PROJECT REPORT

SPINAL CANAL STENOSIS

Problem Statement:

The application we have created is about spinal problem (Spinal Stenosis). Spinal stenosis is a narrowing of the spaces within your spine, which can put pressure on the nerves that travel through your spine. It can be detected through MRI of your spine and what doctors understand of that MRI. We came up with an application/model which take your MRI as an input and process it and predicts if you have spinal problem or not and point out the areas where you have problem. So even a normal person who doesn't have much knowledge of spinal diseases can diagnose his/her MRI through our application. It provide ease to a doctors and a patients as doctors doesn't have to point out the problems as they are pre-defined through our application and save a lot of time for a bigger amount of patients.

Dataset:

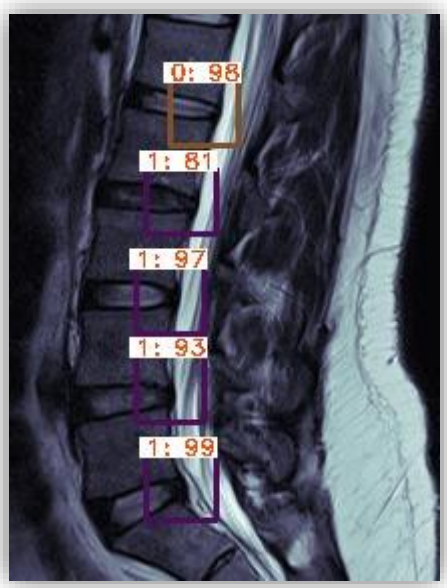
The dataset we used for our project is taken from (https://data.mendeley.com/datasets/k57fr854j2/2). The dataset contains about 500 patients MRI's and each patient's folder contained of MRI's from different views/sides. Each view has about 15 to 25 MRI files. We converted each MRI file into jpeg format and then reduced its size by cropping and other methods so that it is easier and faster for machine to learn.

Training:

We trained our model on the basis of above-mentioned dataset. We took each MRI and examine it by our understanding of what we learned through internet and other similar topics. We point out in each MRI where it has problem and where it does not, then we trained our machine on the selected MRI's that we have diagnosed.

Testing/Accuracy:

After machine's training is completed, we gave it some MRI's (that are not used in training) to test that is it detecting something or it does not detect anything at all. If it detects then at what of level of accuracy it is catching a problem. After testing it is providing results with marked areas where a problem is and where it is not with about 90% of accuracy.

Input	Output
 *Input*	 *Output*
This is the MRI image that was given as input.	This is the processed image with marked areas where problem exist and where it does not. Purple squares define area with problem whereas orange squares define area with no problem.