



Fundamentals of Deep Learning

Part 4: Data Augmentation and Deployment



Agenda

- Part 1: An Introduction to Deep Learning

- Part 2: How a Neural Network Trains

- Part 3: Convolutional Neural Networks

- Part 4: Data Augmentation and Deployment

- Part 5: Pre-Trained Models

- Part 6: Advanced Architectures

Recap of the Exercise

Analysis

- CNN increased validation accuracy
- Still seeing training accuracy higher than validation

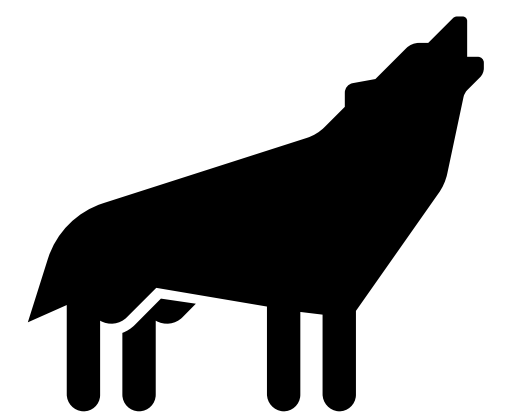
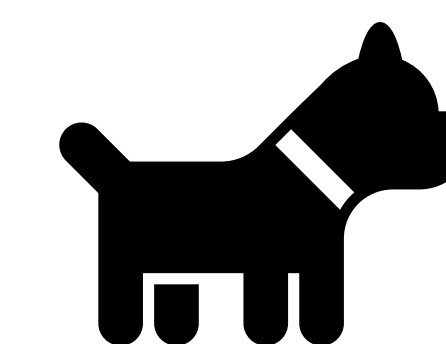
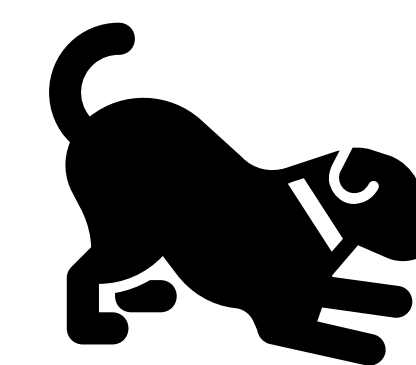
Recap of the Exercise

Analysis

- CNN increased validation accuracy
- Still seeing training accuracy higher than validation

Solution

- Clean data provides better examples
- Dataset variety helps the model generalize





Data Augmentation

Data Augmentation



Image Flipping

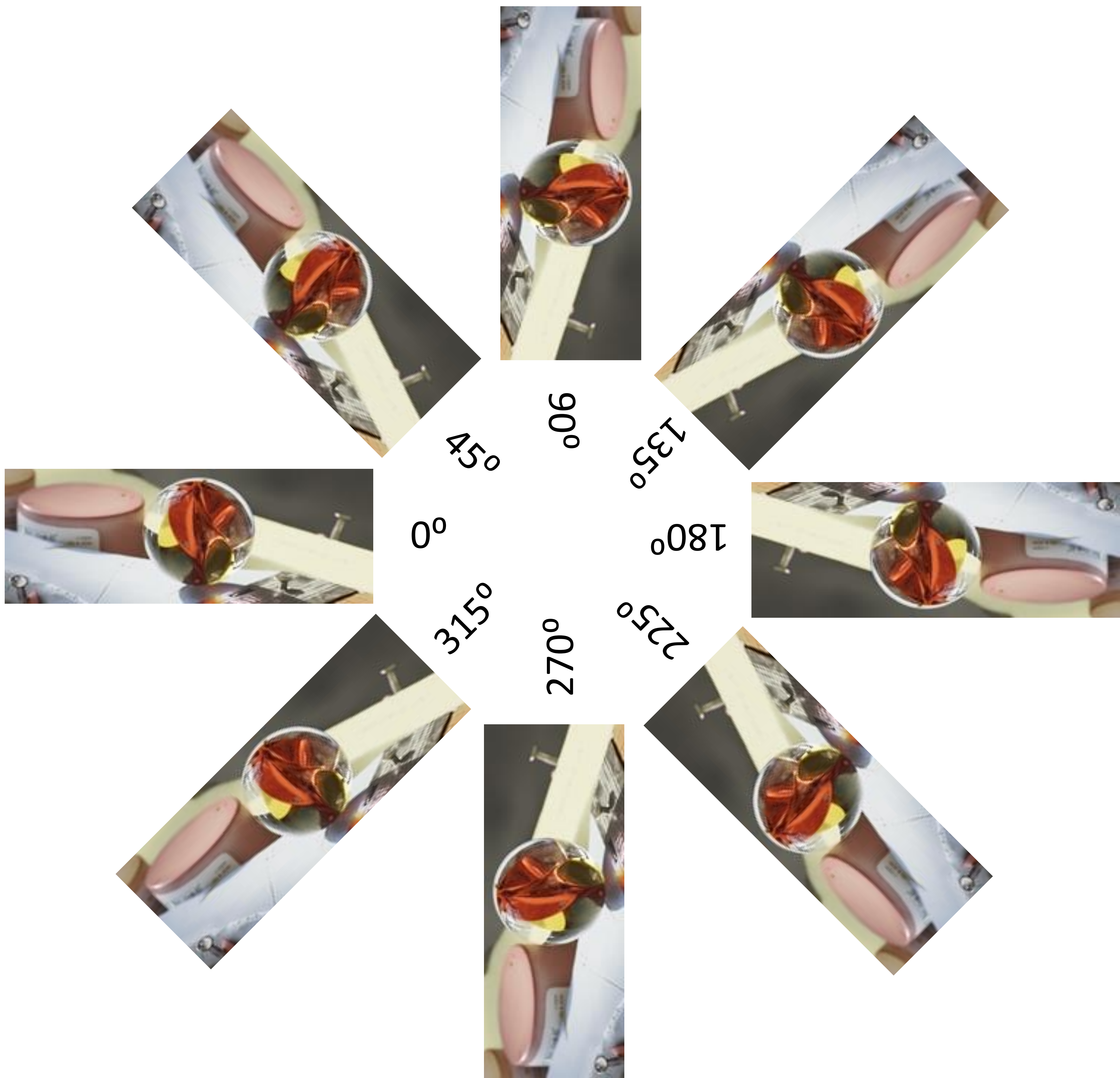
Horizontal Flip



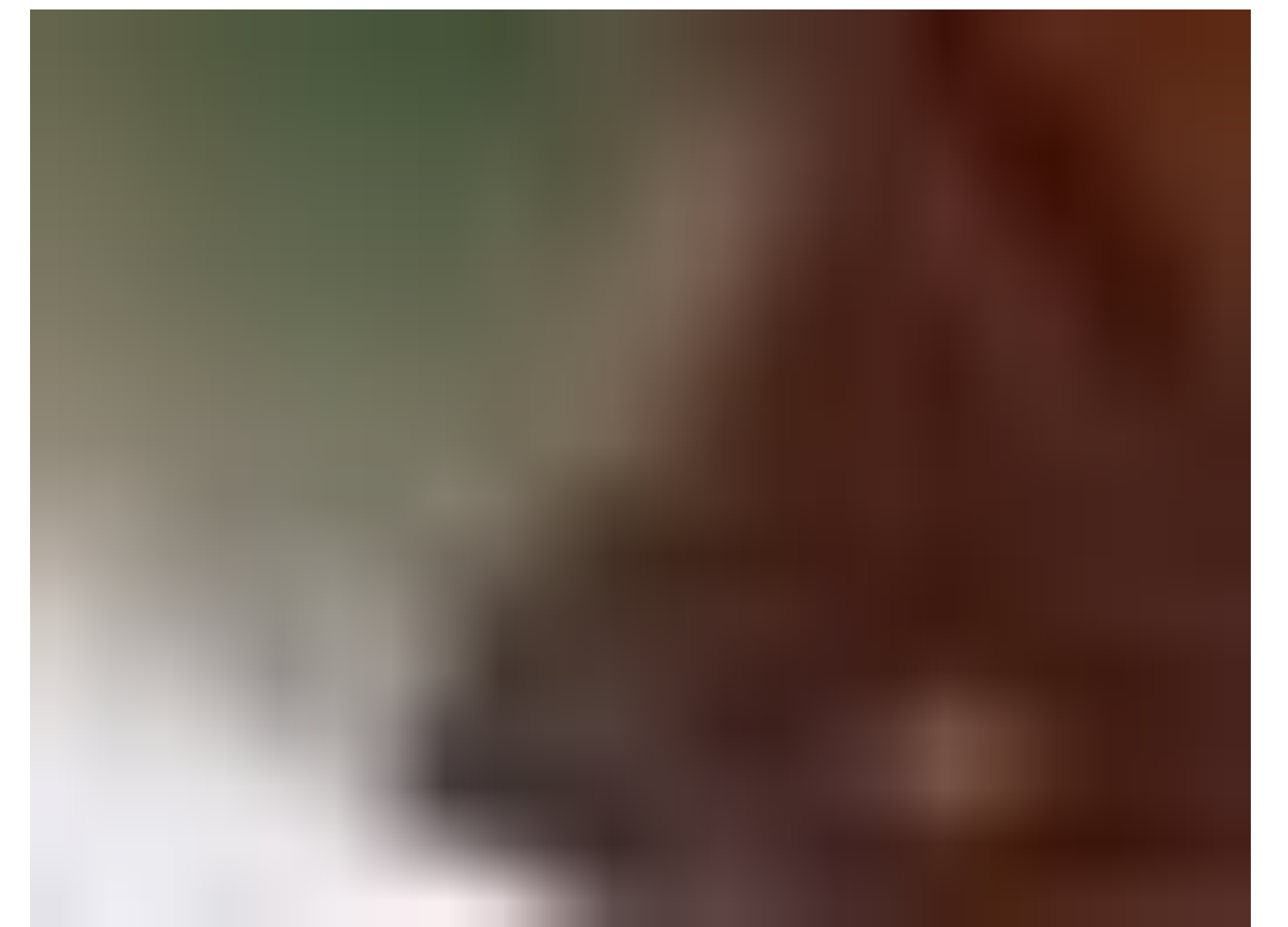
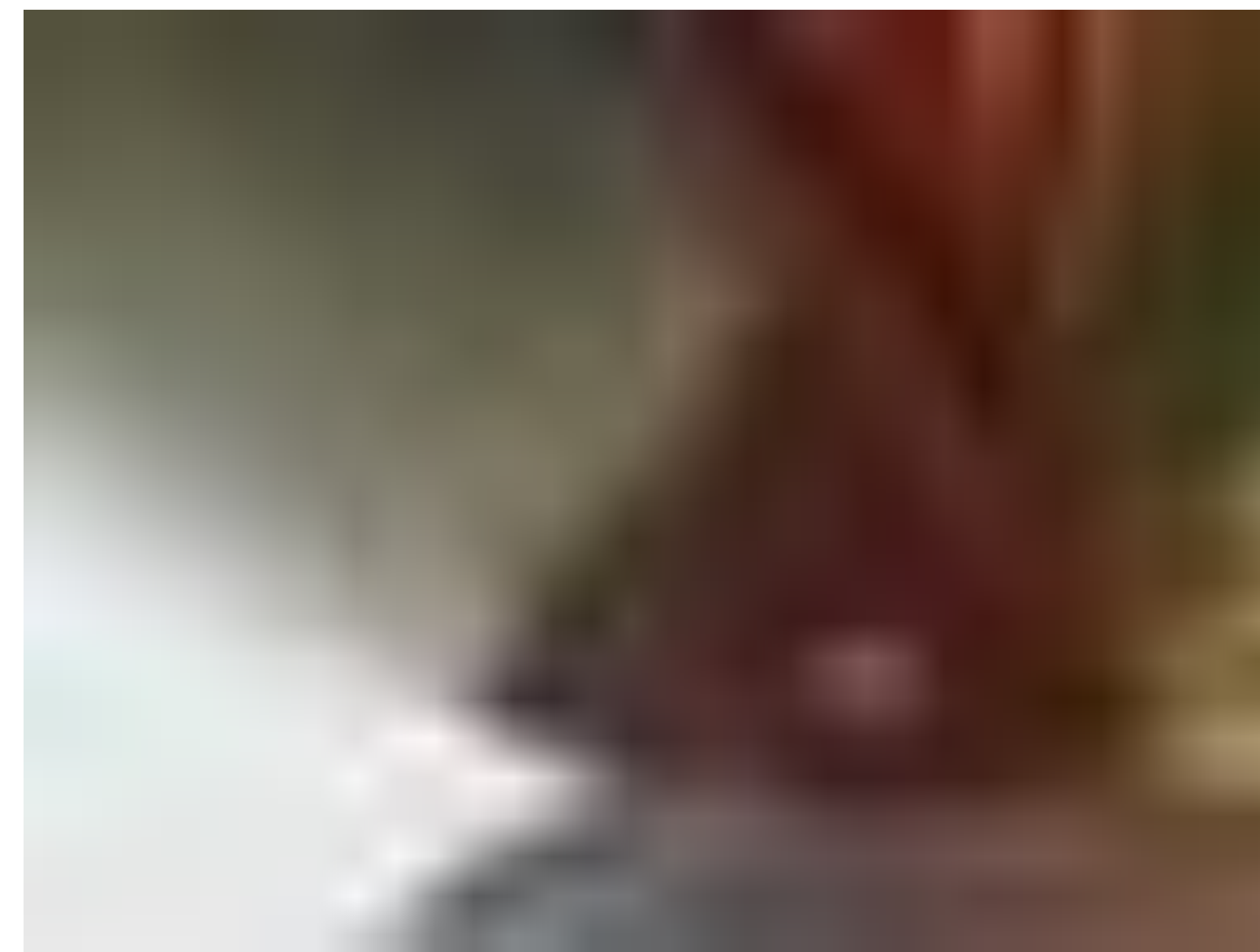
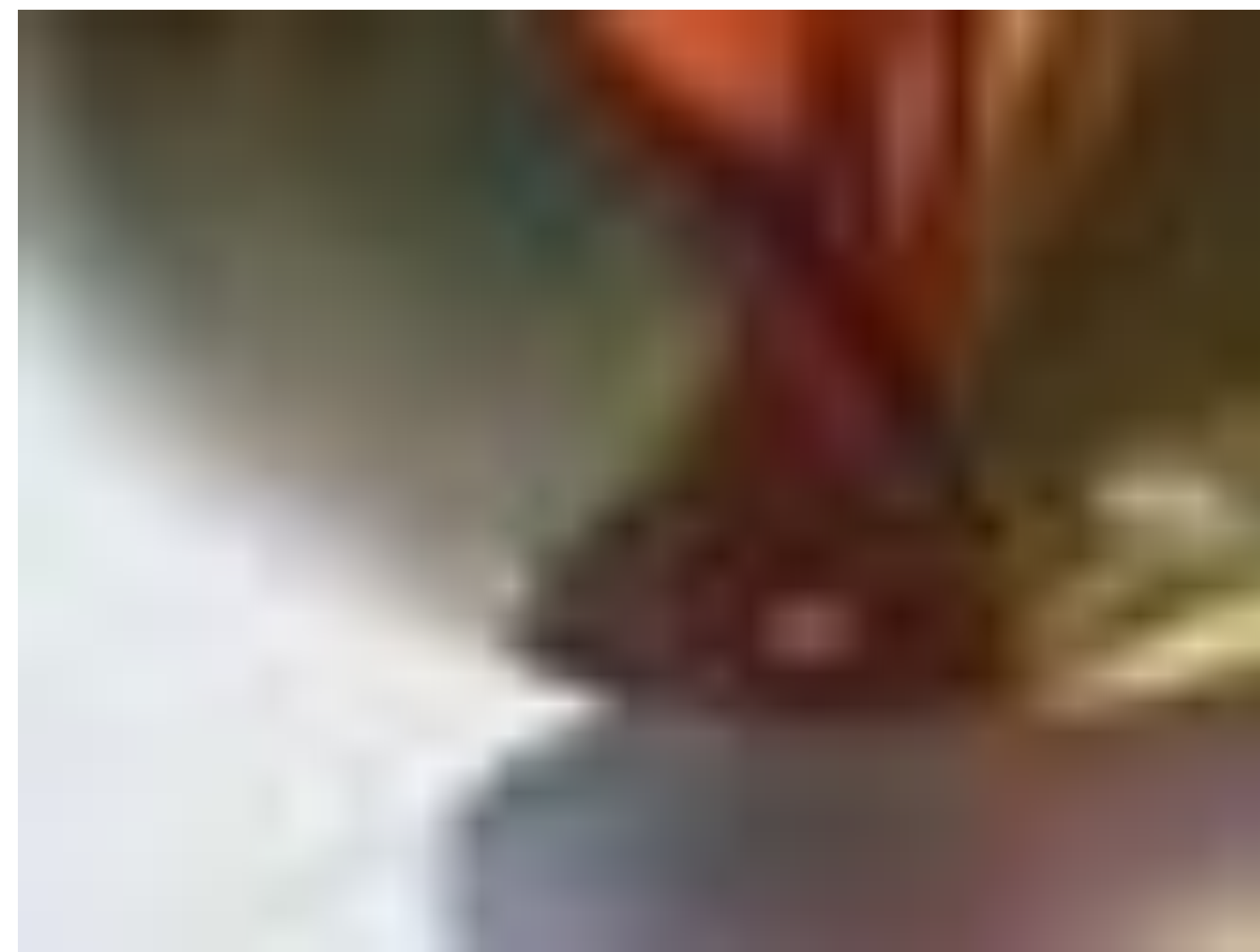
Vertical Flip



Rotation



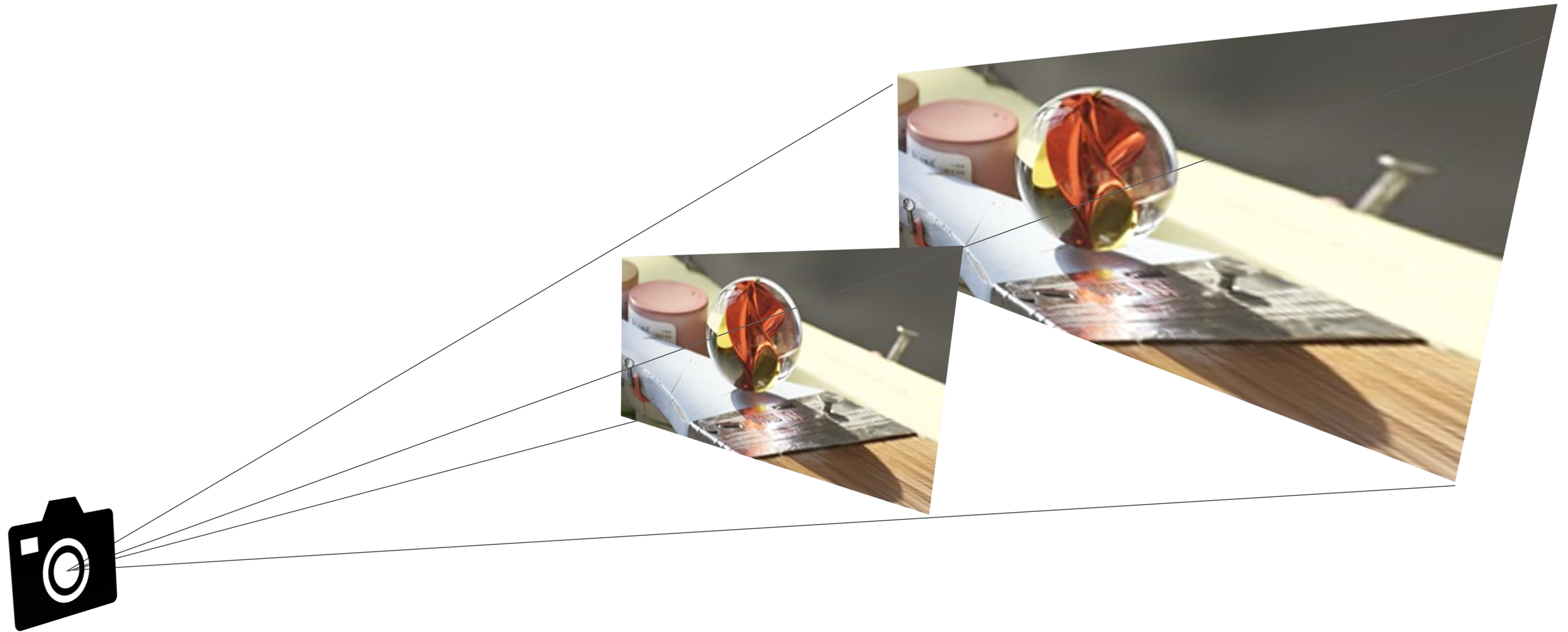
Zooming



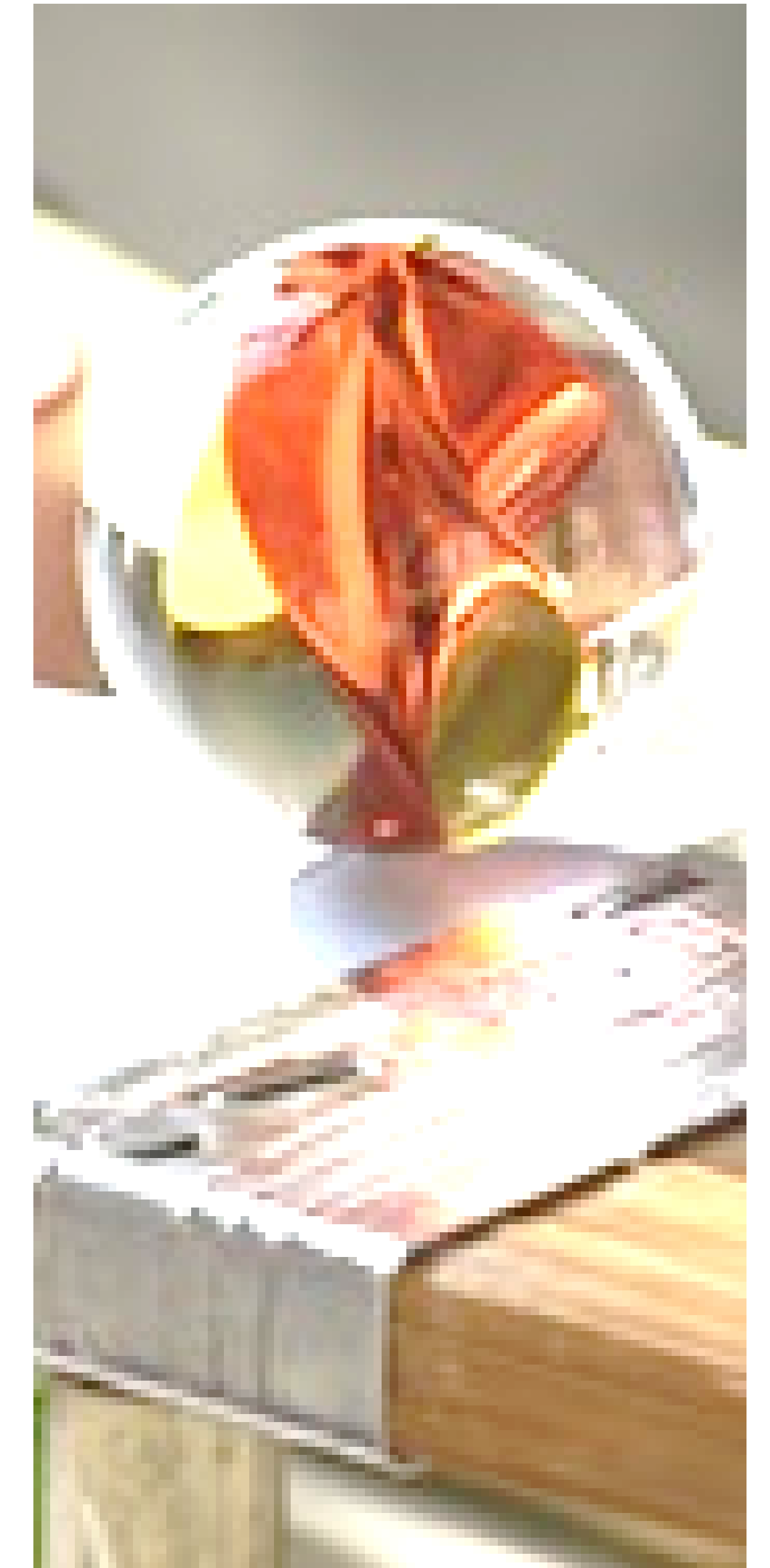
Width And Height Shifting



Homography



Brightness



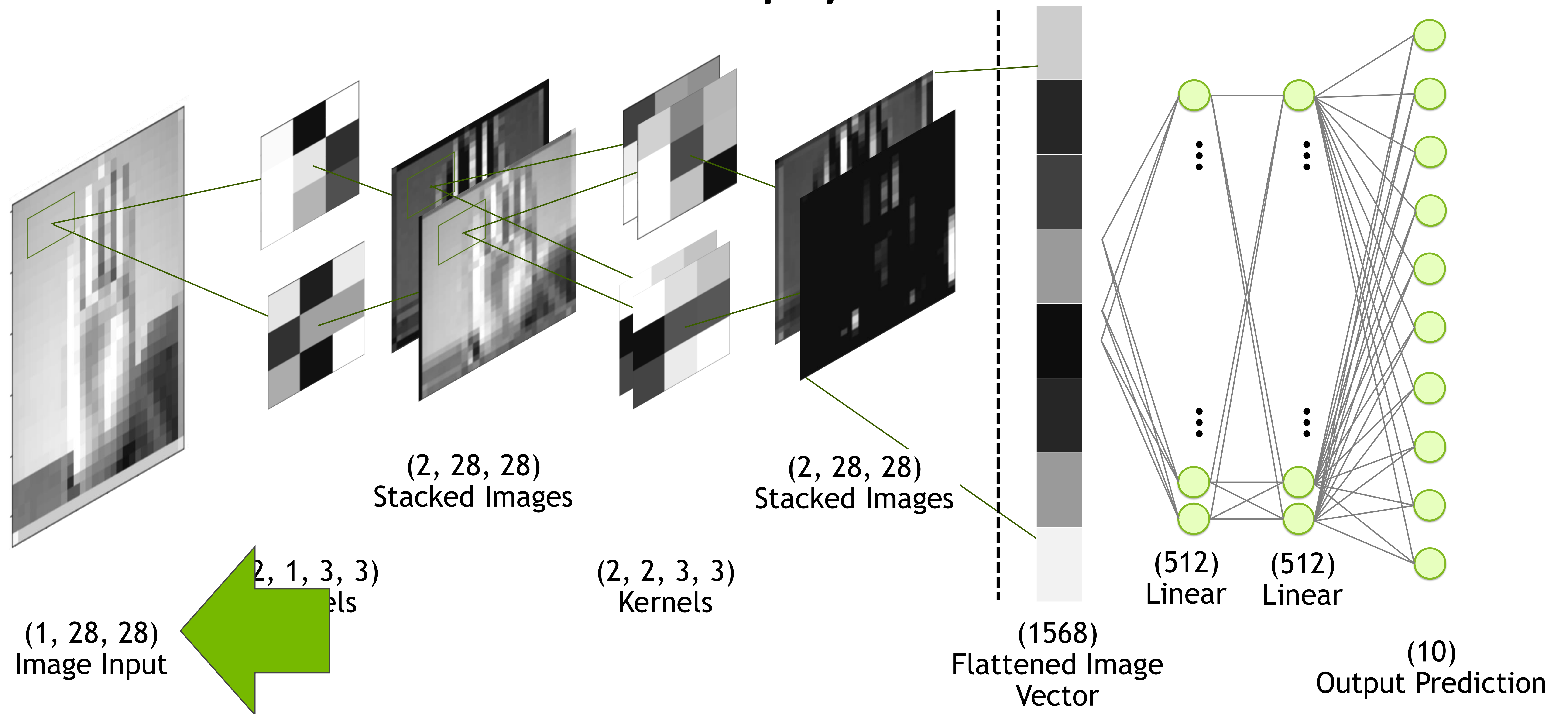
Channel Shifting





Model Deployment

Model Deployment



Model Deployment

Training Batch
Input

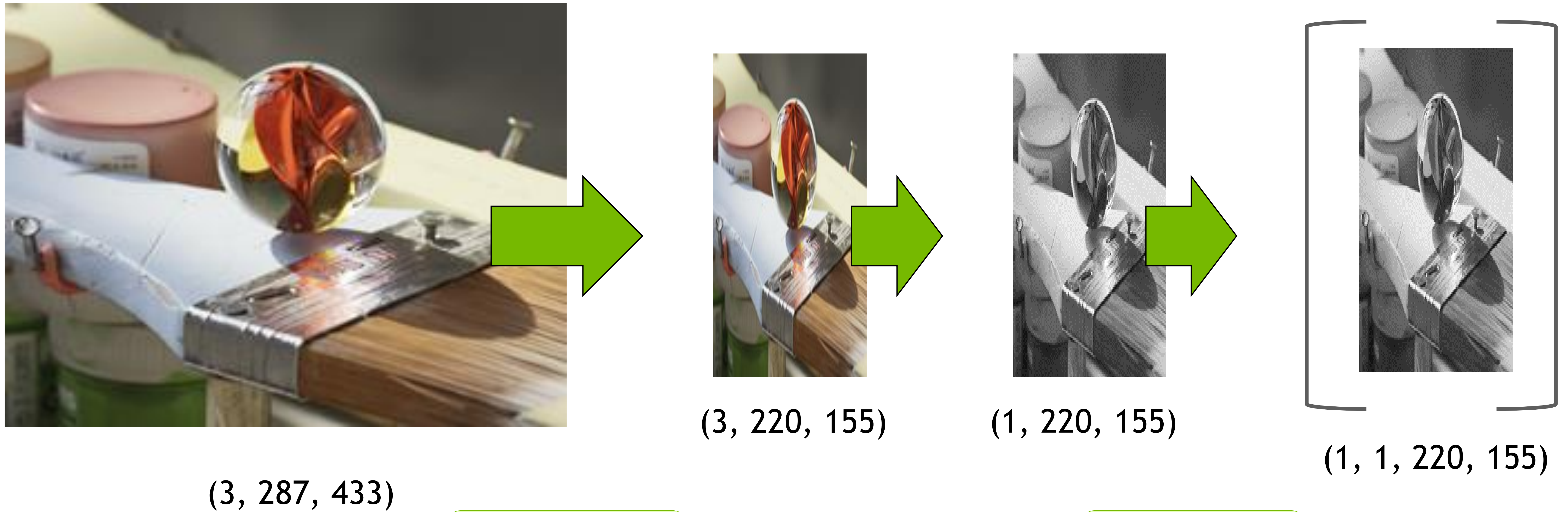


Convolution

Max Pooling

...

Model Deployment





Let's Try It Out!

