eiGroup LLC | Technical Assignment

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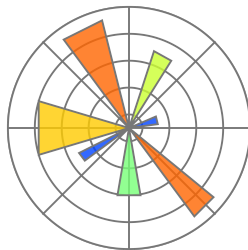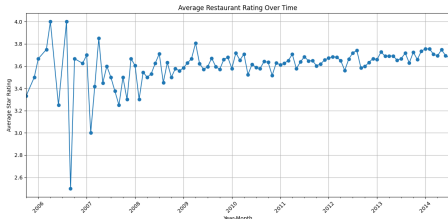
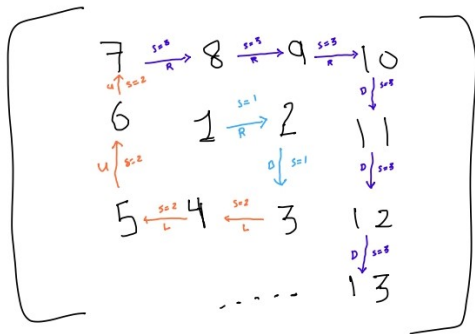September 19, 2024

Task 1 | Yelp Reviews

Objective: Yelp Reviews Dataset
Analysis

Methodology: Using python and
some popular data analysis
libraries

Findings: numerical insights
that can be visualized

$$\begin{bmatrix} 7 & \xrightarrow[R]{s=8} & 8 & \xrightarrow[R]{s=3} & 9 & \xrightarrow[R]{s=3} & 10 \\ 6 & & 1 & \xrightarrow[R]{s=1} & 2 & & 11 \\ 5 & \xleftarrow[L]{s=2} & 4 & \xleftarrow[L]{s=3} & 3 & & 12 \\ & & & \cdots & & & 13 \end{bmatrix}$$
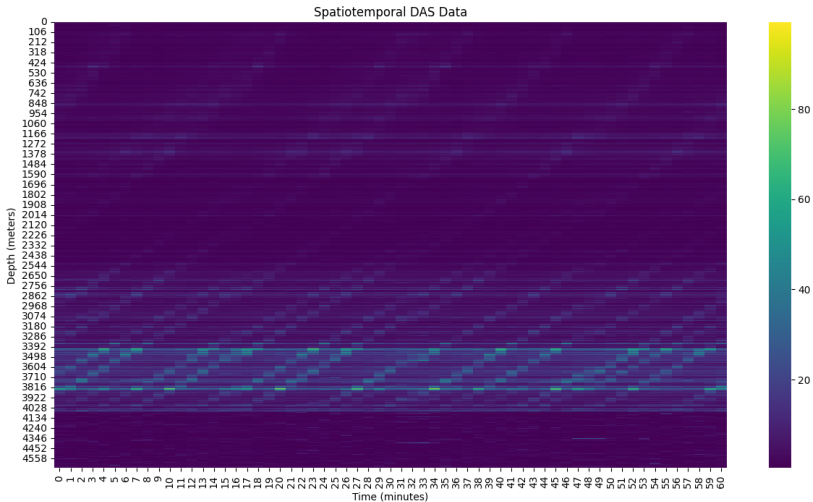
R, D
Step ++

L, U
step ++

Task 3 | Distributed Acoustic Sensing

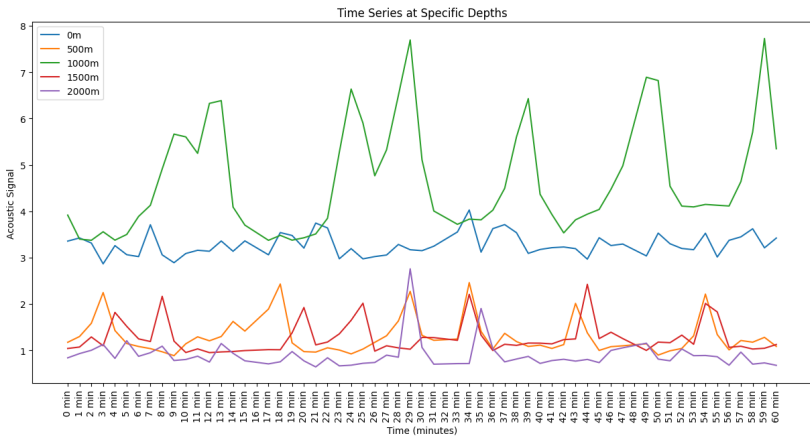**Layman Definition:** Having many microphones made up of fiber optics throughout the ground.

Applications:

- ► **Oil and Gas Industry:** Monitoring pipeline integrity, leak detection, and flow measurements.
- ► **Seismic Monitoring:** Earthquake detection and geophysical surveys.
- ► **Security:** Perimeter security and intrusion detection.
- ► **Transportation:** Rail and road traffic monitoring.
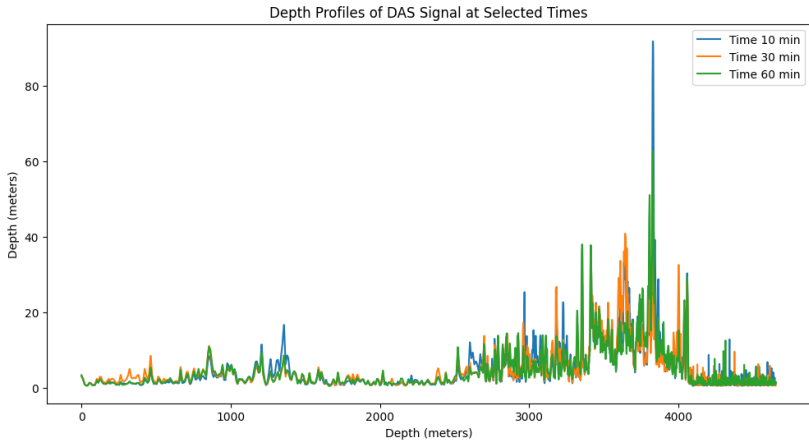- ► **Environmental Monitoring:** Wildlife tracking and environmental sensing.

Task 3 | Distributed Acoustic Sensing

Spatiotemporal DAS Data

Task 3 | Distributed Acoustic Sensing

Time Series at Specific Depths

Task 3 | Distributed Acoustic Sensing

Depth Profiles of DAS Signal at Selected Times

Task 3 | Distributed Acoustic Sensing

Distribution of Acoustic Signals