Image Preprocessing

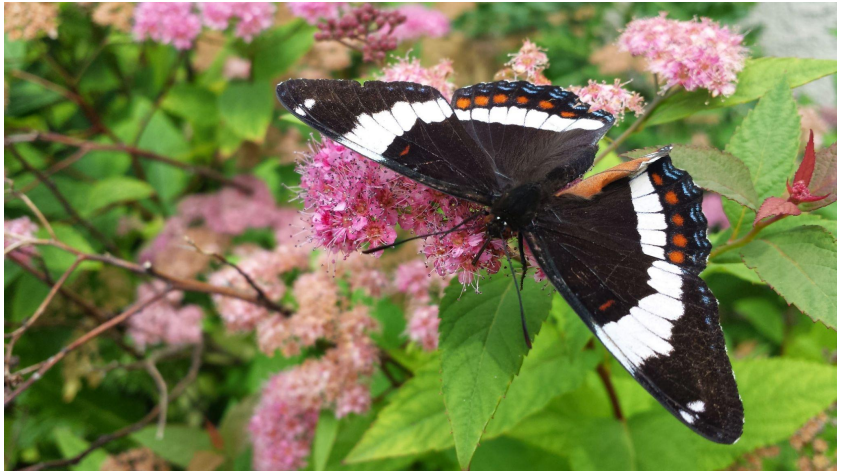
Preprocessing: standardization

Why do we need to standardize images?

- Different sizes
- Different formats
- Different resolutions
- What else?

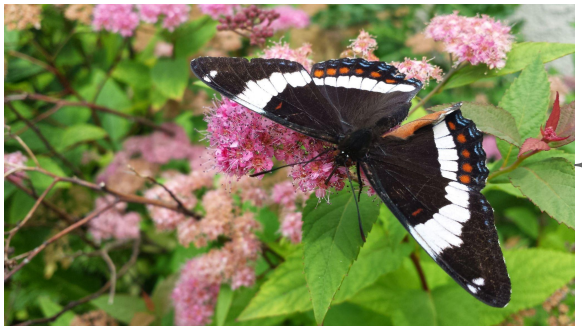
Preprocessing: Converting to Grayscale

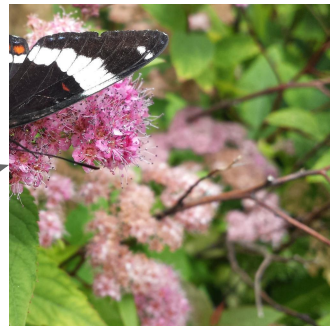
- Why?
- When?

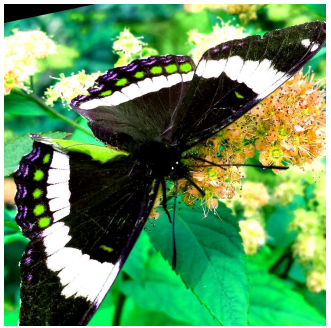


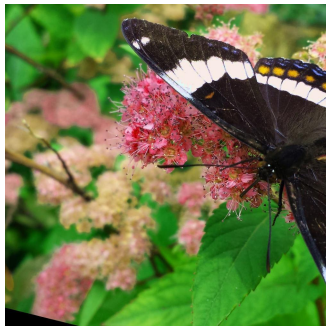
Preprocessing: Data augmentation

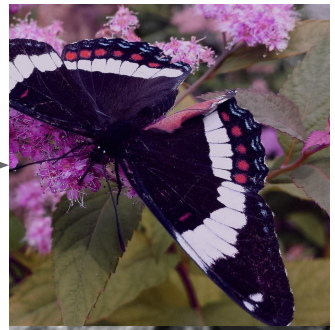
Computational method to generate new data points based on the existing ones

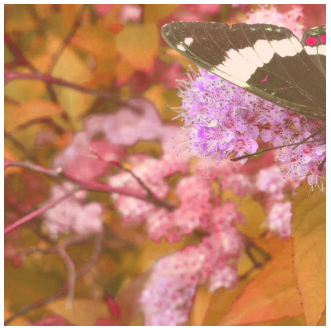


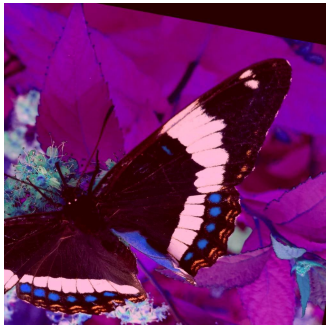










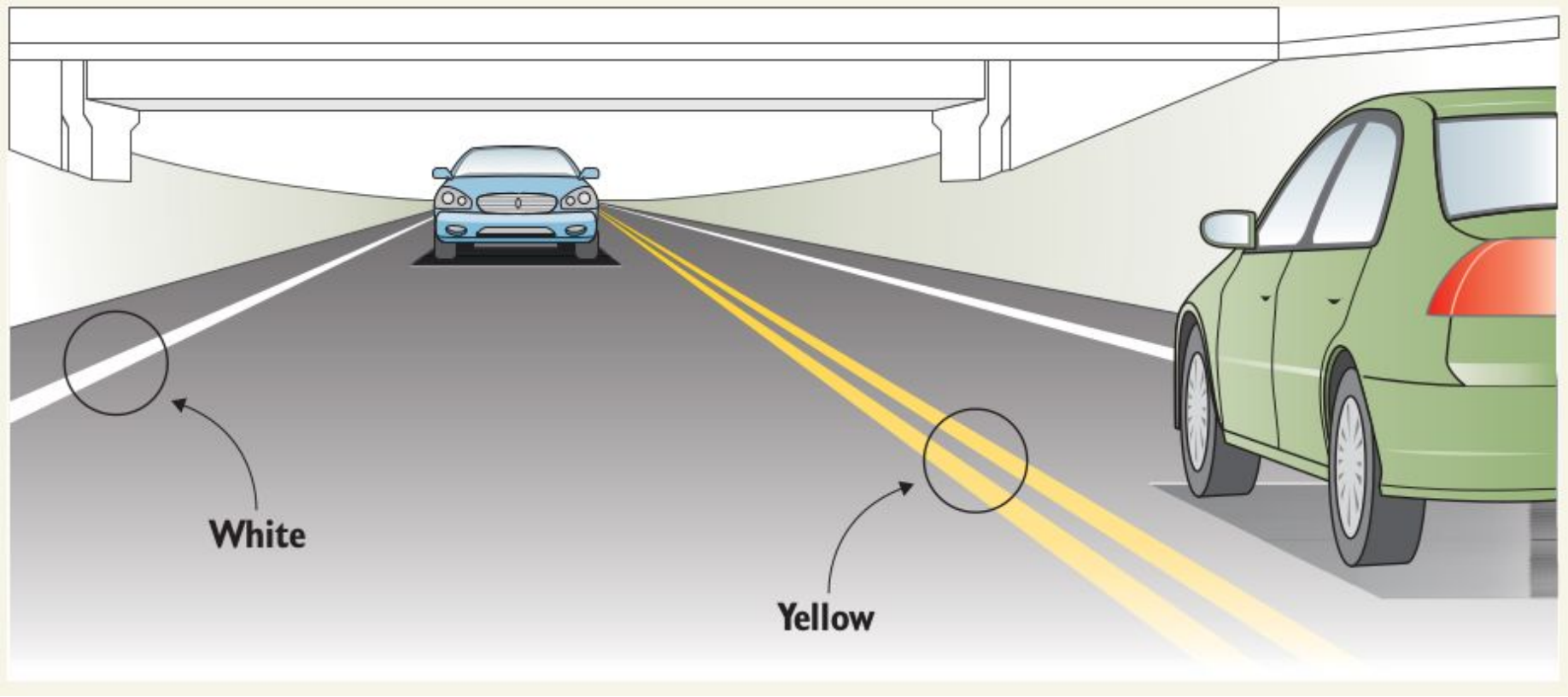


Data Augmentation

Preprocessing

Why do we need to augment images?

- To increase dataset variability
- To artificially increase dataset size



Warning: A potential side effect is loss of important image features

Image from: Elgendy, M., 2020. Deep learning for vision systems. Simon and Schuster.

Feature Extraction: Conventional ML

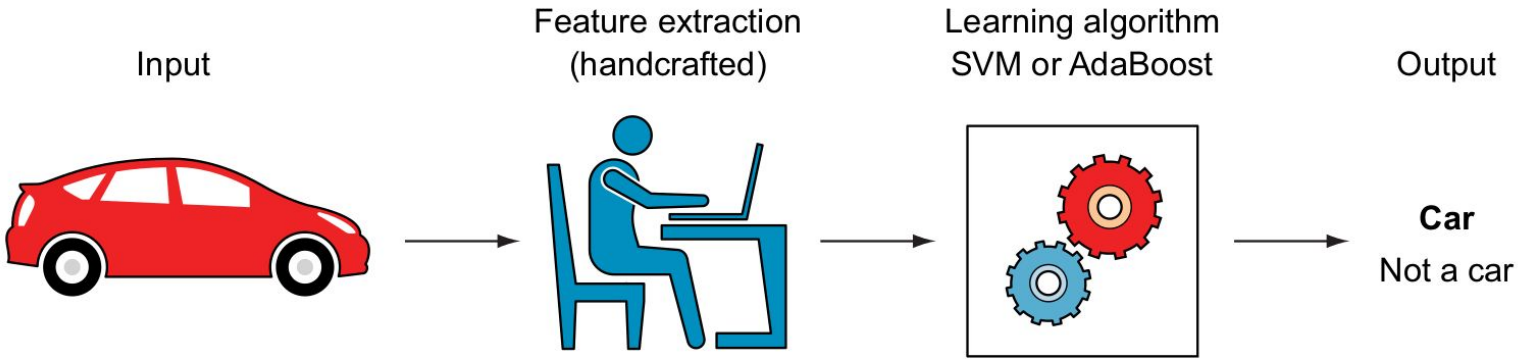


Image from: Elgendy, M., 2020. Deep learning for vision systems. Simon and Schuster.

Feature Extraction: DL

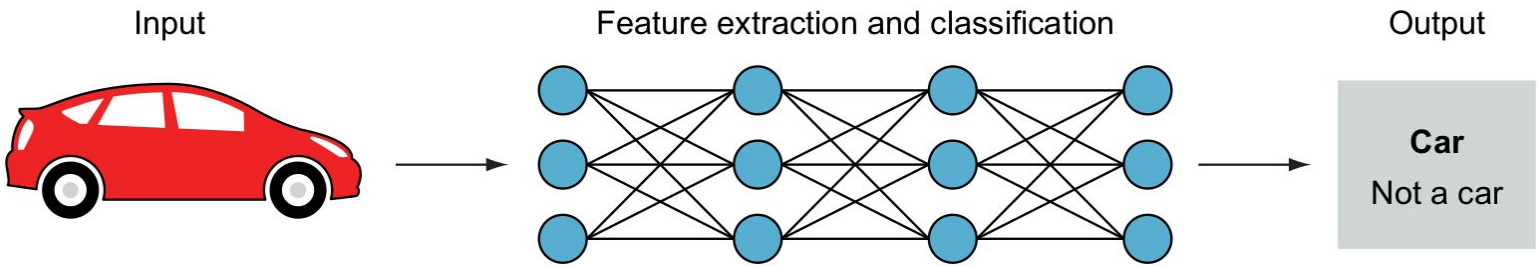


Image from: Elgendy, M., 2020. Deep learning for vision systems. Simon and Schuster.

DL for Feature Extraction: Example

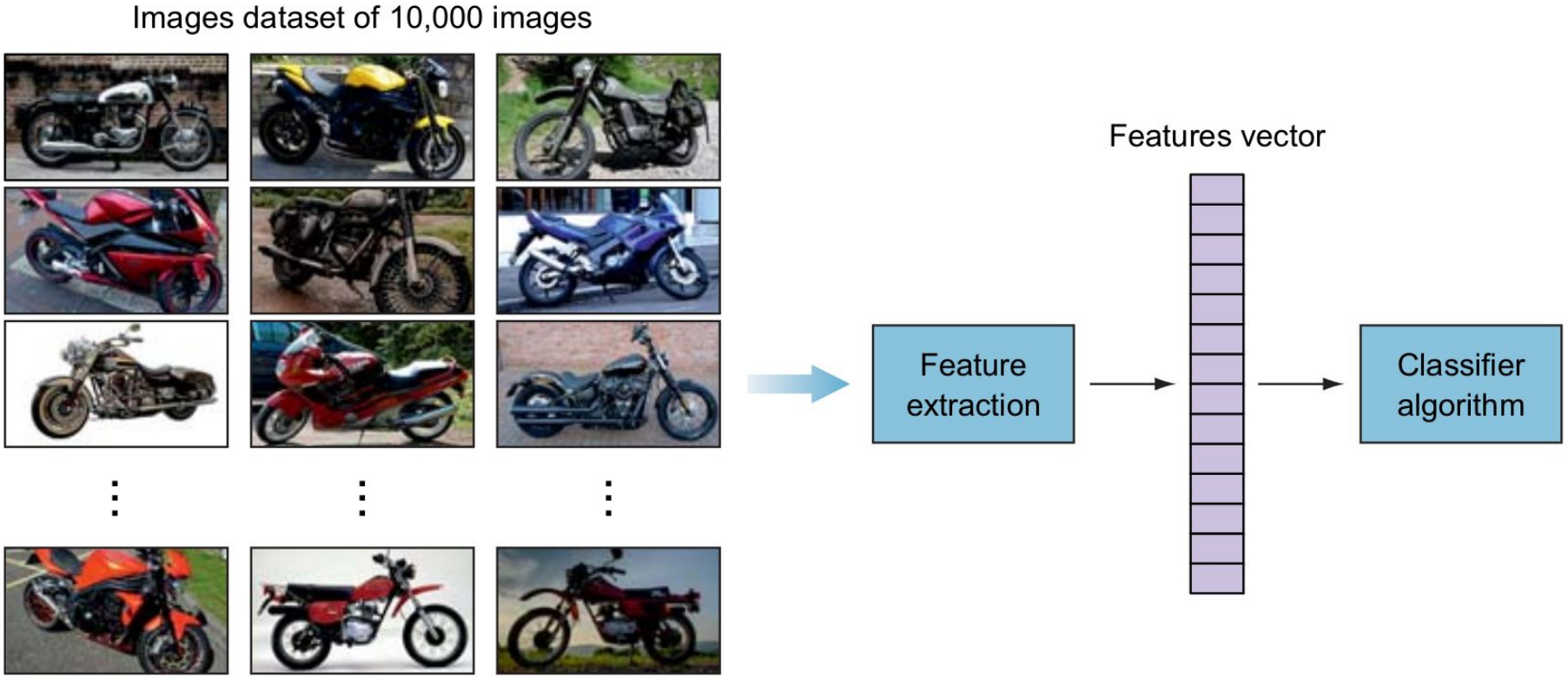


Image from: Elgendy, M., 2020. Deep learning for vision systems. Simon and Schuster.

Let's put these into practice