Final Exam - Open Book Paper

Deep Learning

Deadline : 4-June-2020 (11 pm)

Classifying Playable vs. UnPlayable Levels

Important Instructions:

- **Make sure that your report is unique. Share your ideas but do not share your report.**
- **Make charts, graphs and comparisons to make it more interesting.**
- **Use example graphs similar to research papers.**
- **Font should be 12 size times new roman format.**
- **Submit only pdf copies.**
- **You are not allowed to share dataset with anyone. This is a private copy for research.**
- **Your report should be a research report.**

Question: Solve case study step by step. Each step contains 50 marks.

1. **Dataset: The exam contains an image dataset. The dataset is of Zelda game. It has 1024 playable and 1024 unplayable levels.**
2. **Use CNNs in keras to create a classifier that classifies level images as playable and un-playable.**
3. **Use Image Augmentation to increase the size of dataset. Include the explanation of each augmentation technique used. Also include pictures of augmented images.**
4. **Use different optimizers and loss functions to achieve maximum accuracy. Include comparisons in your report of different optimizers, their achieved accuracy (include graphs).**
5. **Use transfer learning to showcase your improvement in results. Use any two or three methods and report them.**
6. **If you achieve overfitting or underfitting address it and solve it. Use regularization for a improving results.**
7. **Use different metrics for comparison: accuracy, F1score, confusion matrix.**

Good Luck