Team Name on Kaggle:- Begging for Mercy

Team Participants:- Punit K. Jha (punit2) and Stephen Xu (diwenxu2)

Kaggle Score:-

Approach:

1. First run the data_process.ipynb file to process the data and convert it to 4x110x192x163 format images and 110x192x163 segmentation labels for train and validation data. For the test data the format is kept as originally provided only the third and fourth dimensions are changed as 192x163.
2. We then run the rmi_segmentation.ipynb file which separates the train data into two parts of 100 and 104 each (given that we have 204 .npy files). So we basically have two numpy arrays of sizes 100x4x110x192x163 and 104x4x110x192x163 for the train dataset images and corresponding 100x110x192x163 and 104x110x192x163 segmentation files. Similarly we have 68x4x110x192x163 sized numpy arrays for the validation dataset. We wrote the data_process.ipynb from scratch by ourselves.
3. The from the dimension 110 (height) we just select slices 40:100 to reduce the data imbalance.
4. We then construct a U-net (see references) that we feed our data into. This U-net used to take input size of -1x192x192x4 but we modified it to take inputs of -1x192x163x4
5. We train our data for 42 epochs which takes about 6 hours of time on Google Cloud GPU enabled system.
6. Finally, we use the model to predict the segmentation on our test dataset and store the outputs in the folder new_output_sec.

References:

Our approach was based on this U-net model from Github-

https://github.com/as791/Multimodal-Brain-Tumor-Segmentation