COURSE PROJECT

PROPOSAL

COMPUTER VISION

Context Encoders: Feature Learning by Inpainting

OUR TEAM - salt_and_pepper_noise

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2018122010	20171131	20171145

REFERENCE PAPER -

Context Encoders: Feature Learning by Inpainting

Deepak Pathak, Philipp Krahenbuhl, Jeff Donahue, Trevor Darrell
Alexei A. Efros, University of California, Berkeley

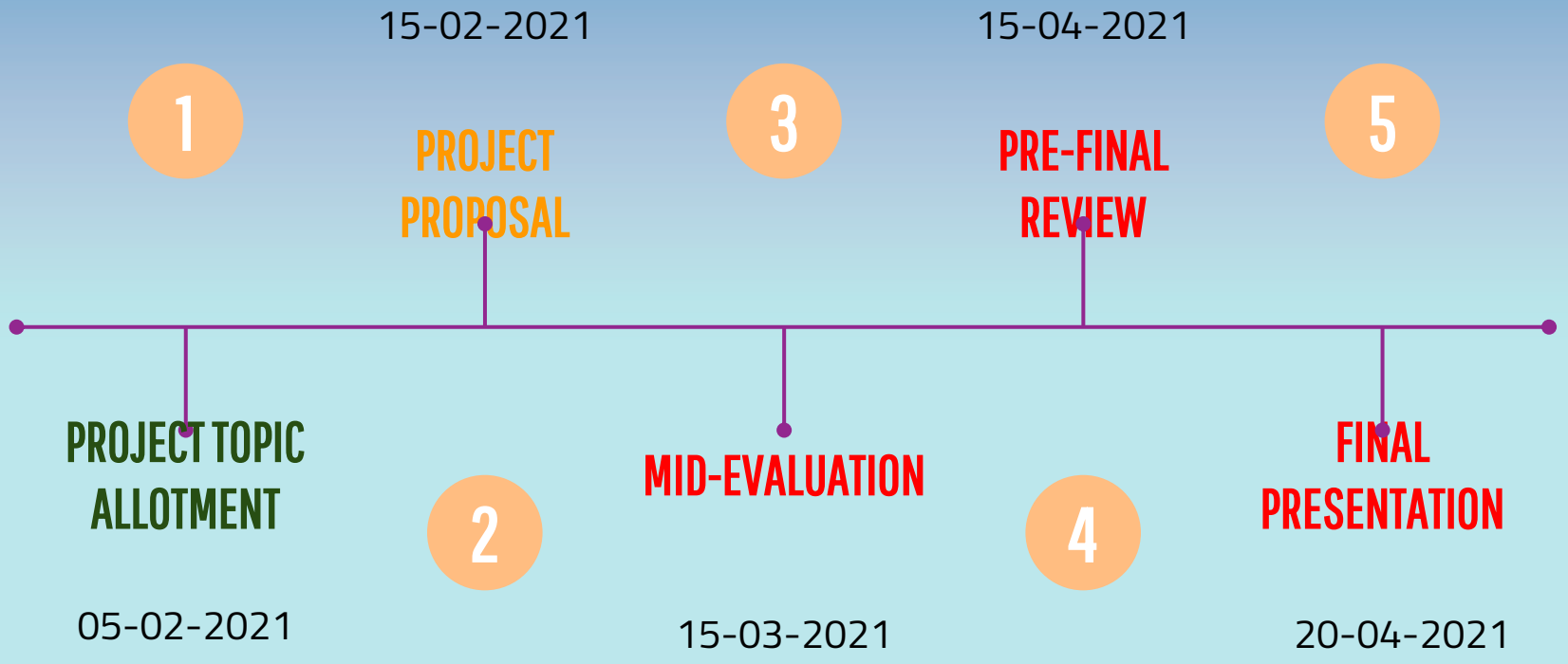
Link - https://arxiv.org/pdf/1604.07379.pdf

PROBLEM STATEMENT - Design and test context encoders trained to generate images conditioned on context advance the state of the art in semantic inpainting, at the same time learn feature representations that are competitive with other models trained with auxiliary supervision.

ABOUT THE PROJECT

1) We will present an unsupervised visual feature learning algorithm driven by context-based pixel prediction.
2) By analogy with auto-encoders, we will propose Context Encoders – a convolutional neural network trained to generate the contents of an arbitrary image region conditioned on its surroundings.
3) In order to succeed at this task, context encoders need to both understand the content of the entire image, as well as produce a plausible hypothesis for the missing part(s).
4) We will quantitatively demonstrate the effectiveness of our learned features for CNN pre-training on classification, detection, and segmentation tasks.

TIMELINE


15-02-2021
15-04-2021
1
3
5
PROJECT PROPOSAL
PRE-FINAL REVIEW
PROJECT TOPIC ALLOTMENT
2
MID-EVALUATION
4
FINAL PRESENTATION
05-02-2021
15-03-2021
20-04-2021

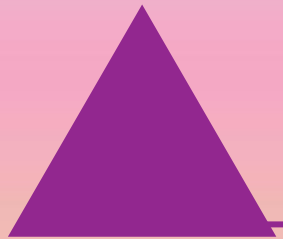
PROJECT WORK DIVISION (TENTATIVE) - TILL MID EVAL

AMITESH

REGION MASKS

RAJASEKHAR

ENCODER
DECODER
PIPELINE



TANMAI

LOSS FUNCTION

PROJECT DELIVERABLES FOR MID EVALS

1) Introduce context encoders: CNNs that predict missing parts of a scene from their surroundings.
2) Give an overview of the general architecture
3) Provide details on the learning procedure
4) Present various strategies for image region removal.

NOTE: MODEL WILL BE TRAINED BEFORE MID EVALS, HOWEVER THE EVALUATION WILL BE DONE AFTER MID EVALS

PROJECT GOALS

GOAL 1

Write a working code on Context Encoders for learning deep feature representation in an unsupervised manner by image inpainting.

GOAL 2

Present a presentation with our results and compare them to other methods of image inpainting.

RESOURCES

PAPER

- https://arxiv.org/pdf/1604.07379.pdf

DATASET FOR TRAINING

- C. Doersch, S. Singh, A. Gupta, J. Sivic, and A. Efros. What makes paris look like paris? ACM Transactions on Graphics, 2012.

DATASET FOR VERIFICATION

- O. Russakovsky, J. Deng, H. Su, J. Krause, S. Satheesh, S. Ma, Z. Huang, A. Karpathy, A. Khosla, M. Bernstein, A. C. Berg, and L. Fei-Fei. Imagenet large scale visual recognition challenge. IJCV, 2015.