

# TGS Salt Identification Challenge

Segment salt deposits beneath the Earth's surface

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## Problem Definition:

Several areas of Earth with large accumulations of oil and gas *also* have huge deposits of salt below the surface.

But unfortunately, knowing where large salt deposits are precisely, is very difficult. Professional seismic imaging still requires expert human interpretation of salt bodies. This leads to very subjective, highly variable renderings. More alarmingly, it leads to potentially dangerous situations for oil and gas company drillers.

## Outline:

See attached Excel file, contains Gantt Chart

## Motivation:

To create the most accurate seismic images and 3D renderings, [TGS \(the world's leading geoscience data company\)](#) is hoping Kaggle's machine learning community will be able to build an algorithm that automatically and accurately identifies if a subsurface target is salt or not.

## Proposed Language and algorithm from Image-to-Image Translation with Conditional Adversarial Networks paper:

The language of use will be Python. The proposed algorithmic method is to build a Generative Adversarial Network (GANs). "GANs learn a loss that tries to classify if the output image is real or fake, while simultaneously training a generative model to minimize this loss." -- <https://arxiv.org/pdf/1611.07004v1.pdf>. From a basic search, no other entry is using GANs in the competition.

## Contribution:

My contribution is to build a simple framework or architecture that translates images and achieves reasonable results.

## Link to Data:

[Data Sources](#)

The data is a set of images chosen at various locations chosen at random in the subsurface. The images are 101 x 101 pixels and each pixel is classified as either salt or sediment. In addition to the seismic images, the depth of the imaged location is provided for each image. The goal of the competition is to segment regions that contain salt.

**Responsibility:**

**Jeremy:** Research, Collection of Data, Exploratory Data Analysis, Build Generative Adversarial Networks (GANs), Submit to Kaggle, Make Presentation & Write Conclusion & Report