

Sagar SINGH

PhD Student



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About me

I love what I do. This is the reason I am here at CWP, Colorado school of mines living my life as a student AGAIN. I have always been fascinated by real world application of mathematics. Owing to my interest, I chose Geophysics after the completion of my high school. I was encouraged by the opportunity to apply mathematics, experiment the laws of physics and get real tangible results by applying them on real earth and to find application for the betterment of the humanity.

I love skiing, hiking, ice skating (Colorado effect :) and I consider myself a decent player of snooker.

Skills

GPU programming

MPI and OpenMP C

Linux

Python

Snooker

(*)[The skill scale is from 0 (Fundamental Awareness) to 6 (Expert).]

Interests

Full waveform inversion, Machine learning, High performance computing, Computer vision.

Education

- Aug. 2017 - Ph.D. candidate in Geophysics, Colorado School of Mines CWP
Project- Full waveform inversion for reservoir characterization
Minor in computer science
- 2011-2016 Integrated M.Tech. Geophysical Technology IIT Roorkee, India
Project- Image reconstruction in time and frequency domain

Abstracts and journal publications

- 2019 Singh, S., Tsvankin, I. and Zabihi Naeini, E.: Bayesian approach to facies-constrained waveform inversion for VTI media . SEG expanded abstract, San Antonio.
- 2018 Singh, S., Tsvankin, I. and Zabihi Naeini, E.: Bayesian framework for elastic full-waveform inversion with facies information. The Leading Edge, 37(12), 924-931
- 2016 Singh, S. and Sain, K.: GPU implementation for high speed elastic forward modelling. 53rd Annual convention of Indian Geophysical Union and 1st Triennial Congress of FIGA.
- 2016 Singh, S., Kanli, A. I. and Mukhopadhyay, S.: Full waveform inversion in seismic imaging: Marmousi velocity modelling with FWISIMAT. 6th International Conference on Computer Application in Mineral Industries
- 2016 Singh, S. and Kanli, A. I.: Estimating shear wave velocities in oil fields: a neural network approach. Geoscience Journal, 20, 221-228
- 2016 Singh, S., Kanli, A. I. and Sevgen, S.: A general approach for porosity estimation using artificial neural network method: a case study from Kansas gas field. Studia Geophysica et Geodaetica, 60, 130-140

Experience

- 2019 Summer Internship at BP Complex imaging team, Houston
P-S wavemode separation and imaging.
- 2018 Teaching assistant-Introduction to Seismology I CSM
Delivered lectures and discussed the properties of far-field and near-field green function and their radiation patterns.
- 2017 Project assistant under Prof. Younghee Kim SNU, S. Korea
Centroid moment tensor inversion for largest recorded earthquake in Korean peninsular.
- 2017 Visiting student under Prof. Daniel B. Peter KAUST, Saudi Arabia
2D Elastic VTI full waveform inversion on a GPU cluster.
- 2016 Software developer at MapMyIndia New Delhi, India
Computer vision and machine learning.
- 2015 Intern under Dr. Venky Krishnan CAM Bangaluru, India
Image reconstruction in seismic imaging for various acquisition geometries.

Other information

Supervisor: Prof. Ilya Tsvankin

Project progress

With the facies-based constraints I showed an effective approach to use Full-waveform inversion for reservoir characterization. I am now moving away from an ideal scenario, where we generate data from the know subsurface model. The idea here is to predict uncertainties, in terms of standard deviation, for the inverted VTI model parameters as well as for FWI-generated facies information.