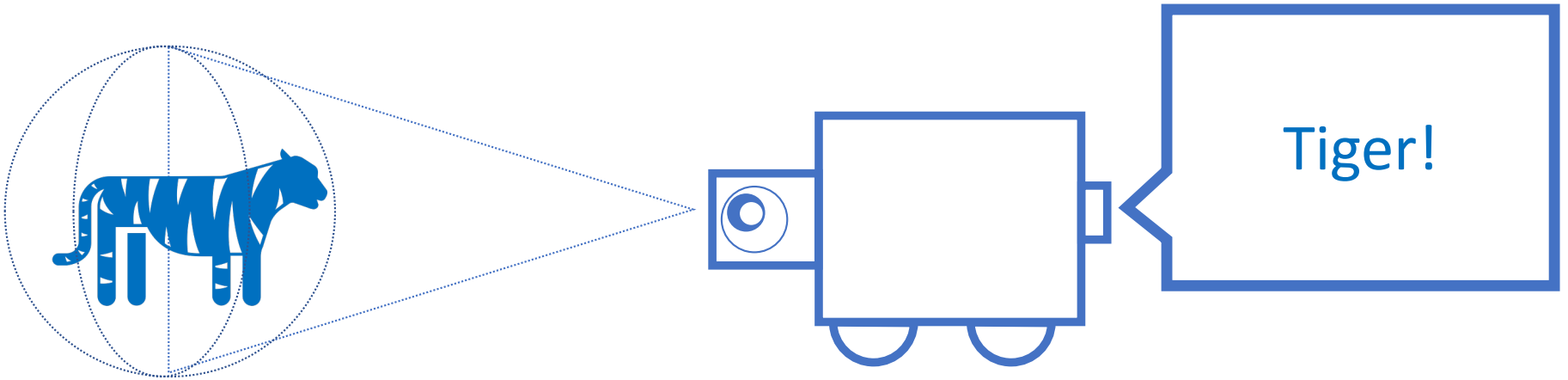

Intro to Machine Learning
Jonny Kalambay

What is Machine Learning

An application of artificial intelligence (AI) that provides systems the ability to automatically learn and improve from experience without being explicitly programmed.

What is Machine Learning



Types of Machine Learning

- Supervised Learning
- Unsupervised Learning
- Semi-Supervised Learning
- Reinforcement-Learning

Machine Learning Applications

Supervised	Unsupervised	Semi Supervised	Reinforcement

- Virtual Assistants
- Autonomous Vehicles
- Face Recognition
- Snapchat Filters
- Marketing Analysis
- Website Classification
- Social Suggestions
- Product Recommendations
- Spam Filtering
- Chatbots
- Fraud Detection
- Game AI

The Neural Network

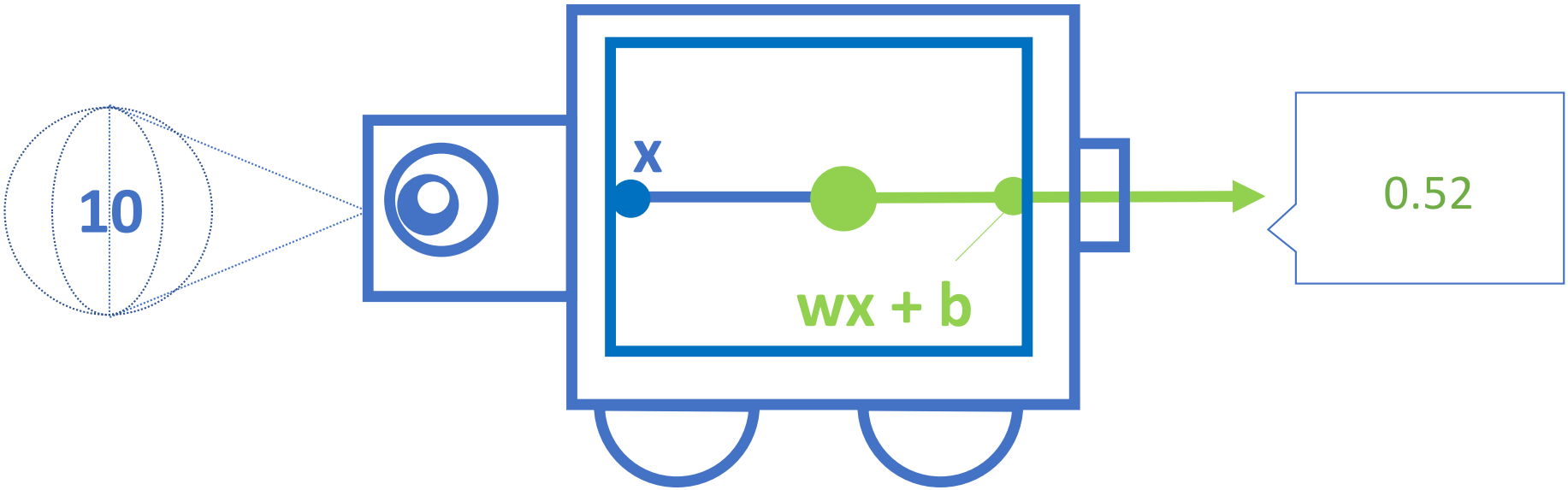
Input

Neuron

Weight

Bias

Output



The Model

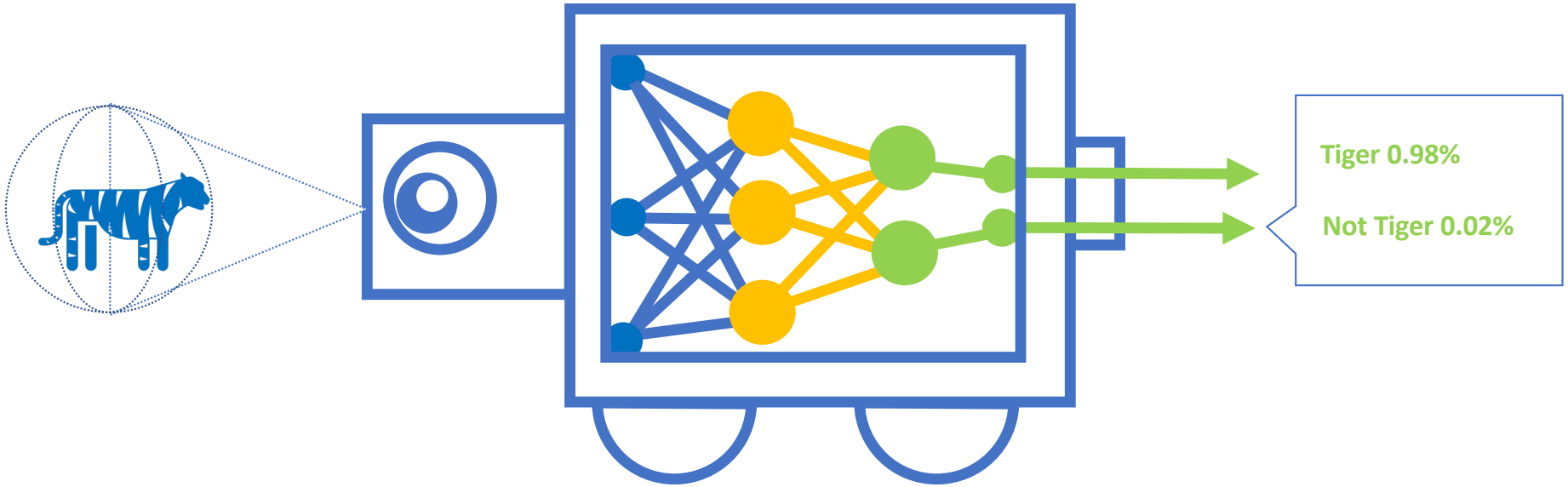
Input

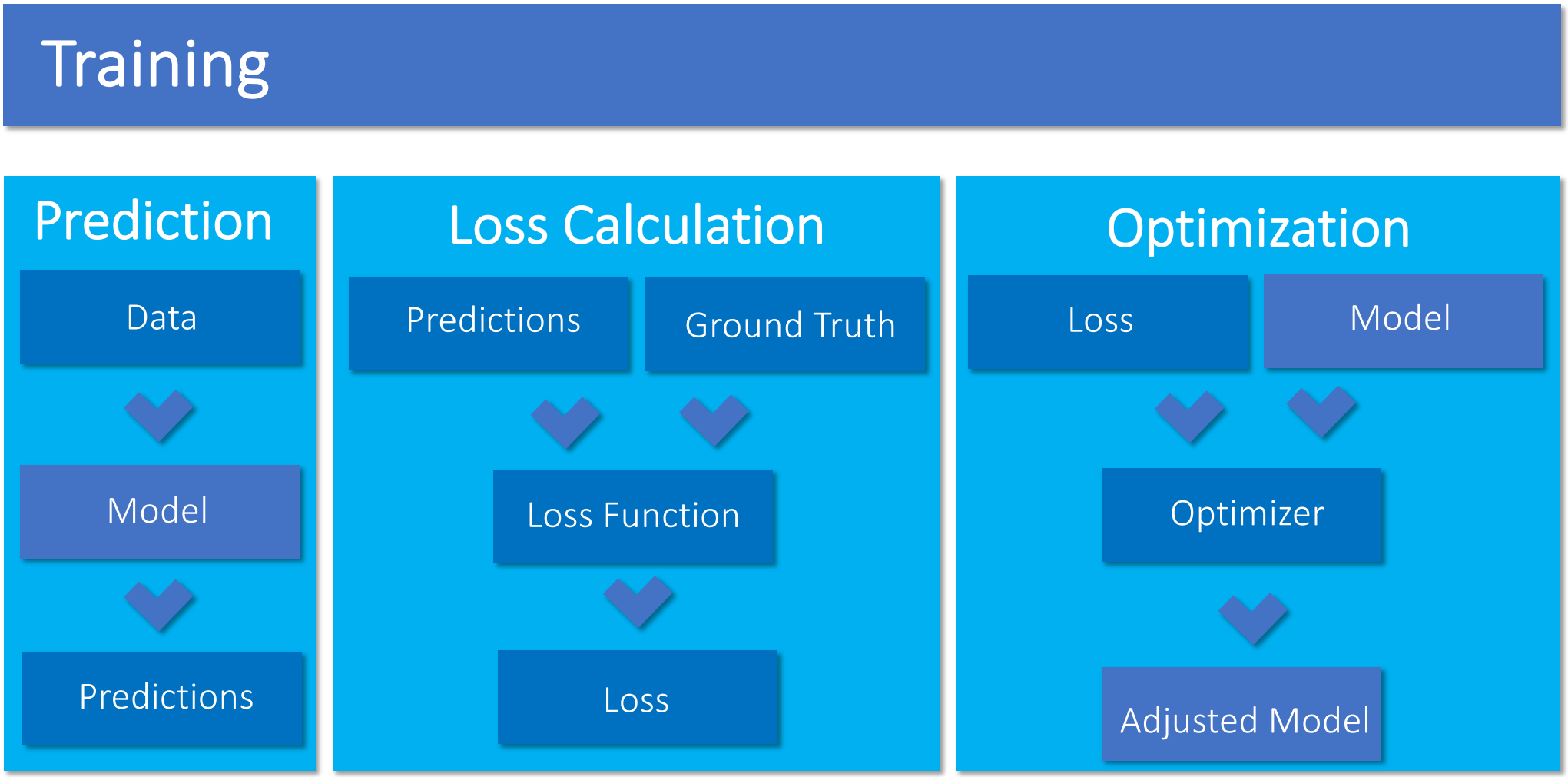
Neuron

Weight

Bias

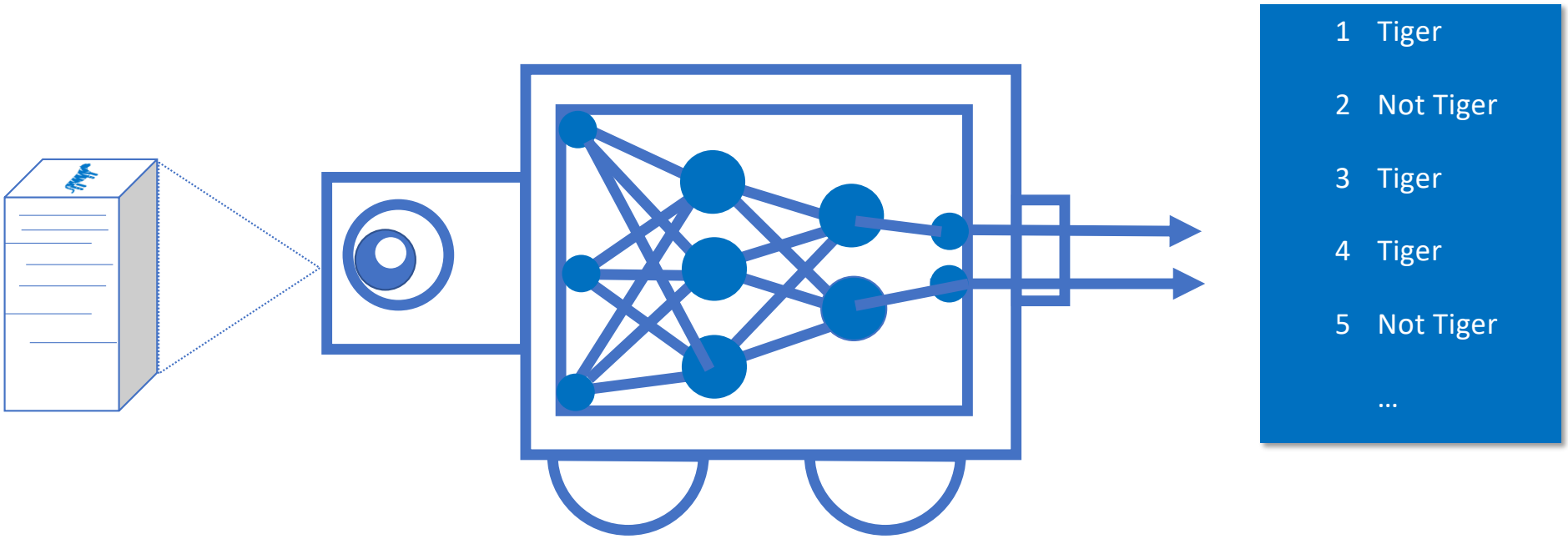
Output




Training
Prediction
Data
Model
Predictions
Loss Calculation
Predictions
Ground Truth
Loss Function
Loss
Optimization
Loss
Model
Optimizer
Adjusted Model

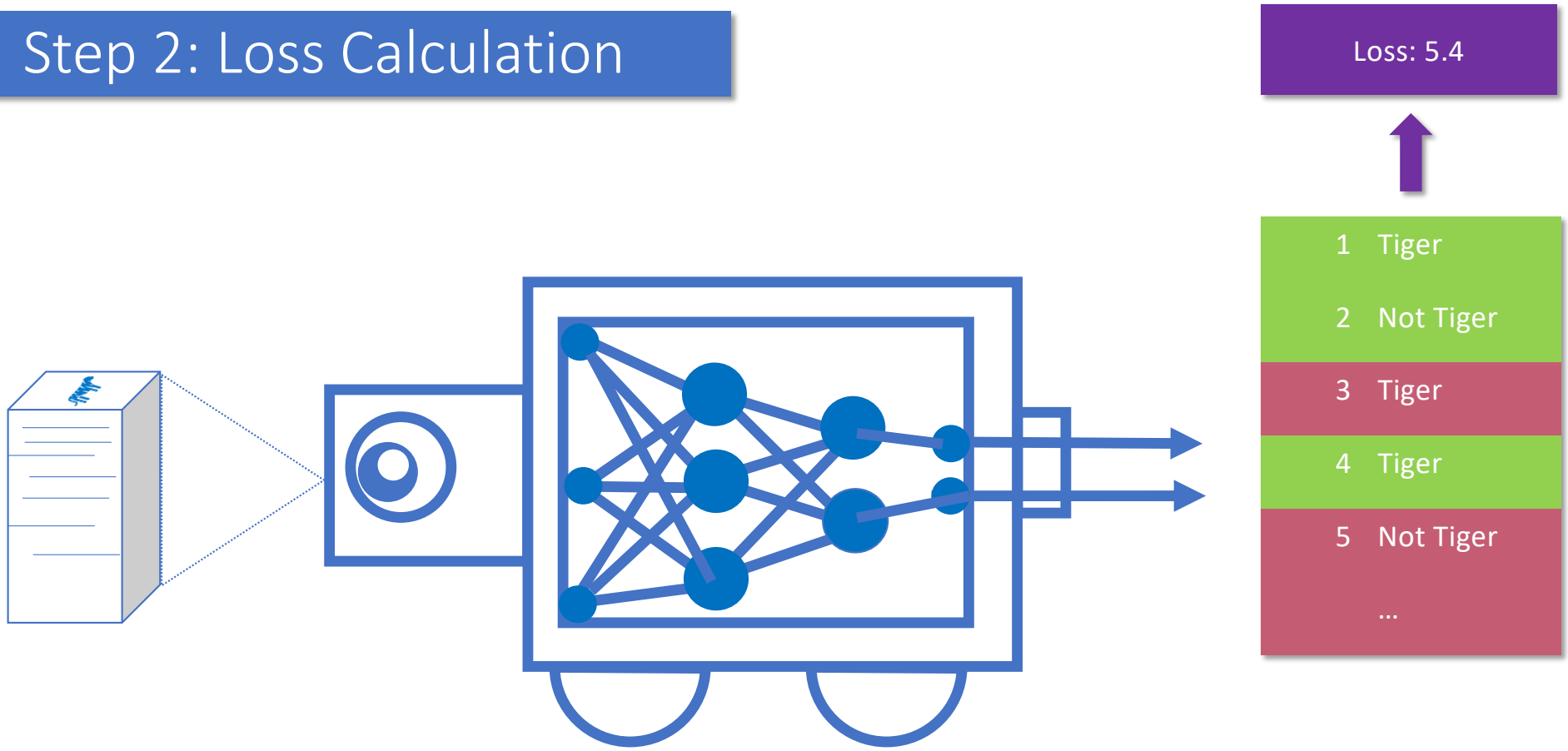
Training

Step 1: Prediction



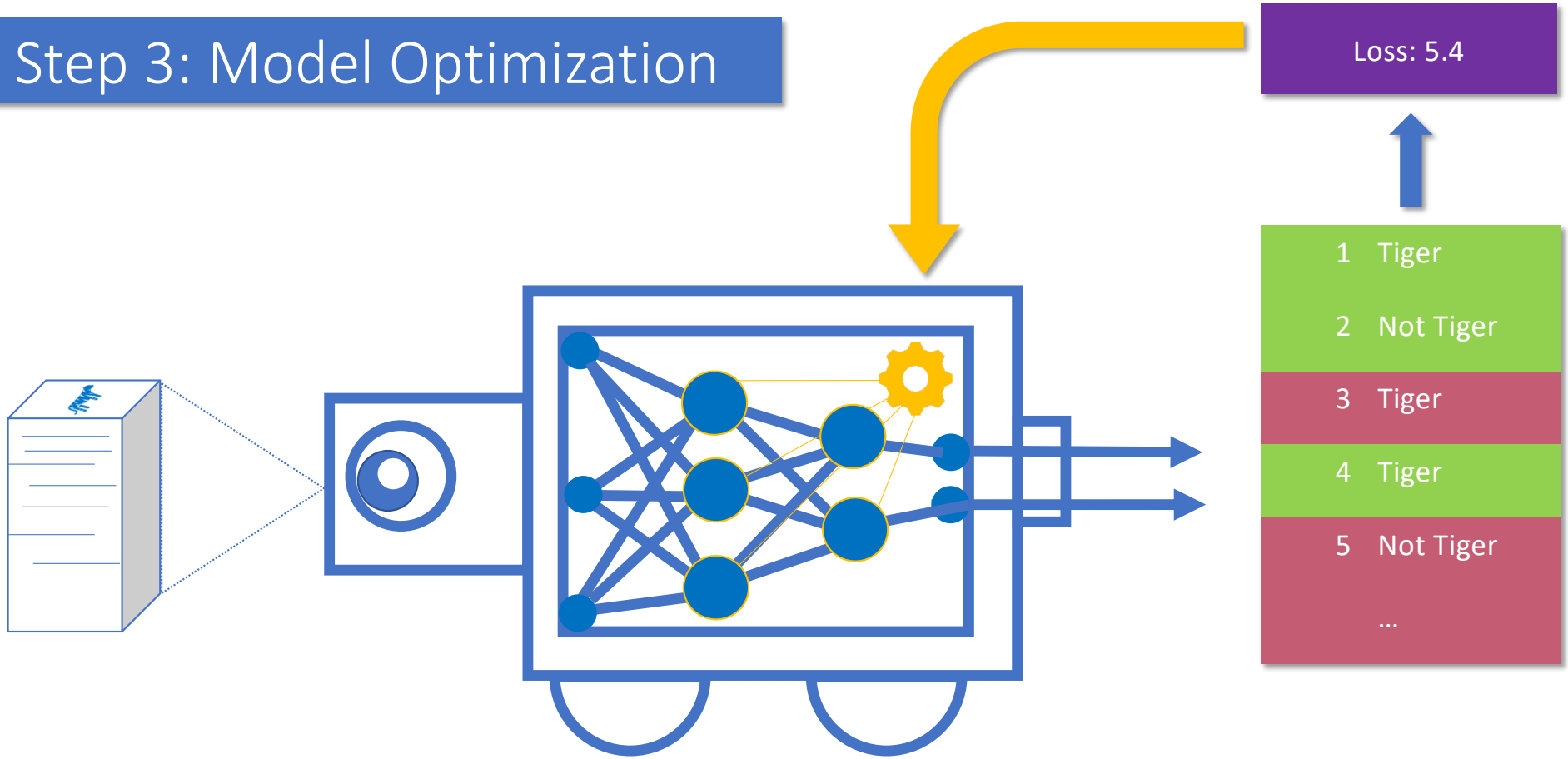
Training

Step 2: Loss Calculation

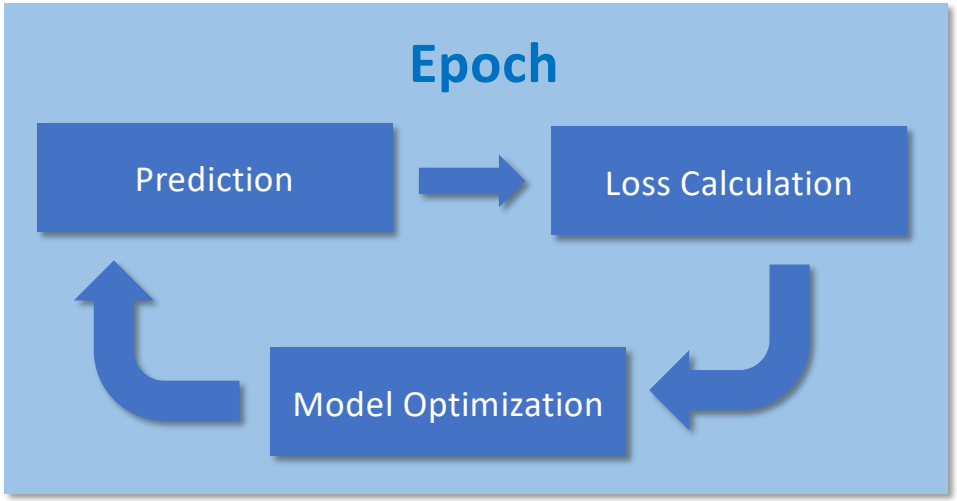


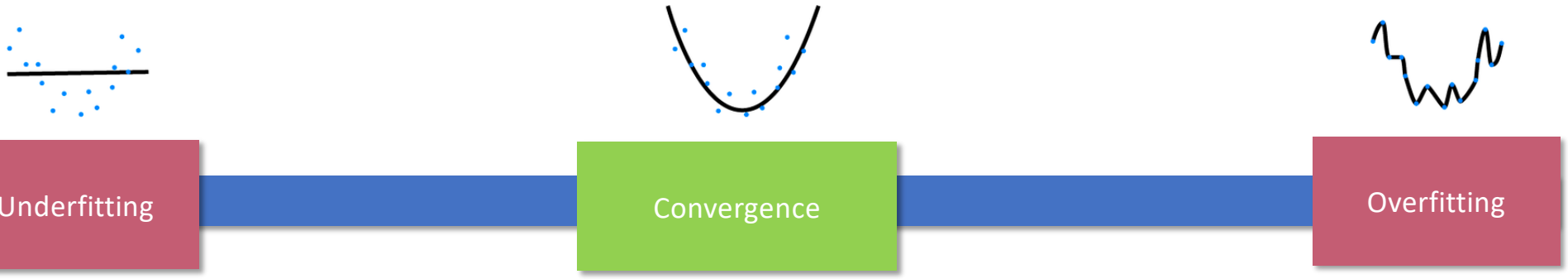
Training

Step 3: Model Optimization

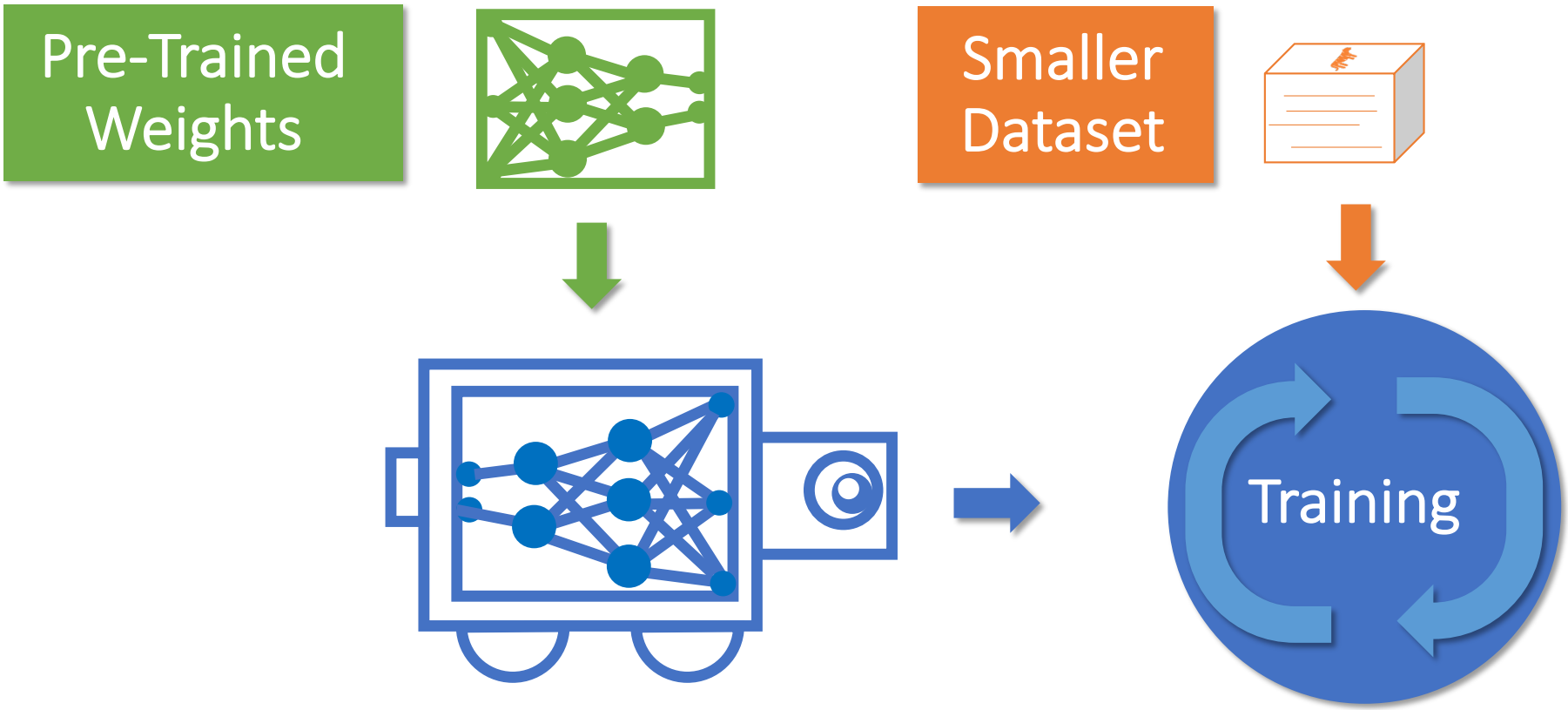


Training Steps



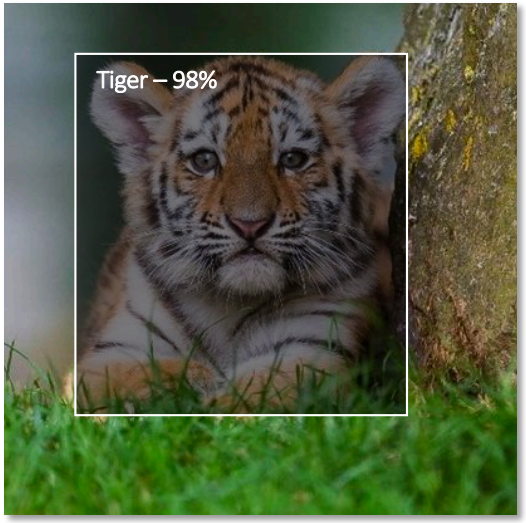


Transfer Learning



Beyond Image Classification

Multi-Label



Object Detection

Image Segmentation

Examples

Linear Regression

https://colab.research.google.com/drive/15x7P7ivrkYOzYivD3xRfYW1XfdEsMNhe

Image Classification

https://colab.research.google.com/github/tensorflow/examples/blob/master/community/en/flowers_tf_lite.ipynb

Where to Learn More

Online Courses

- Fast AI - https://www.fast.ai/
- Stanford - Machine Learning - https://www.coursera.org/learn/machine-learning
- Udacity - https://www.udacity.com/

Books

- Hands-On Machine Learning with Scikit-Learn and TensorFlow: Concepts, Tools, and Techniques to Build Intelligent Systems


Thank You
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