

Diego Domenzain

domenzain.diego@gmail.com

about me

I am a Mathematician with keen interest on applied problems and physics.

Currently, I design better ways to explore the interior of the Earth at shallow depths. In order to achieve this I use numerical modeling of partial differential equations, mathematical non-linear optimization, signal processing (in time and frequency), and high performance computing on CPUs and GPUs.

professional experience

Computational Geophysicist

2024 – now

Seequent - Labs

Research and development of computational methods for better understanding the subsurface. Responsible for crafting the idea, communicating with product managers and compute services, and technical implementation of prototype. Currently focusing on hardware accelerated projects.

Computational Geophysicist

2023 – 2024

Seequent - AGS, DK

Design and implementation of a 3D visualization scheme for DC data measured in arbitrary spatial configurations. Deployment and maintenance of parallel high performance computing algorithms in Azure, and of machine learning models for electromagnetic time-domain data quality control.

Postdoctoral Researcher

2021 – 2023

Aarhus Universitet, DK

Design and implementation of a 3D DC inversion algorithm capable of handling two orders of magnitude more data than previous schemes. Worked closely with the design of a novel survey instrument to achieve the needs of our industry partner. The project specifically aimed (and was successful) at delineating the 3D spread of a contaminant-remediation agent in the subsurface.

Postdoctoral Researcher

2020 – 2021

Colorado School of Mines, USA

Design and implementation of a multi-physics joint inversion of electromagnetic waves (radar) and DC data acquired at the surface. The result of this work was the first successful surface-acquired full-waveform inversion of radar data. Also developed a machine learning method for enhancing resolution of recovered parameters using remote sensing data.

PhD Researcher

2015 – 2020

Boise State University, USA

Joined an existing NSF funded project aiming to join DC voltages and electromagnetic radar data in order to recover 2D subsurface electrical parameters. Successfully designed and developed such a scheme with the added bonus of a new electrical resistivity inversion algorithm capable of handling large amounts of data using low memory requirements. Moreover, through the use of numerical curvature algorithms it was possible to enhance resolution in areas of nearly zero sensitivity.

coding

Languages

C/C++, Cuda, Fortran, Python, Julia, Matlab, Bash, PowerShell, Latex, PyTorch, TensorFlow, Azure API.