DIEGO DOMENZAIN

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Aarhus, Denmark

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Spanish & Mexican

ABOUT ME

Over 8+ years of experience in data science and innovation in the environmental and mining sector.

Flexible and adaptable to new challenges with a wide range of theoretical expertise that help solve problems in an effective and innovative way.

My academic and industry experience allow me to deliver high performance solutions to complicated problems that enhance and innovate the market value of the given task.

During my 3 years of project management I have helped industry partners achieve their goals.

WORK EXPERIENCE

COMPUTATIONAL PHYSICIST

MAY 2023 - PRESENT

Seequent — Aarhus, Denmark

- R&D of scientific HPC code for use in the geophysical exploration industry with a interest in enhancing market value and data user experience.
- Product owner of a 3D visualization scheme for large electrical imaging data.
  - Instantaneous physics-based solution for understanding 3D media measured by arbitrary sensor configurations.
  - Quality assessment and preliminary results are achieved on the fly.
- Development of a deep neural network for quality assessment of electromagnetic data.

POSTDOCTORAL RESEARCHER

2021 - 2023

Aarhus University — Aarhus, Denmark

- R&D of a novel induced polarization instrument capable of measuring orders of magnitude more data than commercial products.
- Design and implementation of a non-linear optimization algorithm capable of imaging 3D volumes using orders of magnitude more data, and with higher resolution than industry standards under tighter time constraints.
  - Project management under close collaboration with an industry partner to ensure quality of results and value of the resulting product.
  - This work led to 5 scientific publications. One of them highlighted in the *Leading Edge of Geophysics*.
- Active advisor and supervision of a Master student.
- Conference presenter.

POSTDOCTORAL RESEARCHER

2021 - 2023

Colorado School of Mines — Colorado, USA

- Development of picture-to-picture deep learning neural network using a GAN architecture for imaging enhancement resolution.
- Completion of the first full-waveform inversion of surface acquired radar field data.
  - This work presents a benchmark for performing high resolution imaging of the shallow subsurface.
  - Led to 2 scientific publications.
- Conference presenter.

RESEARCH ASSISTANT - PHD

2015 - 2019

Boise State University — Idaho, USA

- R&D an optimization algorithm for imaging electrical properties using radar and direct-current methods. This algorithm has better resolution than existing industry methods, and led to 6 scientific publications.

KEY SKILLS

- Project Management
- Problem-Solving
- Creative and Innovative
- Adaptable and Flexible
- Collaborative
- Scientific Communication
- Intellectual Curiosity
- Data analysis

TECHNICAL SKILLS

- C/C++
- Fortran
- OpenMP
- Python
- Julia
- Pytorch
- TensorFlow
- Cmake
- HPC
- Azure

LANGUAGES

Spanish - native
English - full professional
French - intermediate

- Design and implementation on field data of a non-linear optimization algorithm for imaging 2D space using electrical direct-current.
  - My algorithm performs faster, with higher resolution, and allows for larger datasets than current industry standards.
- Development of signal processing and numerical methods for electromagnetic waves and steady-state electrical transfer.
- Teaching Assistant for Statistical Methods in the BSc. and MSc. level.
- Conference presenter.

INTERN 2014 - 2015

CENAPRED Mexico City, Mexico

- Development of a ray-tracing forward model to use for seismic tomography.

TEACHING ASSISTANT - MSC 2012 - 2014

Michigan Technological University Michigan, USA

- Teaching Instructor of Undergraduate Calculus II & IV.

EDUCATION

PH.D. GEOPHYSICS & APPLIED MATHEMATICS 2015 - 2019

Boise State University Idaho, USA

- Non-linear optimization for imaging methods using electromagnetic methods.
- Emphasis on physics and numerical modeling of electrodynamics.
- Signal processing, computer vision, Fourier analysis.
- Proposal writing for an NSF grant extension.
- 6 scientific publications.
- Thesis: *Joint Inversion of GPR and ER Data*. A novel non-linear joint optimization algorithm that combines the sensitivities of both radar and DC surface acquired data.

MSC. DISCRETE MATHEMATICS & COMBINATORICS 2012 - 2014

Michigan Technological University Michigan, USA

- Combinatoric structures and optimization, finite geometries, and numerical linear algebra.
- Thesis: *Maximal arcs, above and beyond*. Algebraic construction of special combinatoric structures embedded in finite geometries.

BSC. MATHEMATICS 2006 - 2012

UNAM Mexico City, Mexico

- Design and development of computer-based interactive multimedia activities for the science museum *Universum* at *UNAM*.
- Thesis: *Surface Codes*. A mathematical construction for quantum error correcting codes based on graph theory and 2D topological surfaces.