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

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Analysis

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

Solution

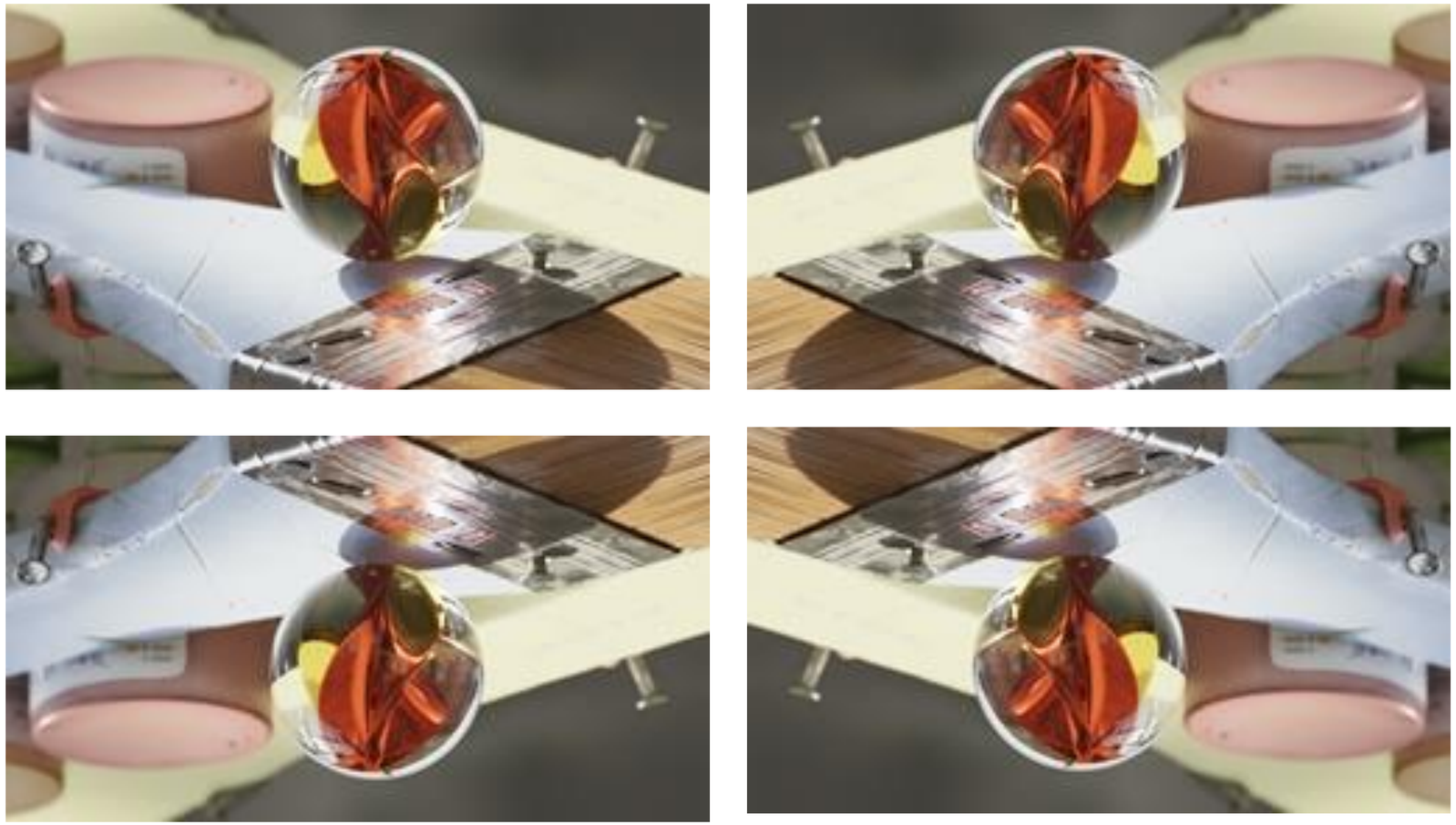
- Clean data provides better examples
- Dataset variety helps the model generalize

Data Augmentation

Data Augmentation

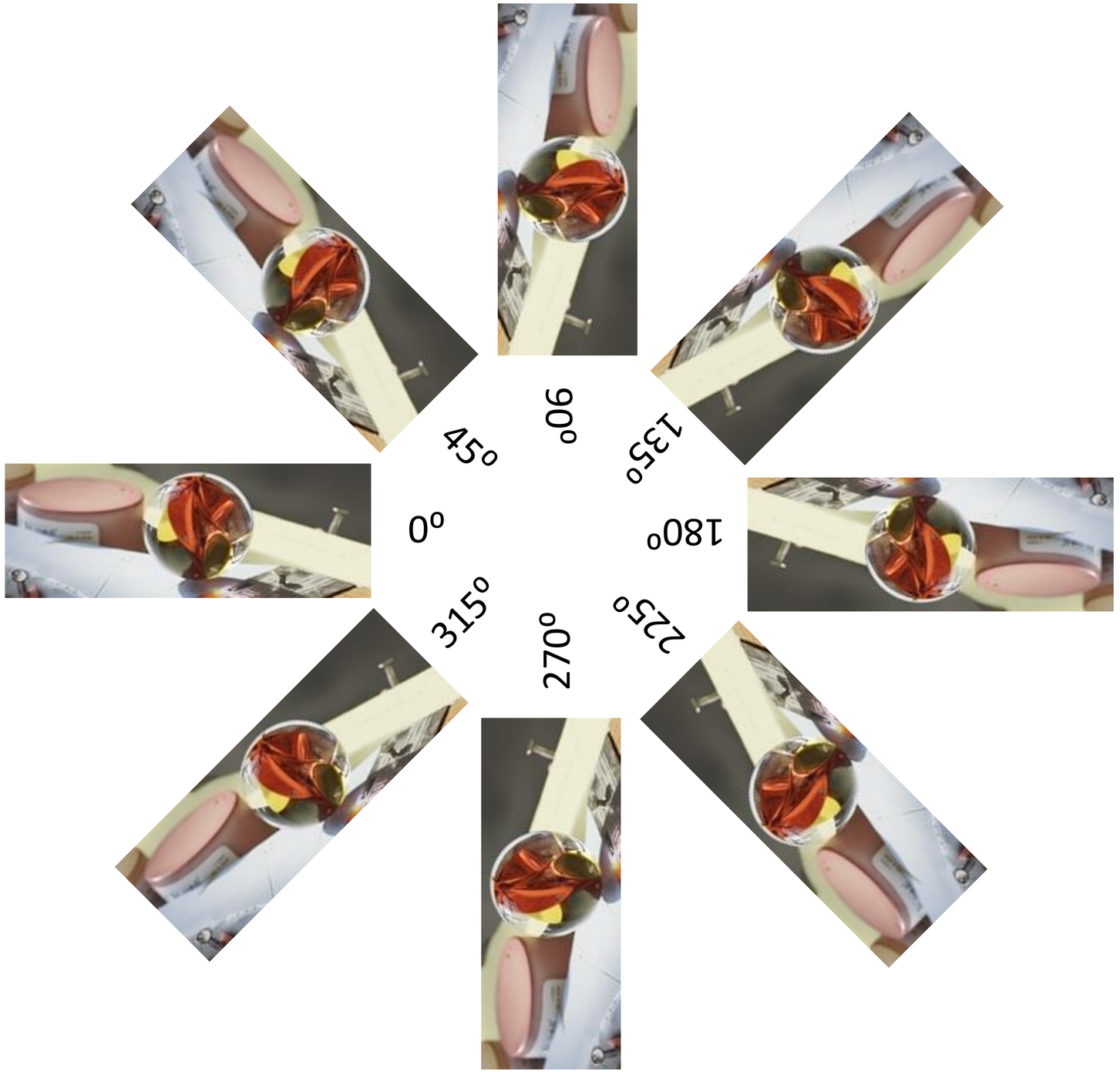
Image Flipping

Horizontal Flip



Vertical Flip

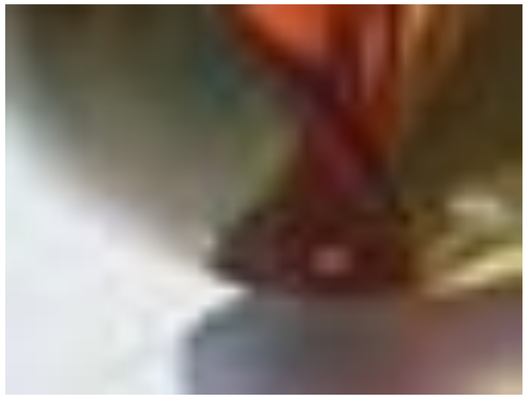
Rotation

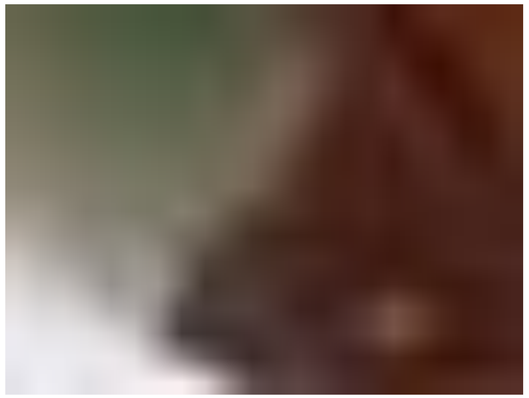


Zooming



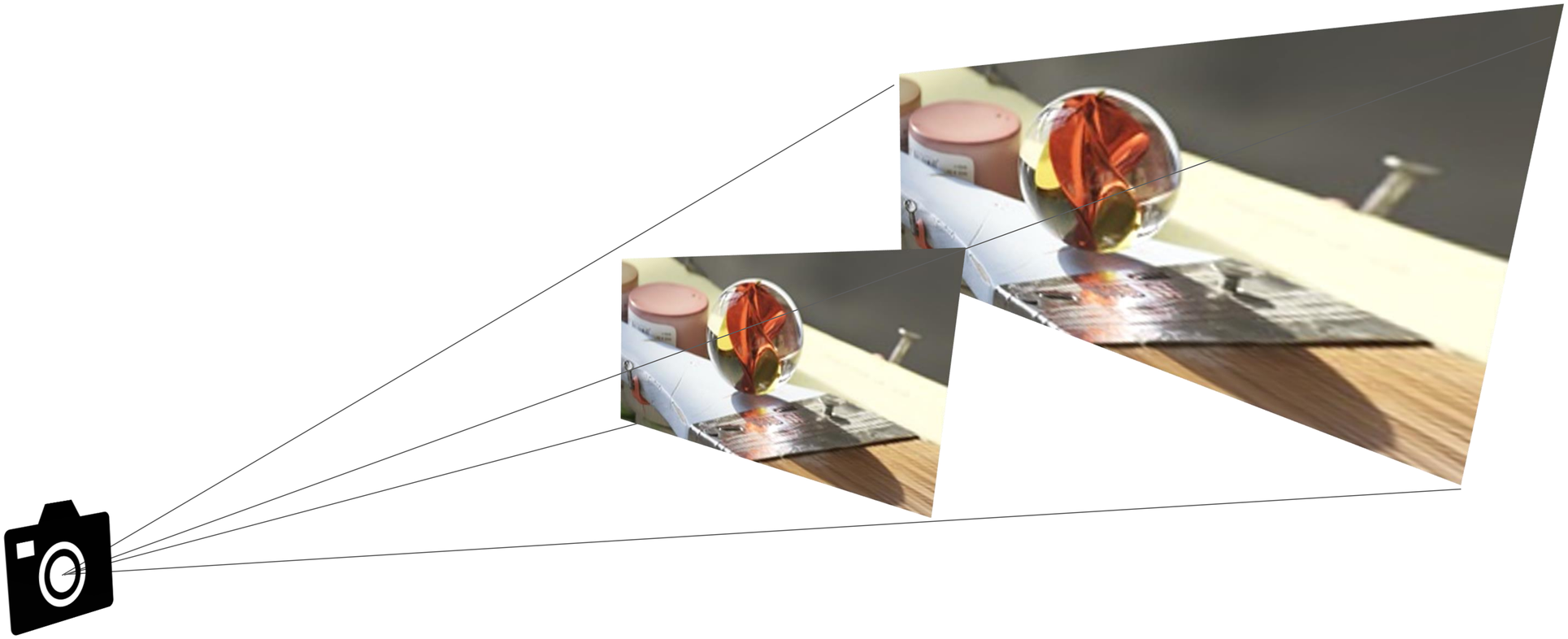




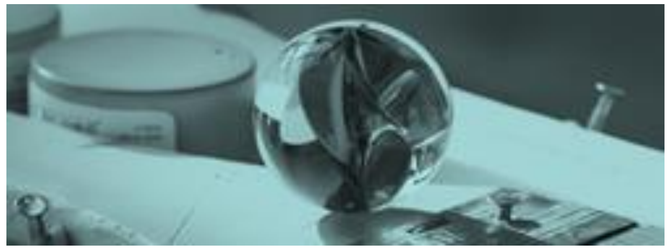
Width And Height Shifting

Homography



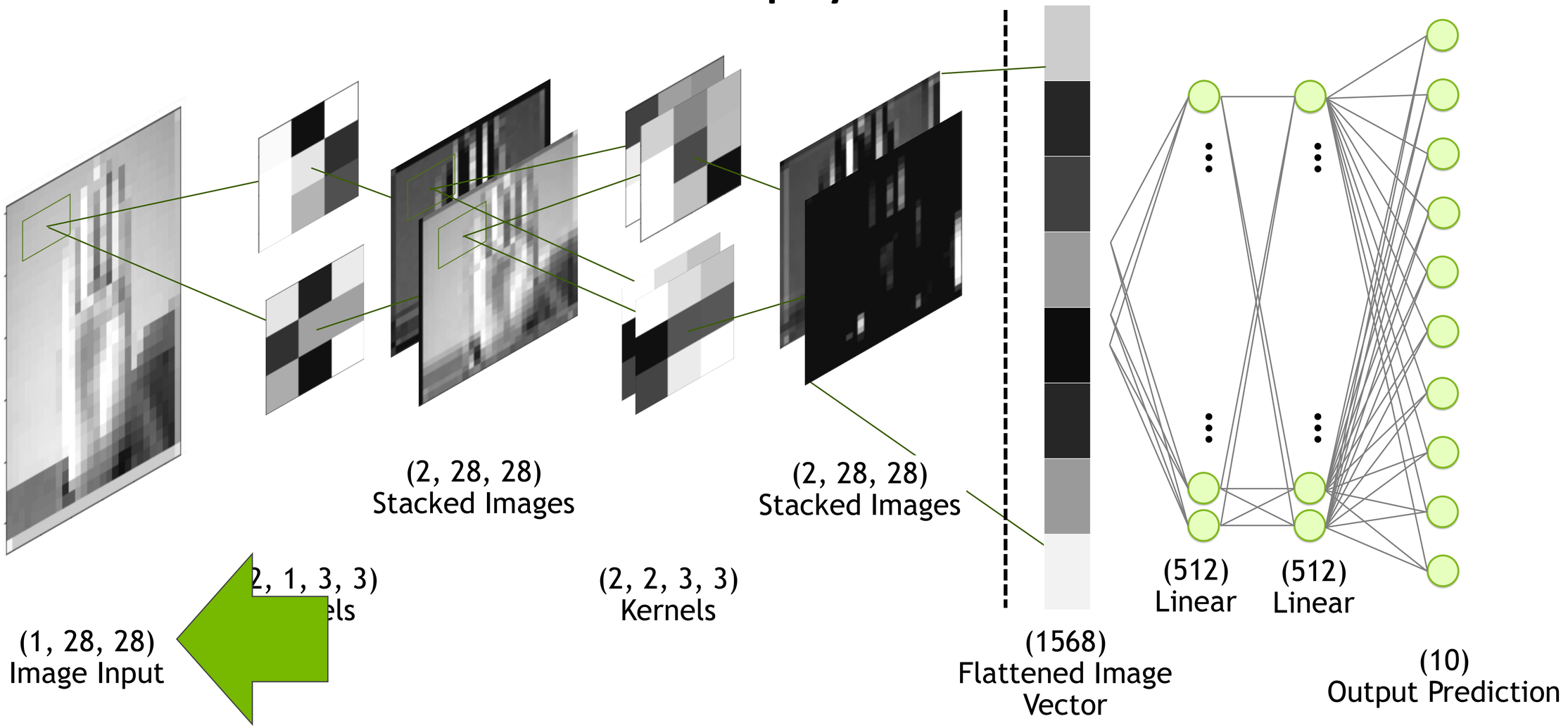
Brightness

Channel Shifting



Model Deployment

Model Deployment



Model Deployment

Training Batch Input

Convolution

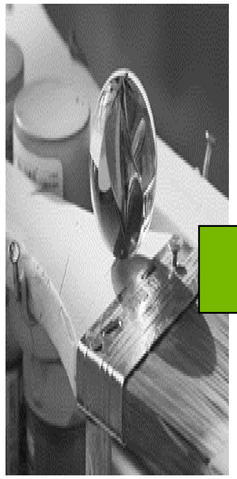
Max Pooling

...

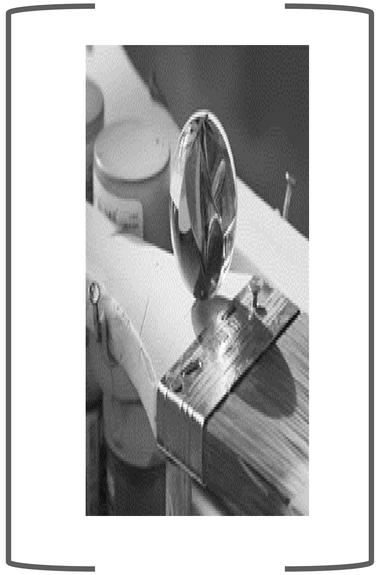
Model Deployment

(3, 287, 433)

(3, 220, 155)



(1, 220, 155)



(1, 1, 220, 155)

Resize

Greyscale

“Batch”

Let’s Try It Out!