COSC 6373 HW ICA 6 Part A

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1. First we need to choose a layer to visualize the filters from.
2. Then we will build a feature extraction model, which will return the activation values for the targeted layer.
3. We want to visualize inputs that maximize the activation of the filters. The **loss function** is defined to maximize the activation of a specific filter in the target layer. And to avoid artifacts, the loss is computed by **ignoring the border pixels.**
4. Then the gradient ascent method iteratively modifies the input image to maximize the filter activation. Gradient Tape is used to compute gradients with respect to the input. The gradient is L2-normalized to maintain stability.
5. Post process the image: Normalize, crop, and convert it into a displayable format.
6. Visualize filters by displaying individual filter responses and create a grid of filters.

This process helps to understand how CNNs understand images by highlighting the patterns detected by different filters.