Opportunity - Utilizing Physics Informed Neural Networks to Predict Seabed Sediment Properties

In this work we plan to exploit new developments in physics informed neural networks (PINNs) to improve seabed environmental parameter prediction. We will use the PINNs to simultaneously draw knowledge from both well-established sediment physics relationships (e.g., porosity and sound speed), and relationships derived from large observational datasets (i.e., "big data"). The utilization of both physics and "big data" has the capability to provide the most accurate quantitative characterizations possible for any environmental setting and at virtually any resolution. We seek qualified applicants with experience in geology and geophysics and/or machine learning and deep learning. Applicants will be expected to have some computational experience and be comfortable in coding/scripting (specific languages are not required). Basic geologic understanding is encouraged, but not required.

Lab Location:
Naval Research Laboratory, Ocean Sciences Division
Stennis Space Center, MS

Advisor:
Dr. Benjamin Phrampus
Naval Research Laboratory, Code 7352
Building 1005
Stennis Space Center, MS 39529
Phone: 228-688-4899
Email: benjamin.phrampus@nrlssc.navy.mil