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*Abstract*—With the past decade showcasing SOTA approaches like Alex-Net, VGG, ResNet, R-CNN and many more, it is inevitable that a deeper network has shown its prowess when trained and tested on large datasets such as ImageNet, but all being computationally very expensive This paper tries to explore the Faster-RCNN architecture with a VGG-16 backbone using 1x1 filters in between computationally expensive convolutions, whose idea was first proposed in GoogLeNet. 1x1 filters are known to reduce the number of feature maps but at the same time retaining all the necessary information. The output corresponding to the approach is measured against baseline models on PASCAL VOC [6] dataset

Keywords—VGG, PASCAL VOC, Faster-RCNN, Neural Networks

# Introduction

The domination of Deep convolutional neural networks (CNN’s) in the field of computer vision isn’t nothing new. Right with the introduction of Yann LeCun’s infamous work of LeNet-5 [1] in 1998. The use of convolution to extract features of images to understand the handwritten numbers, the network containing 7 layers, it felt like as important as discovery of fire giving rise to a plethora of options for the researchers to work in a new direction of inculcating and using neural networks and convolution to detection, which in this case are handwritten number. This lead to an explosion of researchers around the world trying to figure to build deeper and deeper networks by adding more layers to the neural networks. The period after LeNet [1], the area of research became stagnant. During the same time, GPUs and CPUs computational power started to grow. In 2010, a competition started namely ImageNet Large Scale Visual Recognition Challenge (ILSVRC) famous of its ImageNet [2] dataset which was organized according to the WordNet hierarchy. This large data gave rise to one of the most influential deep convolutional neural networks, AlexNet [3]. Created by Alex Krizhevsky, collaborating with Ilya Sutskever and Geoffrey Hinton. The architecture of AlexNet [3] was made up of eight layers among which five were convolutional layers and the other three were fully-connected layers. The main separating factors of this network were the use of multiple GPUs, with shared workload of the model’s neurons among those GPUs, overlapped pooling and ReLu [4] being used as activation function to add nonlinearity to the model. The architecture of AlexNet had 60 million parameters which had a very good chance of overfitting, but used two of the approaches to circumvent that. One being data augmentation and other by using dropout [5]. AlexNet achieved 37.5% top-1 error and 17.0% top-5 error outpacing the previous state of the art models.

# RELATED WORK

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# OVERVIEW OF FASTER-RCNN

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*a**b* 

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* The subscript for the permeability of vacuum **0, and other common scientific constants, is zero with subscript formatting, not a lowercase letter “o”.
* In American English, commas, semicolons, periods, question and exclamation marks are located within quotation marks only when a complete thought or name is cited, such as a title or full quotation. When quotation marks are used, instead of a bold or italic typeface, to highlight a word or phrase, punctuation should appear outside of the quotation marks. A parenthetical phrase or statement at the end of a sentence is punctuated outside of the closing parenthesis (like this). (A parenthetical sentence is punctuated within the parentheses.)
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* Do not confuse “imply” and “infer”.
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* There is no period after the “et” in the Latin abbreviation “et al.”.
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An excellent style manual for science writers is [7].

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Component heads identify the different components of your paper and are not topically subordinate to each other. Examples include Acknowledgments and References and, for these, the correct style to use is “Heading 5”. Use “figure caption” for your Figure captions, and “table head” for your table title. Run-in heads, such as “Abstract”, will require you to apply a style (in this case, italic) in addition to the style provided by the drop down menu to differentiate the head from the text.

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1. Table Type Styles

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| Table column subhead | Subhead | Subhead |
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Figure Labels: Use 8 point Times New Roman for Figure labels. Use words rather than symbols or abbreviations when writing Figure axis labels to avoid confusing the reader. As an example, write the quantity “Magnetization”, or “Magnetization, M”, not just “M”. If including units in the label, present them within parentheses. Do not label axes only with units. In the example, write “Magnetization (A/m)” or “Magnetization {A[m(1)]}”, not just “A/m”. Do not label axes with a ratio of quantities and units. For example, write “Temperature (K)”, not “Temperature/K”.

# CONCLUSION

The preferred spelling of the word “acknowledgment” in America is without an “e” after the “g”. Avoid the stilted expression “one of us (R. B. G.) thanks ...”. Instead, try “R. B. G. thanks...”. Put sponsor acknowledgments in the unnumbered footnote on the first page.

##### References

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For papers published in translation journals, please give the English citation first, followed by the original foreign-language citation [6].

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