:00 PM	9:00 PM	Dinner Cruise			Depart from MIT Boathouse
Thursday, 05/23	9:00 AM	9:20 AM	Full Waveform Inversion	Hongyu Sun	Extrapolated full waveform inversion with deep learning	66-110
	9:20 AM	9:40 AM		Zhilong Fang	Seismic inversion in the framework of modern optimization	
	9:40 AM	10:00 AM		Pawan Bharadwaj	Redshift of An Earthquake	
	10:00 AM	10:30 AM	Break			
	10:30 AM	10:50 AM	Rock Physics and Geomechanics	Bing Li & Omar AlDajani	Hydraulic Fracturing of Opalinus Shale: Insights from the Laboratory	
	10:50 AM	11:10 AM		Chunfang Meng	Elastic perturbations around interactive Eshelby's inclusions in whole, half and finite spaces	
	11:10 AM	11:30 AM		Ekaterina Bolotskaya	Finite Element Modeling of Planar Fault Slip: Fracturing vs. Friction	
	11:30 AM	11:40 AM	Concluding Remarks	Michael Fehler		
	12:00 PM	1:50 PM	Business Lunch			54-209
	2:00 PM	2:45 PM	Special Plenary Session	Jie Zhang PhD '96	Applying search engine, compressive sensing, and machine learning for earthquake monitoring	54-915