

# Sagar SINGH

RESEARCH ASSISTANT · ANISOTROPY TEAM

"I do what i love"

## Education

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### IITR(Indian Institute of Technology Roorkee)

B.S. IN GEOPHYSICAL TECHNOLOGY

- GPA 8.036 \*out of ten

Roorkee, India

July. 2011 - July 2015

### IITR(Indian Institute of Technology Roorkee)

M.S. IN GEOPHYSICAL TECHNOLOGY

- GPA 9.452 \*out of ten

Roorkee, India

July. 2015 - Sept 2016

### CSM(Colorado School of Mines)

PHD. IN GEOPHYSICS

Golden, United States

Aug. 2017 - Present

## Research Publications

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### GPU implementation for high speed elastic forward modelling

SAGAR SINGH AND KALACHAND SAIN

- 53rd Annual convention of Indian Geophysical Union and 1st Triennial Congress of FIGA.

IIT (ISM) Dhanbad, India

8-10 November 2016

### Full waveform inversion in seismic imaging: Marmousi velocity modelling with FWISIMAT

SAGAR SINGH, ALI ISMET KANLI AND SAGARIKA MUKHOPADHYAY

- 6th International Conference on Computer Application in Mineral Industries

Istanbul, Turkey

5-7 October 2016

### A general approach for porosity estimation using artificial neural network method: a case study from Kansas gas field

SAGAR SINGH ALI ISMET KANLI AND SALCUK SEVGEN

- Studia Geophysica et Geodaetica, 60, 130-140

2016

### Estimating shear wave velocities in oil fields: a neural network approach

SAGAR SINGH AND ALI ISMET KANLI

- Geoscience Journal, 20, 221-228

2016

## Experience

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### Seismology, Geophysics, and Tectonophysics Lab, Seoul National University

PROJECT ASSISTANT UNDER PROF. YOUNGHEE KIM

- Centroid moment tensor inversion for largest recorded seismogram in Korean peninsular.
- Implemented spectral finite element method to generate synthetic seismograms.
- Frechet derivatives were computed using synthetics which were then used to inverse for 9 source parameters.

Seoul, S.Korea

June. 2017 - Aug. 2017

### Department of Geophysics, KAUST

VISITING STUDENT UNDER PROF. DANIEL B. PETER

- Elastic VTI full waveform inversion on a GPU cluster
- Several inversion strategies were implemented such as preconditioning, multi scaling, regularization, gradient masking, LBFGS optimization to make FWI more robust.
- Codes were written in CUDA C++.

Jeddah, SAUDI ARABIA

Jan. 2017 - Apr. 2017

## Gas Hydrate section, National Geophysical Research Institute

Hyderabad, India

PROJECT ASSISTANT UNDER DR. KALACHAND SAIN

July, 2016 - Jan. 2017

- Worked on high speed GPU implementation of isotropic elastic Full Waveform Inversion using Marmousi II model developed under CUDA C++.

## MapMyIndia- CE Info System Pvt. Ltd

New Delhi, India

SOFTWARE DEVELOPER

June 2016 - July 2016

- Developed a software that automatically detects all kinds of traffic sign boards on a panoramic based images using OpenCV python utility.
- Also developed a GUI based tool for the same using PyQt.

## IIT Roorkee and Department of Geophysical Engineering, Istanbul University

India and Istanbul, Turkey

MASTER THESIS UNDER PROF. SAGARIKA MUKHOPADHYA AND PROF. ALI ISMET KANLI

Apr. 2015 - Apr. 2016

- Applied acoustic wave equation based Full Waveform Inversion both in time and frequency domain on Marmosui model data-set generated using MATLAB.

## Honors & Awards

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### DOMESTIC

- Fellowship**, Recipient of Human Resources' Development's scholarship for securing all India rank  
2015-16 41 among over 6000 students in Graduate Aptitude Test in Engineering 2015 which tests the core knowledge of geophysics. IIT Roorkee
- Scholarship**, Recipient of Indian naval benevolent association's scholarship from 2011 to 2015 for outstanding academic record. India

## Skills and Interests

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### Programming languages

CUDA C++, PYTHON

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### Software

MATLAB, LATEX, SEISMIC UNIX, MADAGASCAR

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### Sports and Clubs

ATHLETICS, SNOOKER, PHOTOGRAPHY CLUB, SKIING CLUB

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## References

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**Prof. Ilya Tsvankin**, Center for Wave Phenomena, CSM

Golden, Colorado

**Prof. Sagarika Mukhopahyay**, Department of Earth Sciences, IITR

Roorkee, India