PROJECT STATUS REPORT FOR 7th Semester

Note: Please Specify NA if not applicable and AS if already submitted.

1. GROUP NO (If ANY): CS-11

2. Department/Program: Computer Science and Engineering/B.Tech

3.

(i) Date of Project Report Submission: 17th Nov 2017

(ii) Extended work of Last (6th) semester: NA

(iii) New Project/Date of Change (Changed in the 7th semester): 4th Aug 2017

4. MENTOR NAME: Prof. Suneeta Agarwal

5. Status of the Project (Changes done with respect to your previous reports): NA

6. Project Detail:

(i) Title: Caricature Generation and Recognition.

(ii) Title of Last Semester Project/Mini Project: OCR for UPPERCASE and LOWERCASE English Alphabets

(iii) Title of New Project: Caricature Generation and Recognition.

7. Origin of the Project
(Technicality and motivation behind this work should be elaborated)

- Research in face recognition has been significantly advanced in last few years. Multiple databases have been introduced for the same. On the other hand, there have been only very few attempts to address the problem of recognizing caricatures, that too with experiments on small test sets. The IIIT-CFW dataset, released in September 2016 is the largest of its kind and hasn't been explored much.

8. Other Similar ideas available on internet (Please mention origin of sources like website addresses, ftp address etc):

- NOVEL APPROACH TO NEURAL NETWORK BASED CARICATURE GENERATION (ieeexplore.ieee.org/document/4286668)
- Gao, Y., Huo, J., Li, W., Shi, Y., & Yin, H. (2017). WebCaricature: a benchmark for caricature face recognition. CoRR, abs/1703.03230.
- Face detection and face recognition of cartoon characters using feature extraction (http://www.iieej.org/trans/IEVC/IEVC2012/PDF/4B-1.pdf)

9. Importance of the proposed project in the context of current status and its relevance to computer science and engineering (Highlight what is the new area or gap which will be solved in the project in relating to what is already known.)

- Can help visually impaired people to understand cartoon images or movies.
- Can be used to automatically censor communal or politically incorrect cartoons in the social media
- Other applications of understanding cartoons are generating realistic cartoon faces, generating various realistic facial expression in cartoons.

10. Work Plan (Prepare a time chart to show Time Schedule of activities)

(i) **Methodology:** We have carried out a set of experiments on tasks involving gender verification of caricatures followed by their facial recognition, and caricature generation of real faces. Our first approach deals with improving the accuracy of former two tasks using the pixel values of entire images. In our second run, we tried pushing the accuracy further by using three different approach for facial keypoints detection of the caricatures: using Viola-Jones landmark detection algorithm, a BFS based flood-fill algorithm and finally a manually annotated dataset of 300 caricatures merged with a Kaggle dataset (7000 images) on the same. For the task of caricature generation, we tried learning artist-specific styles using feed-forward neural nets. We also carried out fine tuning of the CNN networks used in order to suit our tasks.

(ii) **Time Schedule of activities**

- Task analysis and selecting the sub-tasks. (2 weeks)
- Framing a working skeleton for each sub-task. (2 weeks)
- Refining the models so prepared and manual data annotation for landmark annotation. (4 weeks)
- Verifying and comparing the obtained results. (2 weeks)

(iii) **Outcome expected from the project and its relevance to computer science and engineering.**

- The project aims to surpass the current state-of-the-art cartoon face recognition accuracy through the use of deep learning.
- The subtask of caricature generation of human faces has its applications in mimicking the style of artists by the use of automated technology.

(iv) **Summary of roles/responsibilities of all students:**

- **Pratik Parwal:** Problem Analysis, Landmark Detection using manually annotated dataset, Report Making.
- **Nikhil Agarwal:** Problem Analysis, Face Averaging, training and transformation for Caricature generation, Report making.
- **Richa Pandey:** Dataset Parsing, Detecting Face boundary using Flood-fill algorithm, Report Making.
- **Saurav Jha:** Experiments with CNN models, Data set augmentation, Report Making.
- **Pramee Chowdhury:** Face Detection, alignment, normalization, Java app for manual annotation of caricature landmarks, Report Making

Student's information

Registration No.	Name	Specific Observations
20148093	Pratik Parwal	
20144092	Nikhil Agarwal	
20144126	Richa Pandey	
20144007	Saurav Jha	
20144136	Pramee Chowdhury	

Any specific observation

Comments (if any):

Suggestions for improvement (if any):

Signature of Mentor

PANEL COMMENTS

Comments (if any):

Suggestions for improvement (if any):

Signature of Panel Representative