# Article information:

Implementation of CNN based Demosaicking on FPGA | IEEE Conference Publication | IEEE Xplore
<https://ieeexplore.ieee.org/abstract/document/9614015>

# Article summary:

1. This paper proposes a hardware-friendly Convolutional Neural Network (CNN) based demosaicking scheme for digital cameras.

2. The proposed system is implemented on the Xilinx Virtex-7 FPGA and achieved high PSNR performance of 39.47dB.

3. The proposed demosaicking network consists only 3x3 convolutions without skip connection and deconvolution, and is compressed by applying the Knowledge Distillation (KD) technique with 16-bit integer quantization for hardware implementation.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

The article provides a detailed description of the proposed CNN based demosaicking scheme for digital cameras, which is implemented on the Xilinx Virtex-7 FPGA and achieved high PSNR performance of 39.47dB. The proposed demosaicking network consists only 3x3 convolutions without skip connection and deconvolution, and is compressed by applying the Knowledge Distillation (KD) technique with 16-bit integer quantization for hardware implementation.

The article appears to be reliable in terms of its content as it provides a detailed description of the proposed method, its implementation, and results obtained from experiments conducted on Kodak dataset. However, there are some potential biases that should be noted in this article such as lack of exploration into other methods or techniques that could be used to achieve similar results, lack of discussion about possible risks associated with using this method, lack of discussion about potential limitations or drawbacks associated with this method, etc. Additionally, there is no mention of any counterarguments or alternative approaches that could be used to solve this problem which could lead to one-sided reporting in favor of the proposed method. Furthermore, there is no evidence provided to support any claims made in the article which could lead to unsupported claims being made in the article.

In conclusion, while this article appears to provide a detailed description of the proposed method and its implementation along with results obtained from experiments conducted on Kodak dataset, there are some potential biases that should be noted such as lack of exploration into other methods or techniques that could be used to achieve similar results, lack of discussion about possible risks associated with using this method, lack of discussion about potential limitations or drawbacks associated with this method etc., which could lead to one-sided reporting in favor of the proposed method as well as unsupported claims being made in the article due to lack of evidence provided to support any claims made in it.

# Topics for further research:

* Alternative approaches for digital camera demosaicking
* Risks associated with CNN based demosaicking
* Limitations of Knowledge Distillation technique
* Comparison of different demosaicking methods
* Hardware implementation of demosaicking networks
* Quantization techniques for FPGA implementation

# Report location:

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