PROJECT REPORT

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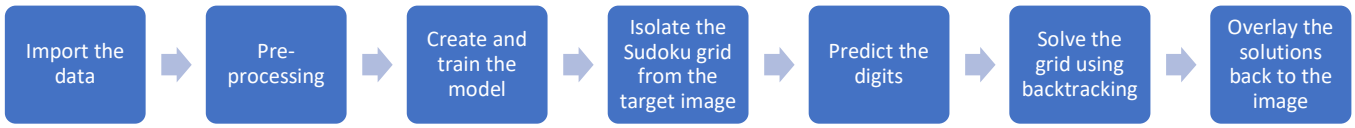
In this project, we were required to make a "***Sudoku Solver***" using deep learning and computer vision. It was a very interesting project, and the mentor was very supportive at each step of the project. I personally got to learn a lot of new things, especially computer vision and image processing.

The basic workflow for the project is as follows:



STEPS

1. **Import the data**
   The data was provided by the mentor
2. **Pre-processing**
   This involved converting the images to greyscale, and applying one-hot encoding
3. **Model training**
   The model used was a CNN. It gave an accuracy of 98%
4. **Isolation of Sudoku grid**
   This was done using warp perspective by OpenCV
5. **Prediction**
   The isolated digits were sent to the model, which gave predictions
6. **Solve the grid**
   Using the predicted digits, the grid was easily solved using backtracking
7. **Overlay the solution**
   This could be done using putText() function of OpenCV

I really enjoyed this project, and would like to thank my mentor, Harsh Chaurasia, for guiding me through the project. Moreover, I'd like to thank Analytics Club, IIT Bombay, for providing me with this golden opportunity.

Looking forward to many more of such awesome projects!