



## Diego Domenzain

Geophysics and Data Science

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## About

I am interested in applying physics, mathematics and high performance computing for the betterment of humanity and exploration of reality.

I acquire, analyze and process big volumes of data using math and physics by designing and deploying computational algorithms.

I specialize in scientific computing, numerical methods, forward models, inverse problems, imaging methods, geophysics and machine learning.

Previous interests include graph theory, error correcting codes, finite geometries and combinatorics.

I also like drawing, swimming and climbing.

## Coding in

Matlab • Python • Bash  
Slurm • Pytorch  
TensorFlow  
Fortran • Julia • Latex

## Skills

geophysics • machine learning  
inverse methods • forward models  
high performance computing  
scientific computing  
algorithm design  
image & signal processing  
data visualization

## Education

Ph.D. Geophysics

Boise State University (BSU). Fall 2019

MSc. Discrete Mathematics

Michigan Technological University (MTU). Summer 2014

## Publications

*Joint inversion of full-waveform inversion GPR and ER data. Part 1.* Geophysics - In review. Diego Domenzain, John Bradford, Jodi Mead.

*Joint inversion of full-waveform inversion GPR and ER data. Part 2.* Geophysics - In review. Diego Domenzain, John Bradford, Jodi Mead.

*Efficient inversion of 2.5D electrical resistivity data using the discrete adjoint method.* Geophysics - In review. Diego Domenzain, John Bradford, Jodi Mead.

## Code

### Gerjoi

Matlab • Bash • Slurm • Python • Pytorch

- Forward modeling of radar and electrical resistivity.
- Novel joint multi-parameter optimization algorithm that recovers electrical parameters of the subsurface from radar and resistivity data.
- Embedded cross-gradients routine that improves structural sensitivities.
- Machine learning routine for finding inversion weights.

### Wave utils

Matlab

Code suite for processing waveforms as recorded by receivers in the field. Features include: frequency domain filtering, beamforming analysis, frequency time analysis, multichannel analysis of surface waves, and virtual source gathers by seismic interferometry.

## Conferences

*Joint inversion of GPR and ER data using the adjoint method.* AGU Fall meeting 2018. Diego Domenzain, John Bradford, Jodi Mead.

*Joint inversion of GPR and ER data.* SEG Fall meeting 2018. Diego Domenzain, John Bradford, Jodi Mead.

*Imaging by joint inversion of electromagnetic waves and DC currents.* SIAM meeting 2017. Diego Domenzain, John Bradford, Jodi Mead.

*Imaging by joint inversion of electromagnetic waves and DC currents.* SAGEEP 2017. Diego Domenzain, John Bradford, Jodi Mead.

*Forward modeling of ground penetrating radar and electric resistivity tomography using FDTD and FV methods.* AGU Fall meeting 2016. Diego Domenzain, John Bradford, Jodi Mead.

AGU = American Geophysical Union. SEG = Society of Exploration Geophysics. SAGEEP = Symposium on the Application of Geophysics to Engineering and Environmental Problems. SIAM = Society of Industrial and Applied Mathematics.