# -CAPSTONE 2 PROJECT PROPOSAL-

## PATTERNS AND RELATIONSHIPS IN THE ROCK TYPE AND TECTONIC SETTING OF HISTORICAL VOLCANIC DATA AND PREDICTING THEIR FUTURE ERUPTIONS BASED ON LOCATION

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**Problem Statement:**
Volcanic eruptions, dynamic geological phenomena with profound global implications, are characterized by their rock type as well as their tectonic setting, amongst other variables. This project seeks to address the pervasive challenge of predicting the location of future volcanic eruptions, working with the noted key variables as well as historical eruption patterns including the locations of these volcanoes.

**Context:**
In a world where volcanic eruptions stand as formidable natural forces, understanding and predicting their potential impact through historical data is paramount. Their spontaneity underscores their significance, as their eruptions can pose serious threats to human populations, ecosystems, and climate stability.

**Criteria for Success:**
This project will be deemed 'successful' if the following criteria are met:

-Relationships are observed and charted between their associated rock type and tectonic settings as well as their location (using lat/lon) being mapped.
-Predictions are drawn based on any patterns formed and a consensus is able to be formed upon the historical data observed..

**Scope of Solution Space:**
I will focus extensively on the measure of the rock type and tectonic settings of the data and the comparisons contained therein, using these as my key identifiers and what I base my relationships on for the project.

**Constraints within the Solution Space:**
The data obtained will prove to be incredibly useful, however real-time data would be essential in order to obtain the best results. For this project we will not have this type of data, using existing datasets. Results will be measured as such, and expectations delivered accordingly. Also more key variables would indeed further the efficiency of the data and thus the results. Again for the sake of this project we will only be using a few key variables.

**Key Stakeholders:**
*Normally, though highly dependent on where this would be submitted->* Geology Director, Direct Manager, (others)

**Data Sources:**
Volcano Eruptions (Kaggle, multiple sheets) -
https://www.kaggle.com/datasets/jessemostipak/volcano-eruptions/data

opendatasoft Significant Volcanic Eruptions Database - (.xlsx file)
https://public.opendatasoft.com/explore/dataset/significant-volcanic-eruption-database/export/