

Distinguishing Computer-Generated Images from Natural Images Using Channel and Pixel Correlation

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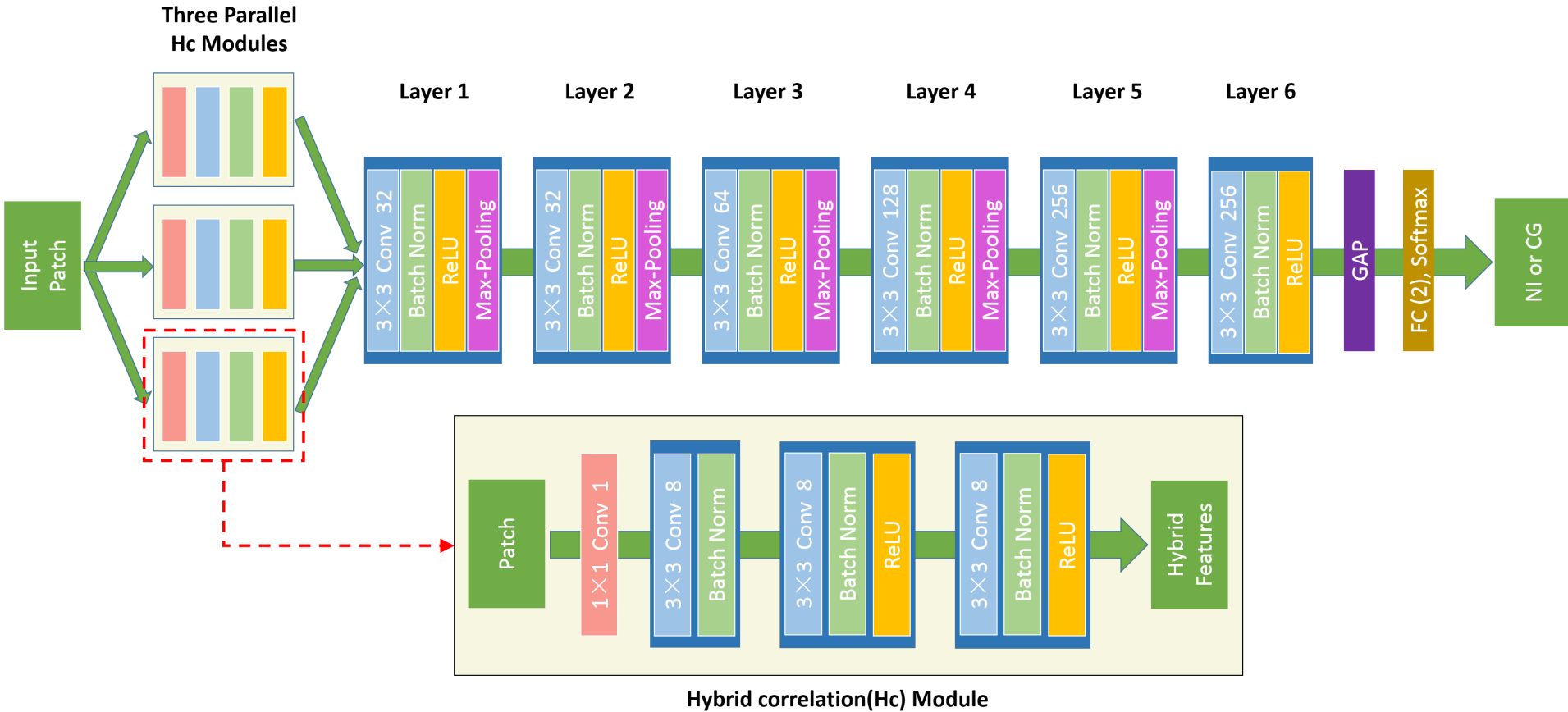
Research Problem

- Computer generated fake images now easily deceive the inspection of human visual system.
- The light is filtered by the Color Filter Array (CFA) before reaching the camera sensor, which causes image color channels correlation.



**Which
one
is fake?**

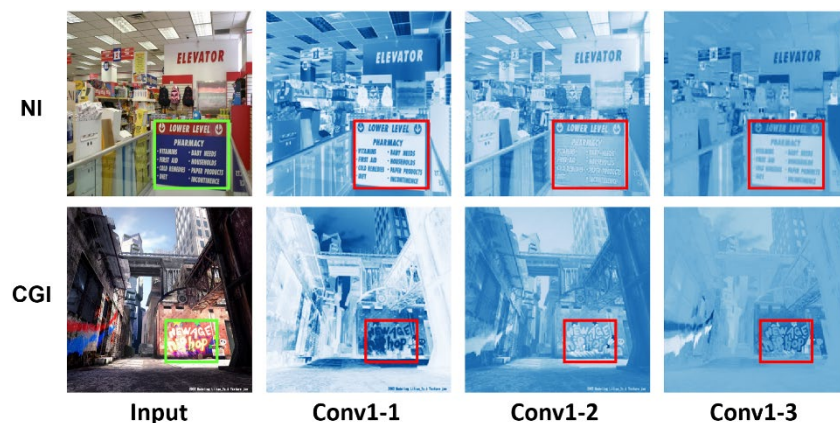
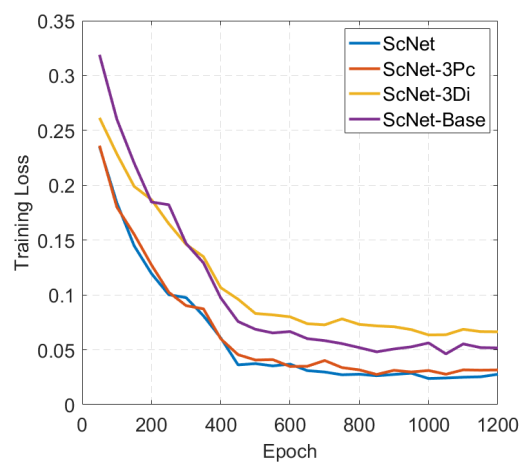
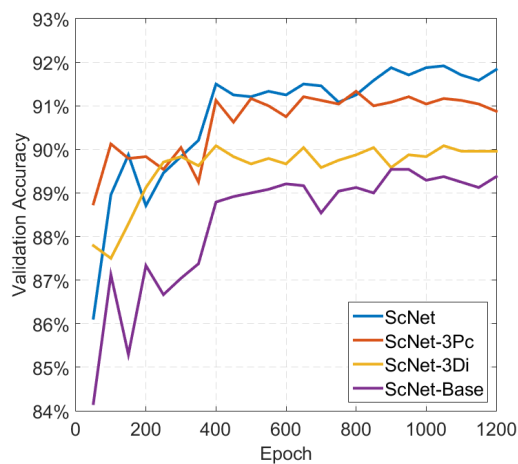
Proposed Method



Hybrid Correlation Module: extract the correlation between color **channels** and image **pixels**, respectively

Results

- The proposed network outperforms state-of-the-art methods in terms of classification performance.
- Hybrid correlation module improve the classification performance, robustness and generalization.
- Hybrid correlation module have good generality on different CNN architectures.



Conclusions

- We designed a self-coding module to extract features between image color channels.
- We used consecutive convolutional layers without pooling conduction to better extract features between image pixels.
- Good robustness and generalization may make the module useful in a real scenario.
- Hybrid correlation module try to solve other multimedia security tasks such as recolored image or image manipulation detection.