Description:

Steel is one of the most important building materials of modern times. Steel buildings are resistant to natural and man-made wear which has made the material ubiquitous around the world. To help make production of steel more efficient, this project will help identify defects.

In this project, you'll classify surface defects on a steel sheet.

Data Description:

In this project you will be predicting the location and type of defects found in steel manufacturing. Images are named with a unique ImageId. You must segment and classify the defects in the test set.

Each image may have no defects, a defect of a single class, or defects of multiple classes. For each image you must segment defects of each class (ClassId = [1, 2, 3, 4]).

The segment for each defect class will be encoded into a single row, even if there are several non-contiguous defect locations on an image. You can read more about the encoding standard on the Evaluation part.

Data files:

- train_images/ - folder of training images
- test_images/ - folder of test images (you are segmenting and classifying these images)
- train.csv - training annotations which provide segments for defects (ClassId = [1, 2, 3, 4])
- sample_submission.csv - a sample submission file in the correct format; note, each ImageId 4 rows, one for each of the 4 defect classes

Evaluation:

This project will be evaluated on the mean Dice coefficient. The Dice coefficient can be used to compare the pixel-wise agreement between a predicted segmentation and its corresponding ground truth. The formula is given by:

$$2*|X \cap Y|/|X|+|Y|$$

where X is the predicted set of pixels and Y is the ground truth. The Dice coefficient is defined to be 1 when both X and Y are empty. The score is the mean of the Dice coefficients for each `<ImageId, ClassId>` pair in the test set.

Submission File Format:

Your submission file should be in csv format, with a header and columns names : `ImageId_ClassId`, `EncodedPixels`. Each row in your submission represents a single predicted defect segmentation for the given `ImageId`, and predicted `ClassId`, and you should have the same number of rows as `num_images * num_defect_classes`. The segment for each defect class will be encoded into a single row, even if there are several non-contiguous defect locations on an image.

```
ImageId_ClassId,EncodedPixels
004f40c73.jpg_1,1 1
004f40c73.jpg_2,1 1
004f40c73.jpg_3,2 409599

etc...
```