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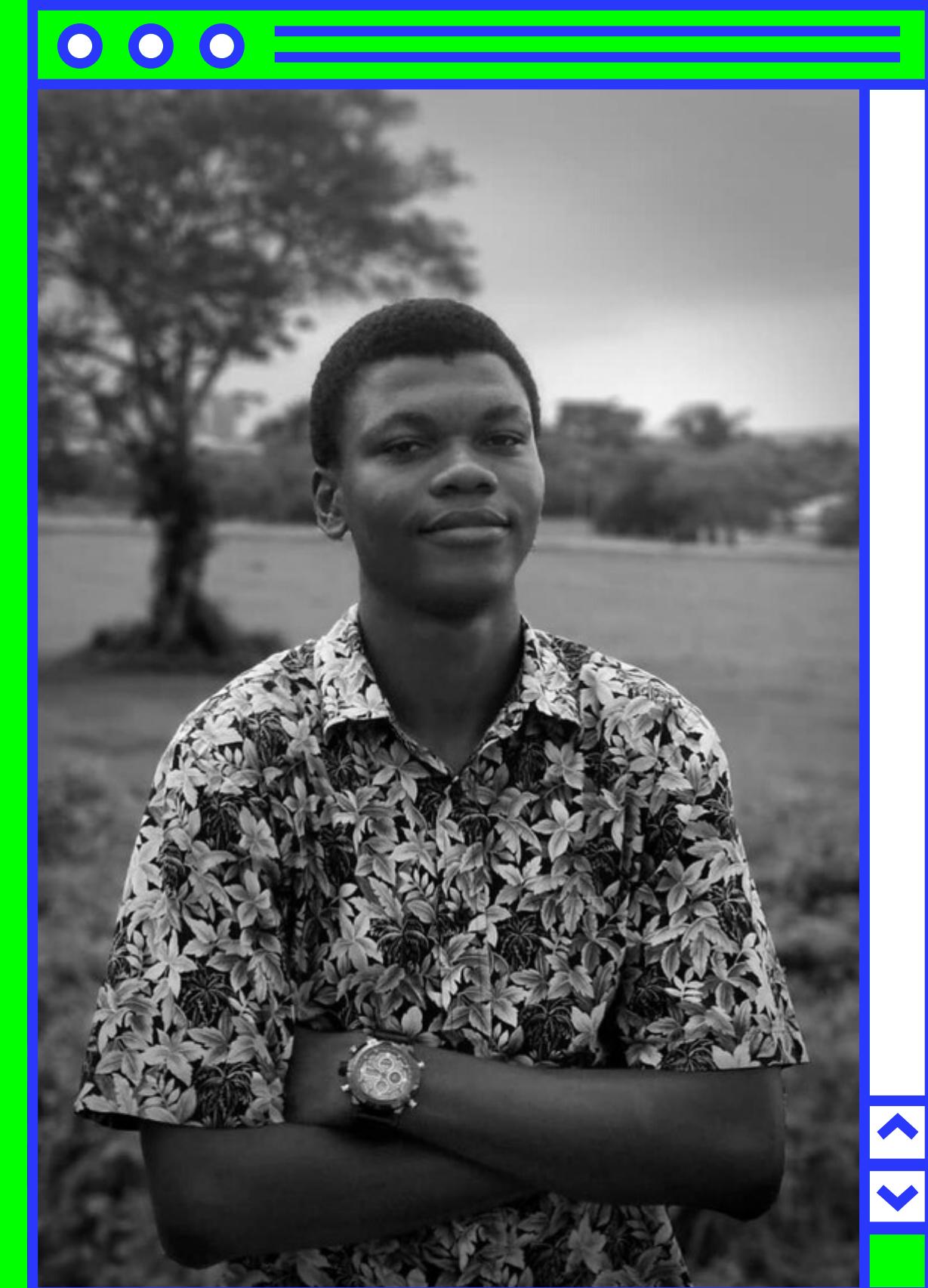
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IMAGE PROCESSING FOR COMPUTER VISION USING OPENCV

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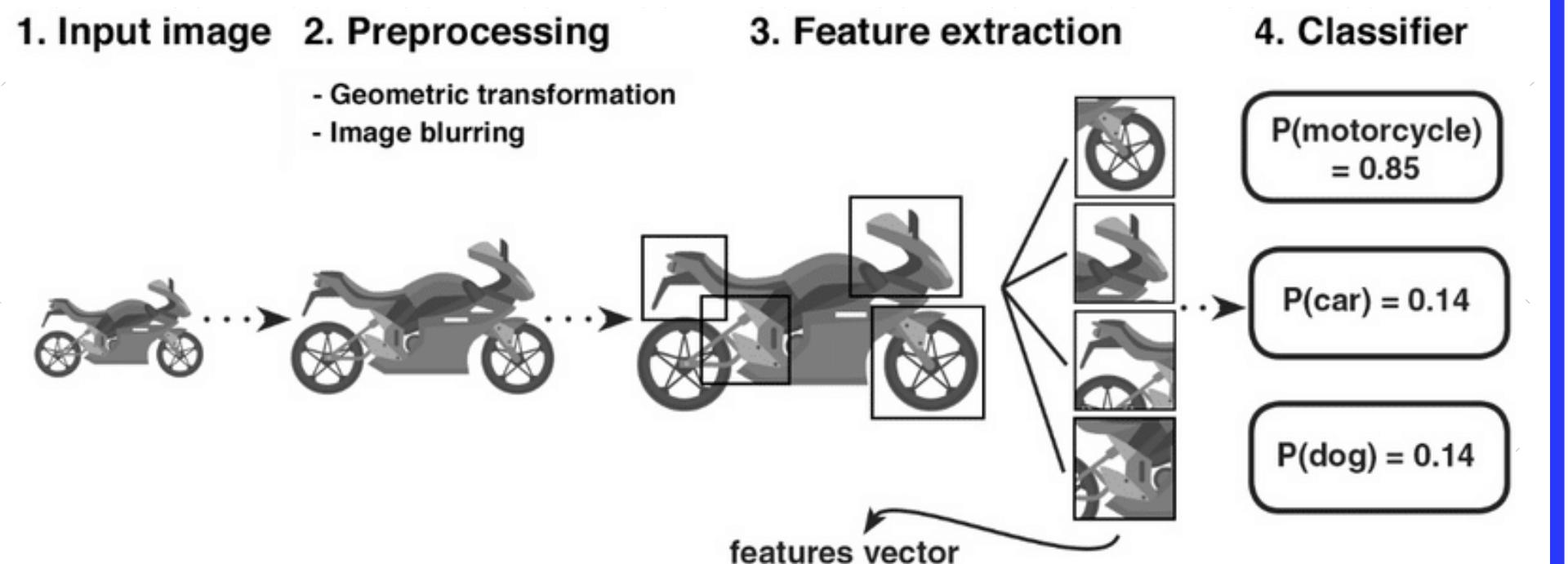
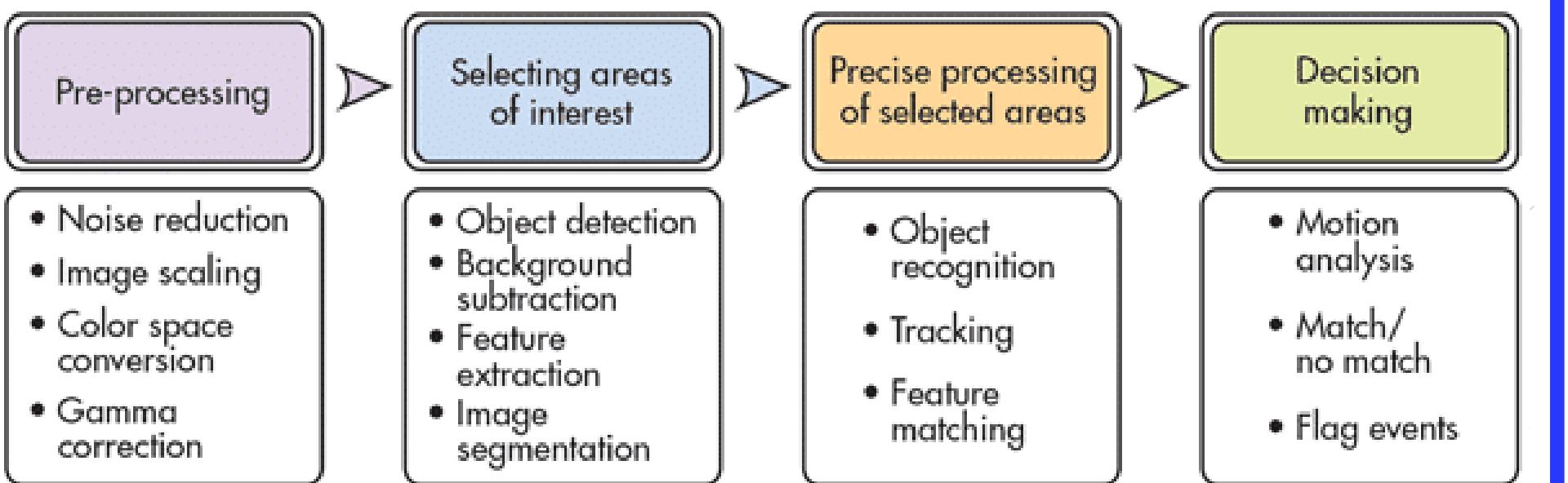
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- Technical Content Writer at LinuxHint.
- Python & Linux Fanboy.



PRESENTATION HIGHLIGHTS

AREAS OF FOCUS

- The Computer Vision Pipeline
- Why Image Preprocessing?
- What is OpenCV?
- Colour Modes
- Cropping Images
- Filters
- Smoothing Images
- Edge Detection
- Removing Salt and Pepper Noise
- Restoring Blurry Images



THE COMPUTER VISION PIPELINE

Why Image Preprocessing?

FEATURES

Make features stand out.
This can help improve
accuracy of the model.

NOISE

Remove noise from the
image. Your model is only
as good as the data.

FOCUS

Crop out the image.
Reduces the image to the
needed parts, reduces
compute time.

RESTORATION

Restore damaged images.
Makes an image worthy of
being part of the dataset.

WHAT IS OPEnCV?



OPEN SOURCE COMPUTER VISION

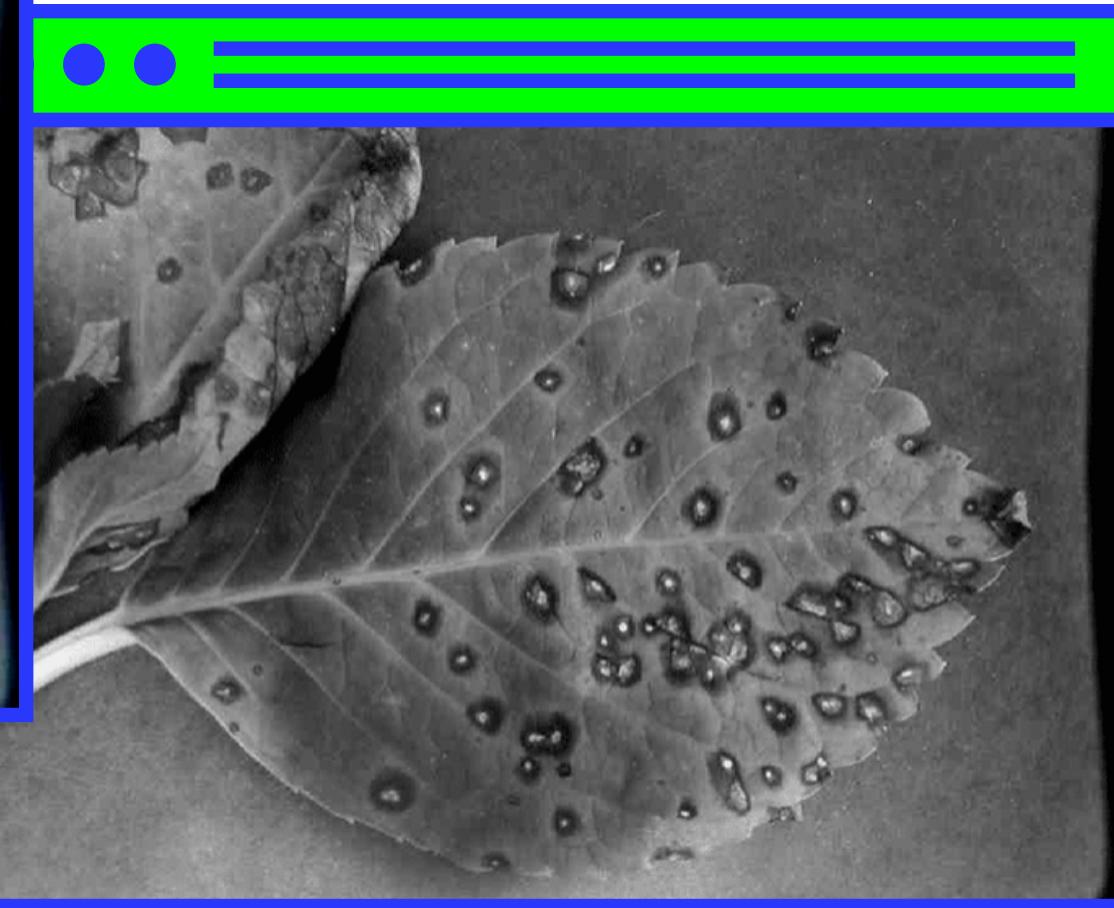
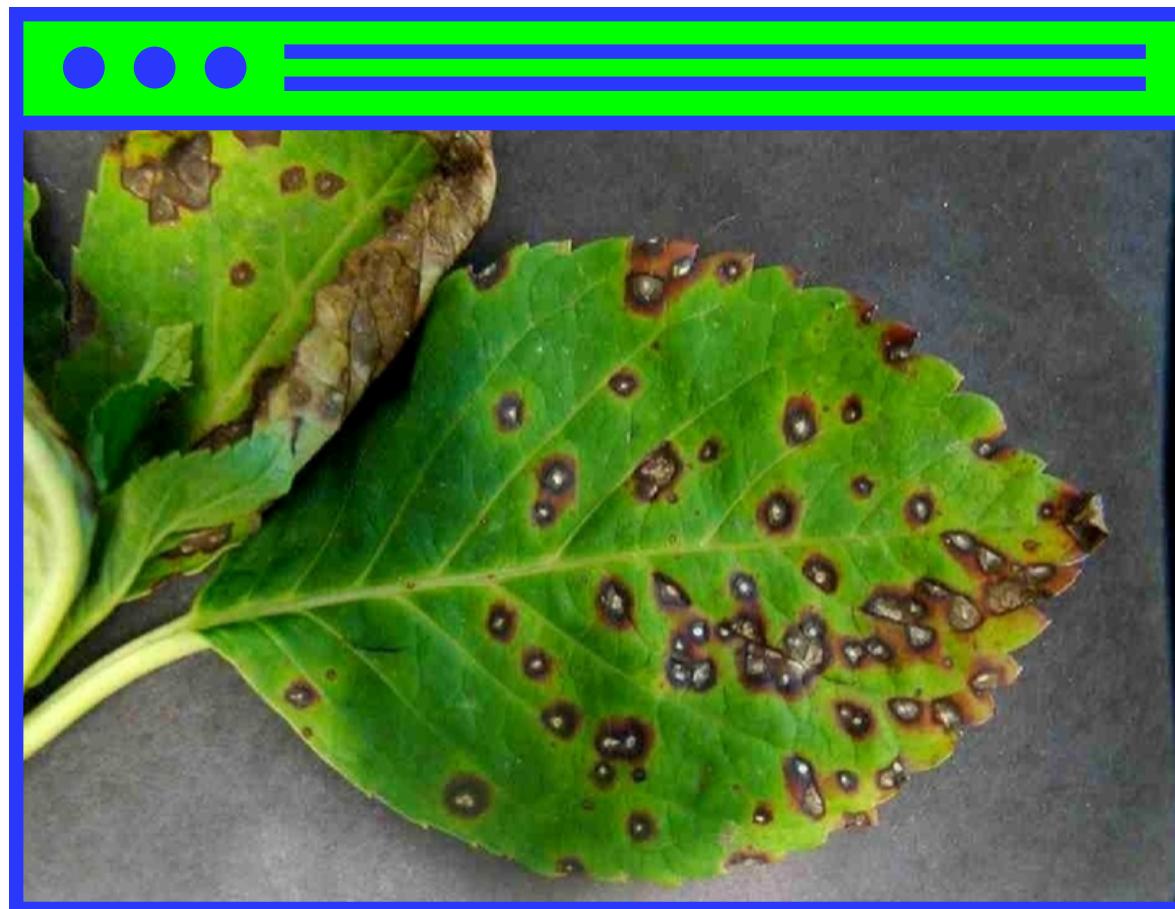
A library that makes it easy to add computer vision capabilities to software.

LANGUAGES

Written in C/C++. But has bindings for other languages such as Python, Java.

WHY IS IT TRUSTED?

Over 2500+ optimized Computer Vision algorithms! That's no joke.



COLOUR MODES

RGB, BGR, HSV are some of the most popular colour modes.

Cropping Images

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1. X'S FACE.



2. X'S EYES.

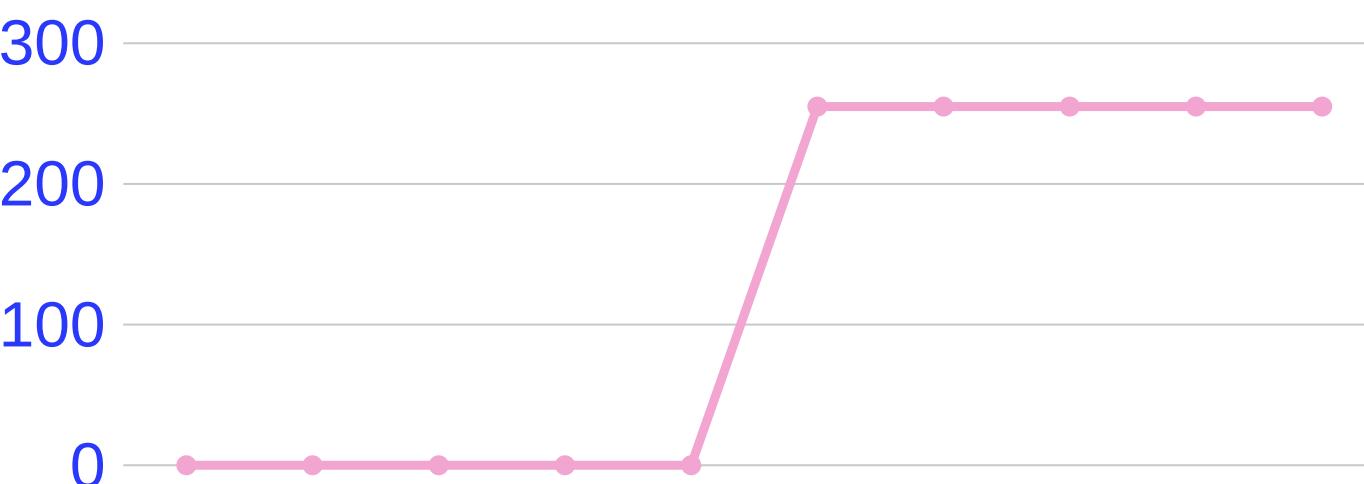
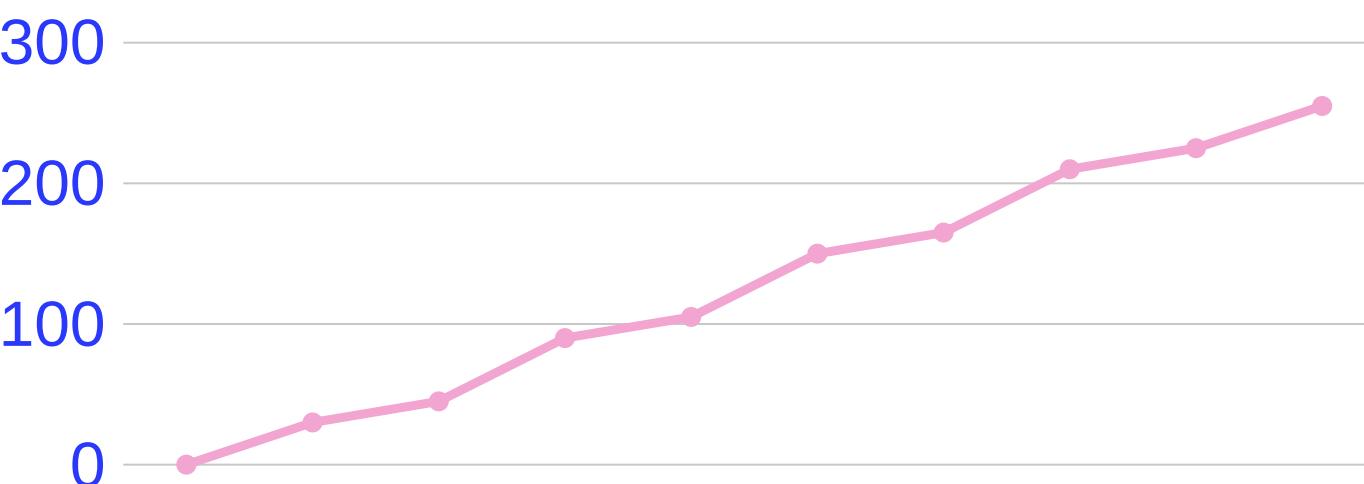


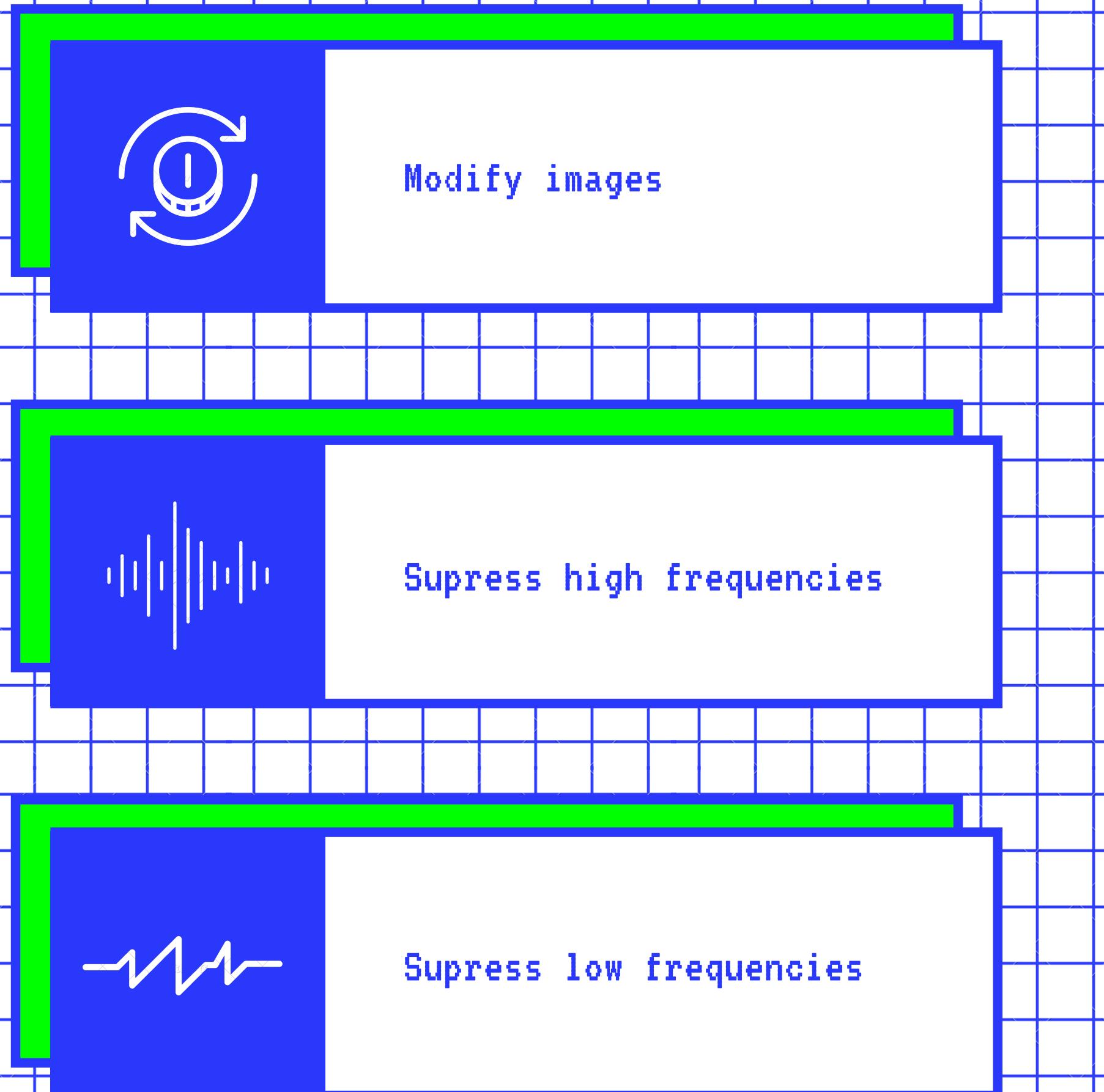
3. X'S MOUTH.

SHOTO X

THRESHOLDS

Creates a binary image





FILTERS

THE SUPPRESSOR?

$$\frac{1}{9} \begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \\ 1 & 1 & 1 \end{bmatrix}$$

SMOOTHING IMAGES

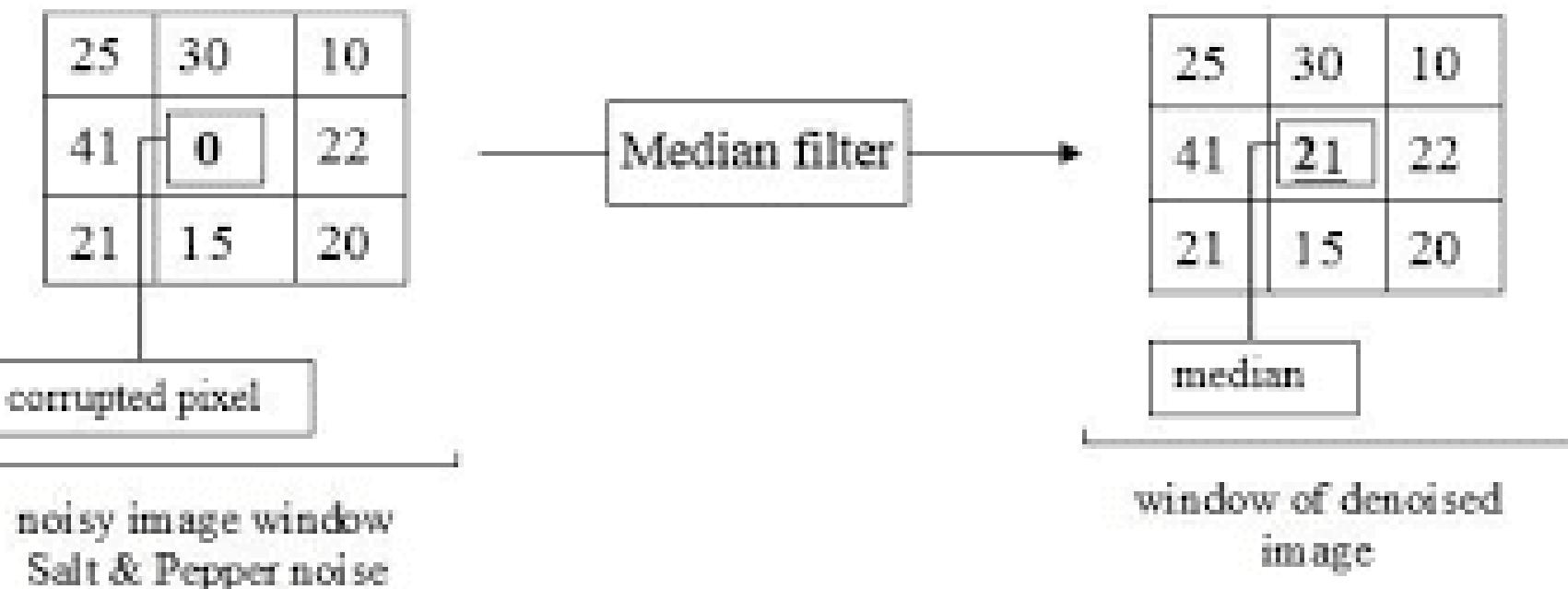
Gaussian low pass filter and Mean filter are some of the most popular blurring algorithms.

EDGE DETECTION

Canny, Prewitt and Sobel are some of the most popular edge detection algorithms.

SALT AND PEPPER noise?

Clear out the salt and pepper with median filters.



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THE END

THANKS FOR LISTENING...