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Senior Project Plan

Faculty advisor: Eileen Martin

Topic:

























Poor coupling leads to inaccurate estimates on earthquake magnitude calculations and the velocity model. Ultimately, I would like to link this to improving the reliance of early earthquake warning. To do this, I will look at how induced seismology in Texas can affect early earthquake warning as part of literature review (included as description in the literature review task). Then, I will analyze at least 5 earthquakes detected by DAS and look if instrument response is consistent by measuring channels' peak amplitudes.

Distributed acoustic sensing (DAS) is an innovative geophysical technique in the field of seismic imaging that can detect acoustic frequency strain signals for an extended period of time after initial deployment in harsh conditions especially some that it is unsafe or inaccessible for field crew. However, DAS data has not replaced seismic nodes even when there are clear advantages due to many reasons including difficulties associated with processing and interpretation of the collected data. One of the difficulties is that it is challenging to measure the quality of the data collected. This project's goal is to develop a method to examine the coupling conditions of previously collected DAS data, in hopes to help evaluate the quality of DAS data especially when the documentation of the field site and coupling conditions is limited.

For the development, I will examine various methods such as correlation coefficient, event detection using clustering to identify anomalies in the processed data and its Fourier magnitude spectra, and examination of correlation between data collected using different sources at different locations.

 All Tasks  By Priority  By Status  My Tasks  Due Dates 

 Due Date   Add filter

Aa Name	 Due Date	 Priority	 Status
 Get datasets	January 28, 2023	High 	Completed
 Literature review	February 4, 2023	Medium	In Progress
 Initial processing	February 5, 2023	High 	In Progress
 FFT	February 12, 2023	High 	Next Up
 Try: correlation coefficient	February 12, 2023	Medium	Next Up
 Project intro presentation	February 22, 2023	High 	Next Up
 Try: edge detection for event detection	February 26, 2023	High 	Next Up
 Try: clustering for event detection	February 26, 2023	High 	Next Up
 Early earthquake warning and DAS	March 19, 2023	Medium	Next Up
 Figures	March 29, 2023	High 	Next Up
 Final presentation	April 26, 2023	High 	Next Up
 Final report	May 8, 2023	High 	Next Up

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