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

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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
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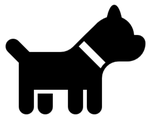
Solution

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



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Data Augmentation

Data Augmentation

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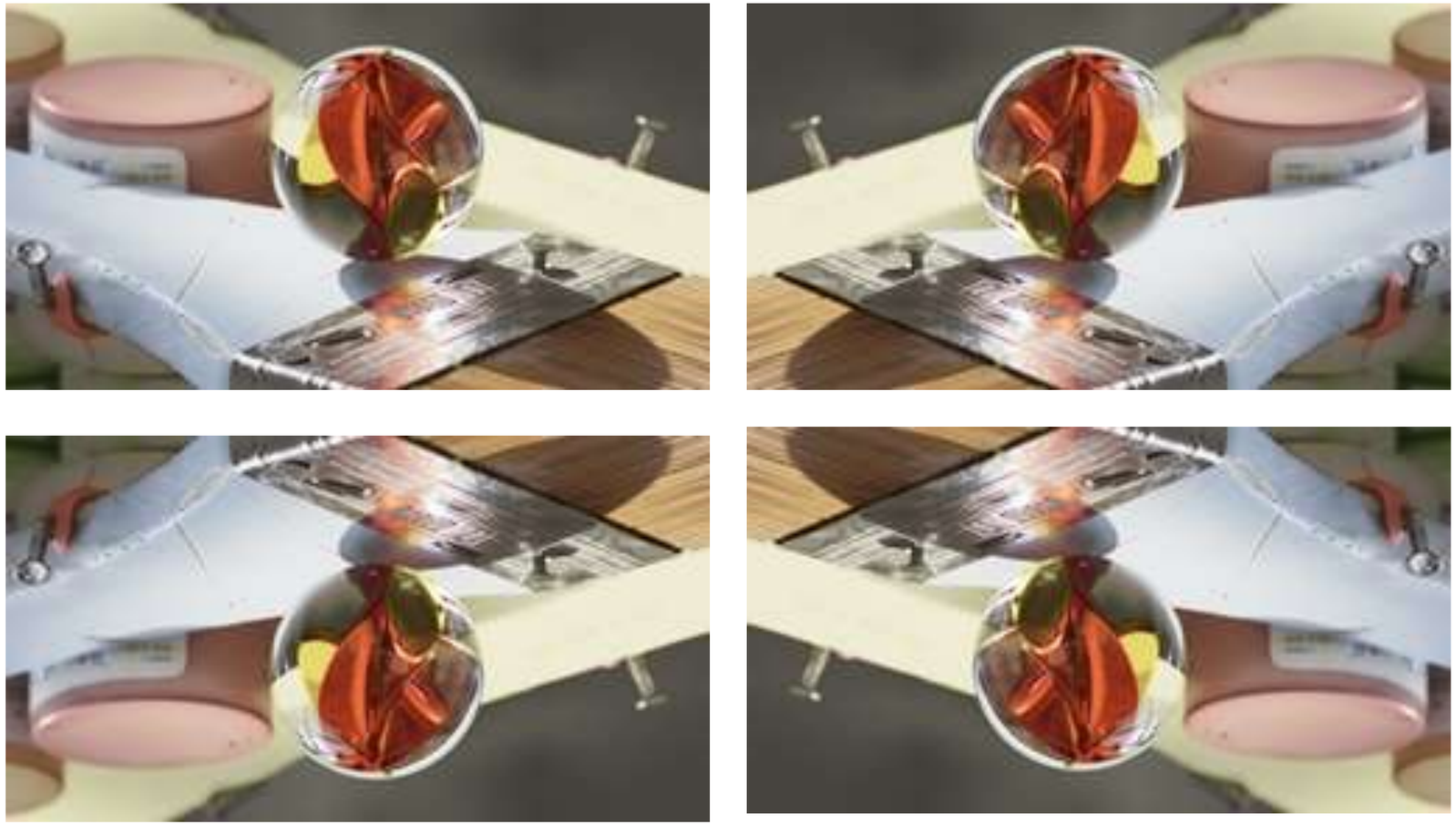
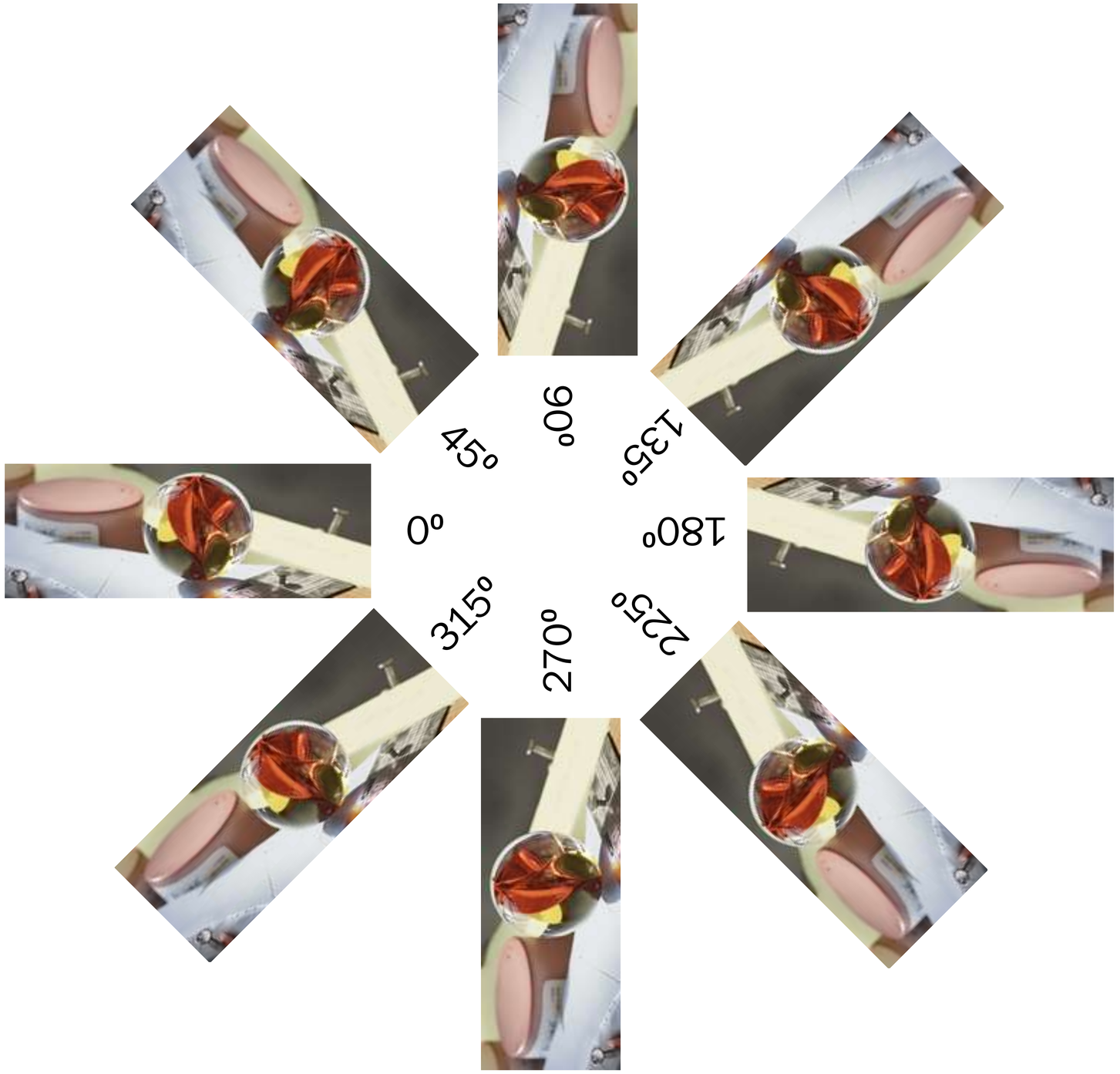
Image Flipping

Horizontal Flip

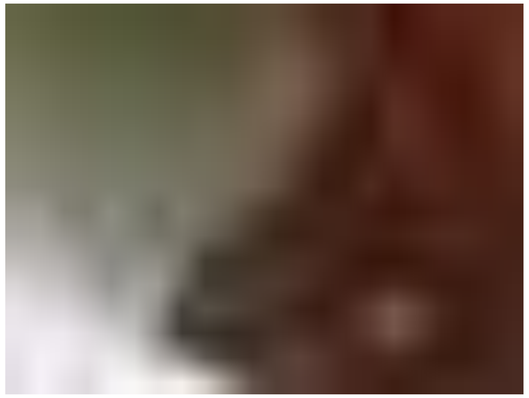


Vertical Flip

Rotation



Zooming



Width And Height Shifting

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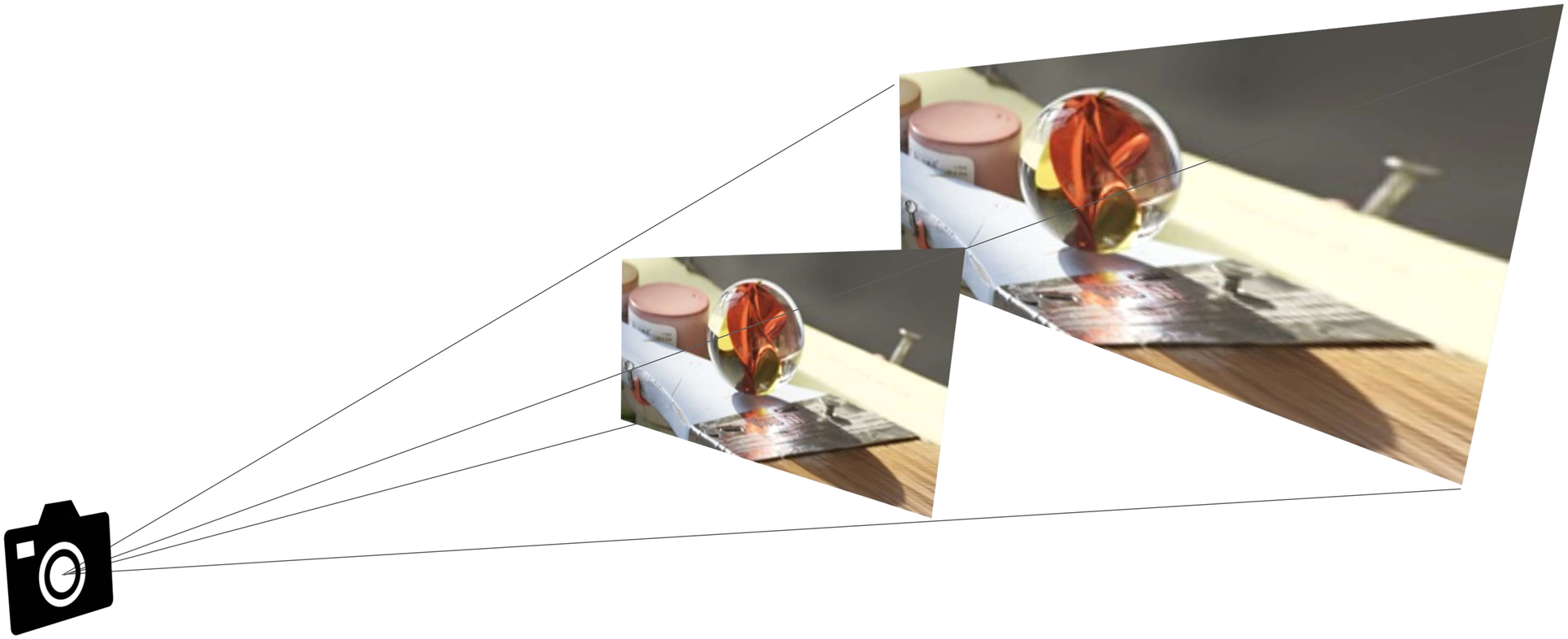
Homography



Brightness

Channel Shifting

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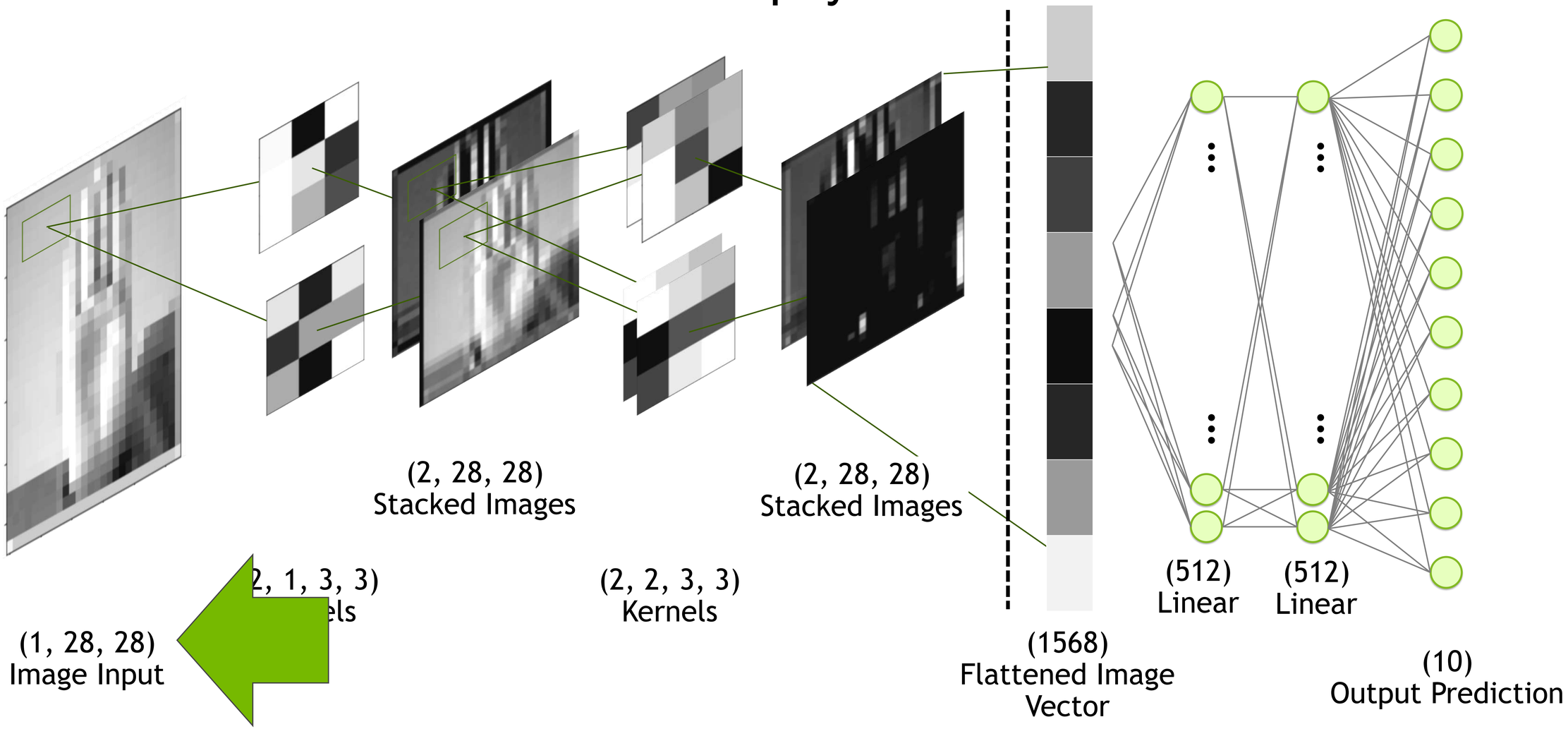
Model Deployment

Model Deployment



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Model Deployment

Training Batch Input

Convolution

Max Pooling

...

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Model Deployment

(3, 287, 433)

(3, 220, 155)

(1, 220, 155)

(1, 1, 220, 155)

Resize

Greyscale

“Batch”

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Let’s Try It Out!