

YASHWANT SONI

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Unit # 422, Speight Jenkins Apartments
1501, South 9th Street, Waco, Texas, USA

EDUCATION

BAYLOR UNIVERSITY, WACO, TEXAS, USA
Graduate Teaching Assistant
PhD Candidate in Geophysics

January 2021 – Present

INDIAN INSTITUTE OF TECHNOLOGY (ISM), DHANBAD
5 Year Integrated Master of Science and technology Applied Geophysics

July 2013 – May 2018

EXPERIENCE

- BAYLOR UNIVERSITY August 2018 – November 2018

Advisor: Dr. Jay Pulliam | Professor | Department of Geosciences

1. Worked on to understand the functionality and to be able to make changes in the functionality of FUNCLAB, a MATLAB based GUI which performs operations on waveform data to extract relevant features and then uses these features to estimate the subsurface physical parameters such as crustal velocity and crustal thickness.
2. Calculated Ps and Sp receiver functions using processRFmatlab package.
3. Modified MATLAB scripts of processRFmatlab package to detect SsPmp phase from seismological data, which has a potential to provide more information about the Crust-Mantle Boundary (CMB) in addition to Ps and Sp receiver functions.
4. Used H-K stacking and H-V stacking methods to estimate three important subsurface physical parameters including crustal Vs, crustal Vp and crustal thickness.

- COLORADO STATE UNIVERSITY May 18, 2017 – July 30, 2017

Advisor: Dr. Derek Schutt | Associate Professor | Department of Geosciences

1. Calculation of lithospheric temperatures from surface waves: A project to produce inversions of Rayleigh wave phase velocities for lithospheric Geotherms using Simulated Annealing and Markov Chain Monte Carlo approaches for examine the best fitting geotherms to phase velocities.
2. Worked on MATLAB to produce codes for Markov Chain Monte Carlo and Simulated Annealing optimization algorithms.
3. Learned to measure the phase and amplitude of surface waves and then to generate surface wave tomography maps using a MATLAB based Generalized Seismological Data Functionals (GSDF) method.

- INDIAN INSTITUTE OF TECHNOLOGY (ISM), DHANBAD

Advisor: Dr. Mohit Agarwal | Assistant Professor | Department of Applied Geophysics

1. Simultaneous Joint Inversion of Receiver Functions and Surface Wave Dispersion Curves: An approach to jointly model the complementary datasets to find the estimates of subsurface physical parameters of the earth.
2. Worked on Linux Operating System based applications such as Seismic Analysis Code (SAC), Bob Herrmann's Computer Program in Seismology, Standing Order for Data (SOD) and Generic Mapping Tool (GMT).

CONFERENCE PROCEEDINGS

- Soni, Y. and M. Agrawal (March 2018), Lithospheric Temperature Variations using Surface Waves Dispersion Curves, Emerging trends in Geophysical research for Make-in-India (ETGRMI 2018), Indian Institute of Technology (Indian School of Mines), Dhanbad, India.
- Soni, Y. and Singh U. (March 2020), Application of three novel population-based stochastic optimization methods on nonlinear inversion problems in geophysics and comparing the results with previously well-established algorithms for optimization, 36th International Geological Congress – IGC, Delhi, India.
- Soni, Y. (March 2020), Synopsis on Application of Machine Learning in Earthquake Detection, Location and Phase Picking, 36th International Geological Congress – IGC, Delhi, India.

TECHNICAL SKILLS

- **Programming languages:** MATLAB, Python, FORTRAN, BASH scripting.
- **Python Libraries:** NumPy, Pandas, Scikit Learn, Matplotlib, Tensorflow.
- **Algorithms:** Markov Chain Monte Carlo, Simulated Annealing, Particle Swarm Optimization, Genetic Algorithm, Neural Networks.
- **Operating Systems:** Windows, Linux.
- **Linux based Applications:** Seismic Analysis Code (SAC), Bob Herrmann's Computer Programs in Seismology, Generic Mapping Tool (GMT), Standing Order for Data (SOD).

AWARDS

- Awarded Graduate Teaching Assistantship Scholarship for a period of 5 years from January 2021 to December 2025 along with full tuition waiver and health benefits.
 - Got accepted in 3 reputed universities in the US including Baylor University, University of Alaska Fairbanks, and Louisiana State University to pursue my PhD.
 - INSPIRE fellowship: Provided by government of India to students showing aptitude in field of the science.
 - Cleared Joint Entrance Exam in 2013, which is the India's top undergraduate level exam for pursuing a career in science and engineering and stood amongst top 0.5% of 1.4 million candidates.
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