**Lesson 76 - 84:**

DeepDream is an image processing algorithm that utilizes convolutional neural networks to create psychedelic images generated from an input image. The process is achieved by optimizing the image to maximize the activation of certain layers within the neural network.

The basic process of DeepDream involves the following steps:

1. Choosing the Neural Network: A pre-trained convolutional neural network is selected, often using models trained on extensive datasets like the Inception model.
2. Selecting Layers and Neurons: Specific layers and neurons within the network are chosen as targets for activation maximization. These neurons might detect specific features like lines, textures, or complex patterns.
3. Optimization Application: The input image is fed into the network, and the algorithm adjusts the image to maximize the activation of the selected neurons. This is done iteratively, modifying the image to have more features activate the desired neurons.
4. Pattern Enhancement: During the optimization process, patterns and visual features from the original image are emphasized, becoming more prominent as the algorithm attempts to activate the targeted neurons.
5. Iterations and Scaling: The process is repeated several times at different spatial scales, resulting in a zooming effect that creates intricate patterns and textures across the entire image.

The final result is an image that appears distorted and filled with patterns, with visual elements exaggerated or enhanced. These images often display a psychedelic visual style inspired by the deep neural network's learned features.

Example: If you have a CNN that is used to identify dogs, we can increase the activation sensibility of the layer responsible to identify the dog patterns. In this way, we induce the CNN put in the image a lot of random patterns that the CNN identified, because one specific layer is being over activated.

