

Department of Computer Science & Engineering, Govt. Engg. College – Wayanad
CS451 Project Preliminary – Topic Submission Form
August 2018 – November 2019

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|------------------------------------|--------------------------|-------------------------|
| 1. Group Number: 2 | Programme: B.Tech | Batch: 2016 Adm. |
| 2. Name 1 :Jithin T Mathews | | Roll No.:30 |
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6. **Guided by:Prof. Nikesh P**

7. **Area:Convolutional Neural Network**

8. **Title of the work:Custom Image Classifier**

9. **Proposal:**

A. Problem Context – Image recognition refers to technologies that identify places, logos, people, objects, buildings, and several other variables in images. Users are sharing vast amounts of data through apps. The large volume of digital data is being used by companies to deliver better and smarter services to the people accessing it. However, the vast amount of data can only be recognized and classified with the use of generally trained CNN. There is no specific purpose trained CNN for recognizing data with custom requirements.

B. Problem Statement – Lack of specific image classifiers to classify the vast amount of digital data being shared by users. The available image classifiers are capable of classifying inputs that are trained by neural networks generally. This can be solved by creating a custom image classifier with transfer learning to identify specific classes of objects using Nvidia jetson nano and Pytorch.

10. **Objectives:**

To create a custom image classifier

O1: To collect training data of a specific area.

O2: To train the last few layers of CNN using transfer learning .

O3: To deep classify the data collected using the trained CNN.

11. **Correlation to course outcomes:**

CO1: To estimate the ability of the student in transforming the theoretical knowledge studied so far into a software product.

CO2: Acquire practical knowledge within the chosen area of technology for project development.

CO3: Perform requirement analysis and identify design methodologies.

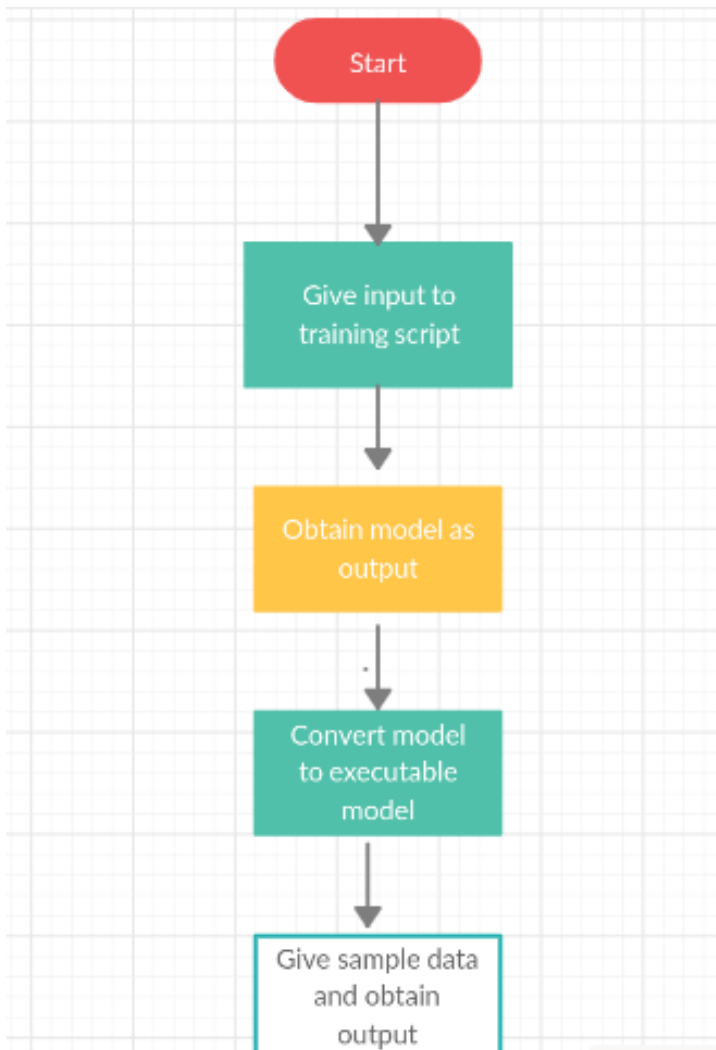
CO4: Contribute as an individual or in a team in the development of technical projects.

CO5: To develop skills in doing literature surveys, technical presentations, and report preparation.

CO6: Understand the importance of Computer Engineering solutions in the societal and environmental context, and demonstrate the knowledge of and need for sustainable development.

	CO1	CO2	CO3	CO4
O1	✓	✓	✓	✓
O2	✓	✓		✓
O3	✓			✓

12. Methodology:



Process cycle

A convolutional neural network is used to recognize the images accurately. It is an algorithm used for analyzing images and assigning importance to specific bits. The last few layers of CNN are retrained to recognize and identify and classify images more deeply.

Transfer learning (Making use of already available data to train a model with more specific requirements) is used for re-training the CNN layer. The network will analyze the image and classify it according to the training data provided.

13. Expected result and performance evaluation strategies:

Train a model with the use of transfer learning to identify custom requirement images.
The model will be able to deep classify images.

14. Hardware and software requirement:

Working environment preferably ubuntu with PyTorch. Cnn for training and NVIDIA Jetson Nano ai module for image recognition and classification.

15. Plan of Action:**Mini project**

Sl No.	Work to be completed	Date	Approval by Guide
1	Synopsis evaluation and approval	15/10/2019	
2	Collection of dataset	22/10/2019	
3	SRS documentation	28/10/2019	
4	Submit software design document	29/10/2019	
5	Interim review	4/11/2019	
6	Submit e-copy of Project report for review	6/11/2019	
7	Project Final Review	13/11/2019	
8	Submission of e-copy final version (Plagarism Checked)	19/11/2019	
9	Submit Mini project Report (2 hard copies)	20/11/2019	

Main project

Sl No.	Work to be completed	Date	Approval by Guide
1	Pre-Processing of data	10/1/20	
2	Training initial model	10/2/20	
3	Testing model	10/3/20	
4	Retraining	10/4/20	
5	Report Completion	10/7/20	

16. Related works:

- In 2001 : Paul Viola and Michael Jones invented a simultaneous face detection algorithm allowing for human figures to be identified through their facial traits.
- 2005 : Navneet Dalal and Bill Triggs published Histograms of Oriented Gradients (HOG), theorizing a feature detector for the recognition of pedestrians in security system circuits.
- 2015: the Convolutional Neural Network (CNN) developed IR tools whose level of accuracy in facial recognition exceeded 95 percent.

17. References:

- [1] geofrey a hinton alex krivezhky, hya sustkever. image net classification. *SIAM Journal on Scientific Computing*, 34(4):C192–C209, 2012.
- [2] viola Paula. rapid object detection using cascade of simple features. In *rapid image detection using cascade of simple features*, volume 3, pages 1381–1384. IEEE, 2001.

Date of approval: 17/10/19

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Note:- Use these e-mail ids for communication. Communication send to any other address is invalid or is not part of project correspondence.