

# Does Fourier Transform instead of convolution make neural networks better at edge detection?

Fourier Transforms have been used in statistical machine learning-based approaches for the purpose of edge detection. The advent of neural networks has made classification tasks easier at the cost of reduced interpretability. In this project, we ask the question: do neural networks with Fourier Transform followed by traditional activations, make them better at detecting edges from images?

The project is organized as follows:

- Perform Fourier Transform of image and Fourier filter as opposed to convolution.
- Perform inverse Fourier Transform of the resulting Fourier Transform in frequency domain.
- Perform ReLU
- Check if such an approach is better at edge detection tasks as opposed to a traditional ConvPool layer.

*This project has to be completed by the middle of February, owing to administrative constraints.*