

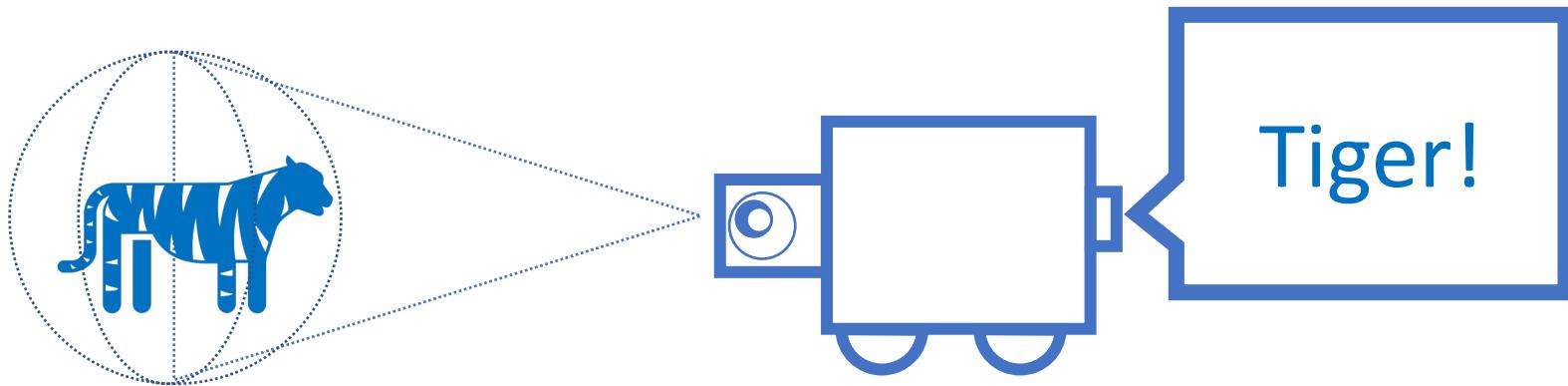
A photograph of a lush green forest. In the foreground, there's a rocky stream bed with large, mossy stones. The background is filled with tall, thin trees, likely cedars or similar conifers, creating a dense canopy. Sunlight filters through the leaves, creating bright highlights and deep shadows.

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.



Types of Machine Learning

Supervised Learning

Unsupervised Learning

Semi-Supervised Learning

Reinforcement-Learning

Machine Learning Applications

Supervised

Unsupervised

Semi Supervised

Reinforcement

Virtual Assistants

Social Suggestions

Autonomous Vehicles

Product Recommendations

Face Recognition

Spam Filtering

Snapchat Filters

Chatbots

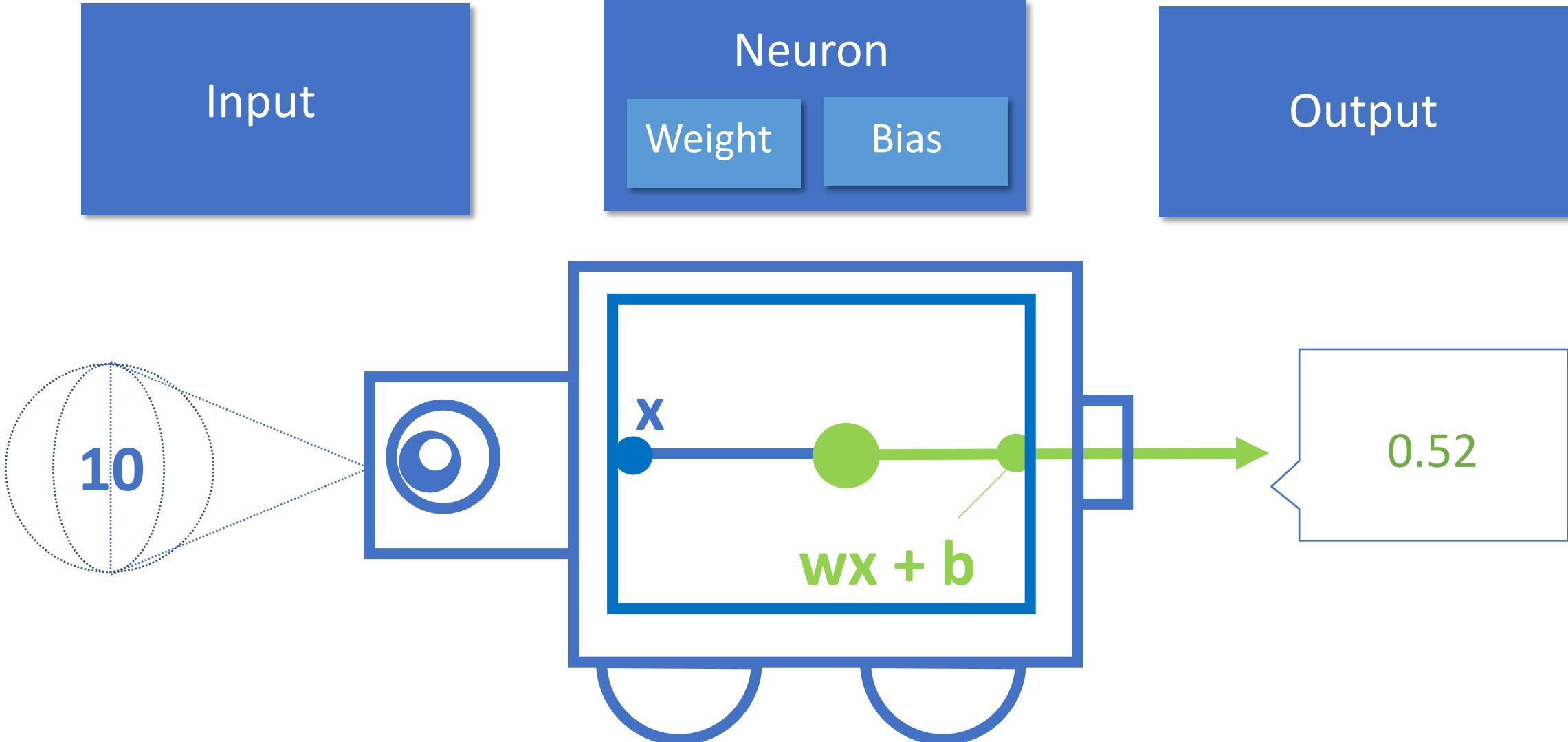
Marketing Analysis

Fraud Detection

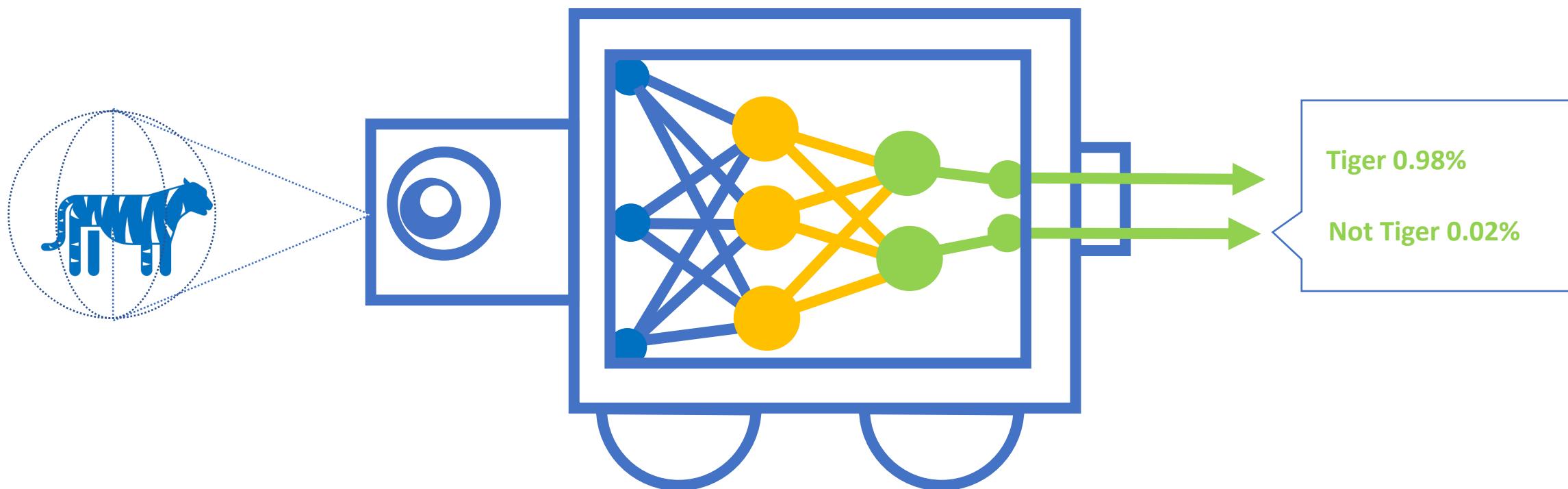
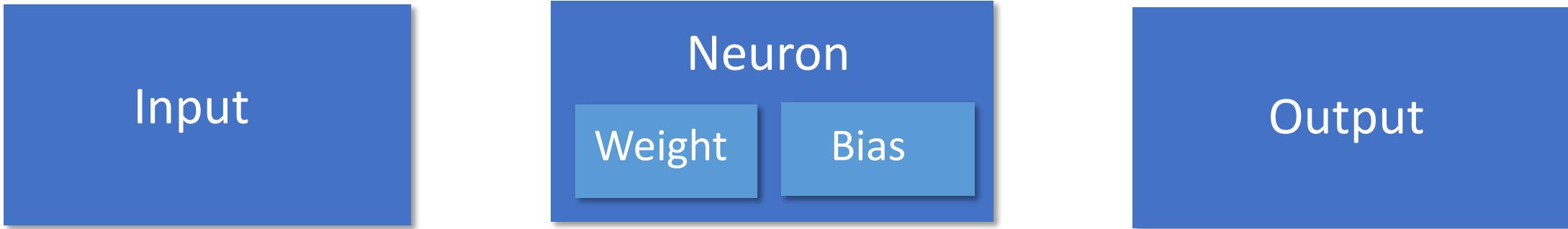
Website Classification

Game AI

The Neural Network



The Model



Training

Prediction

Data



Model



Predictions

Loss Calculation

Predictions



Ground Truth

Loss Function



Loss

Optimization

Loss



Model



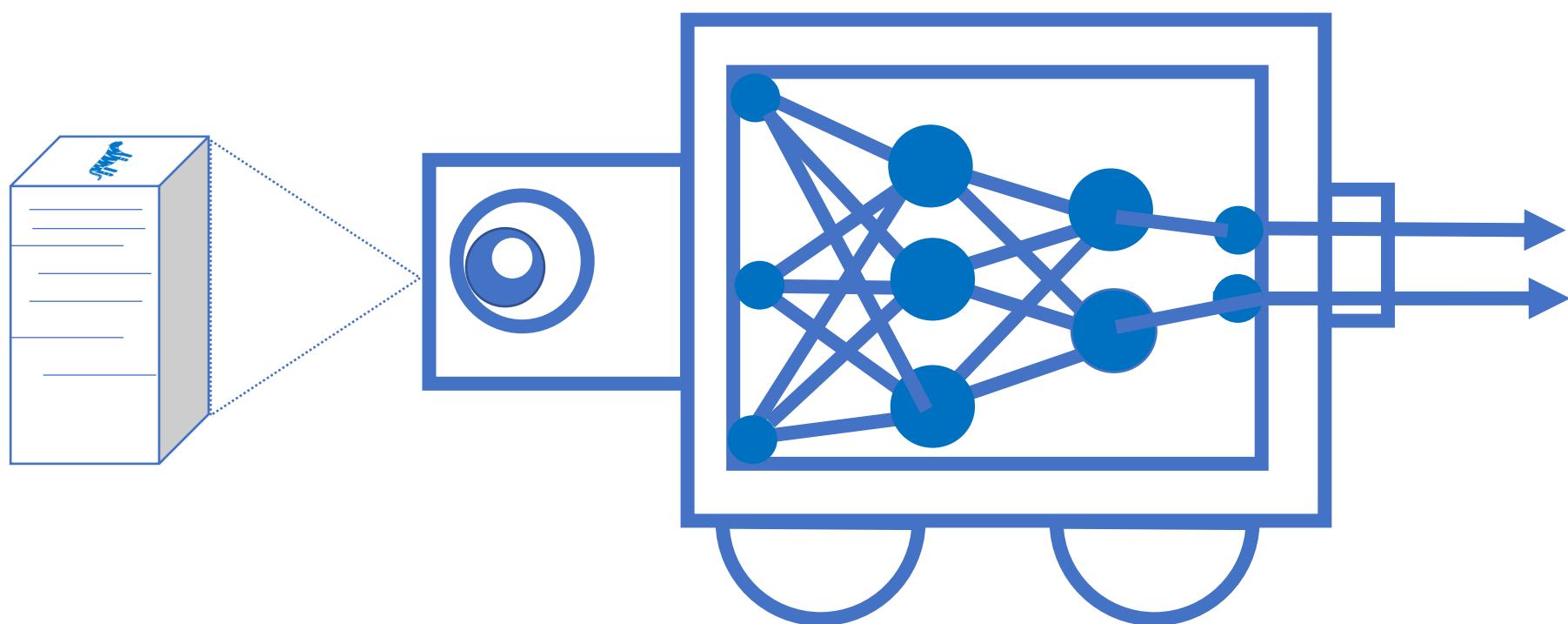
Optimizer



Adjusted Model

Training

Step 1: Prediction

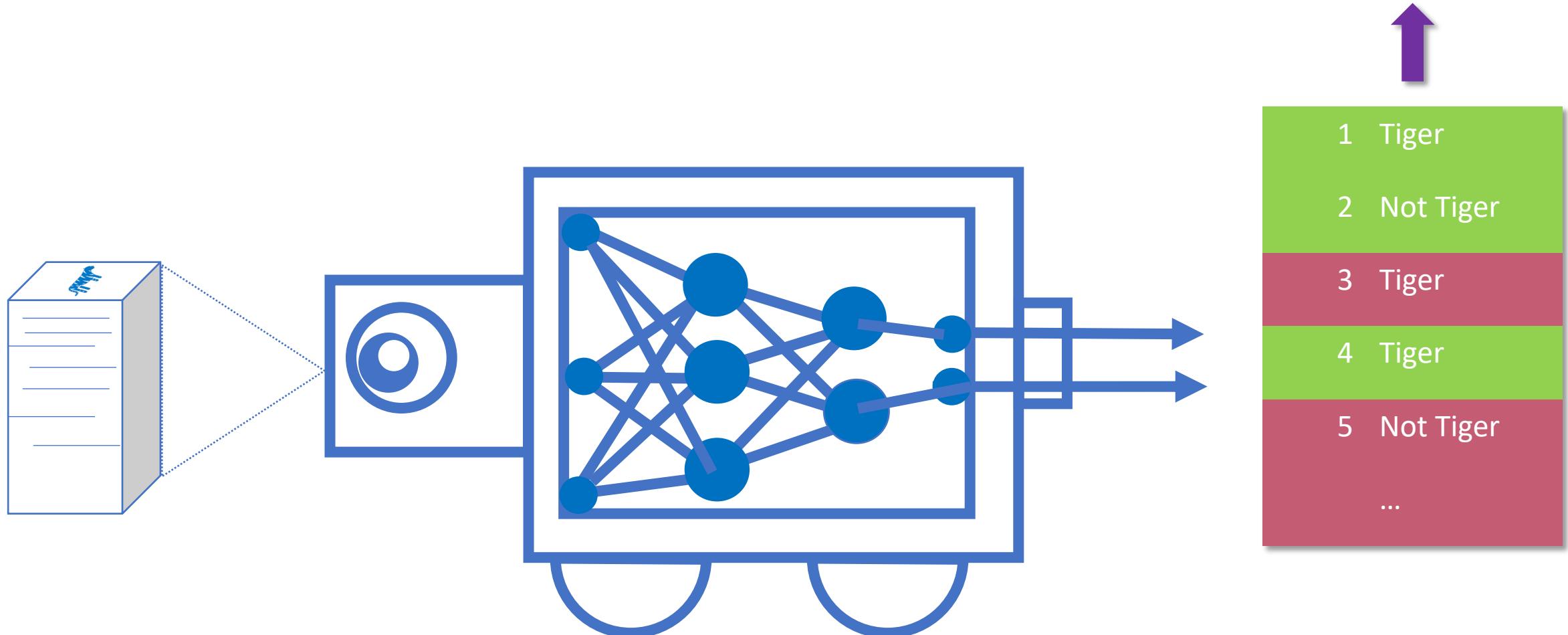


- 1 Tiger
- 2 Not Tiger
- 3 Tiger
- 4 Tiger
- 5 Not Tiger
- ...

Training

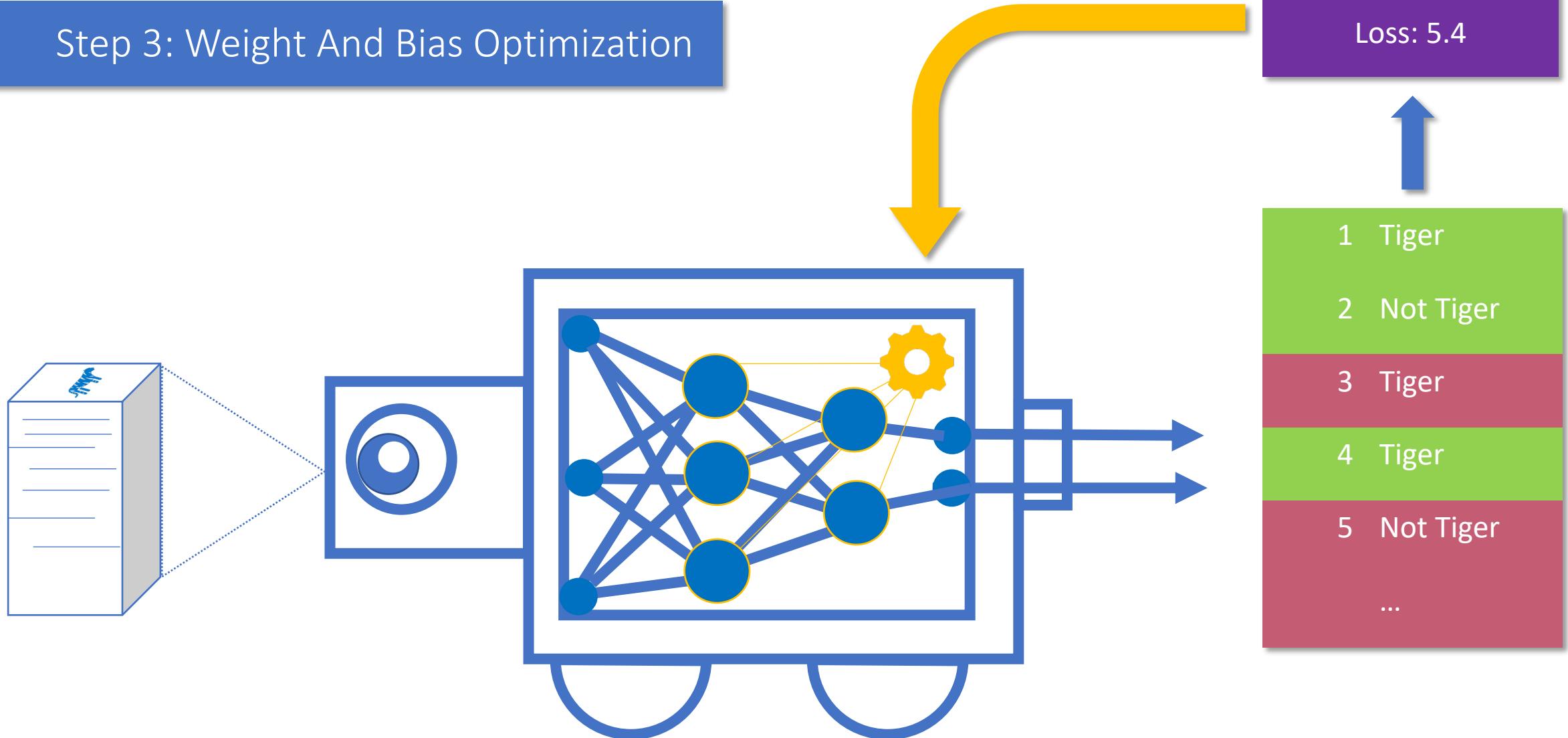
Step 2: Loss Calculation

Loss: 5.4

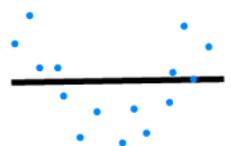
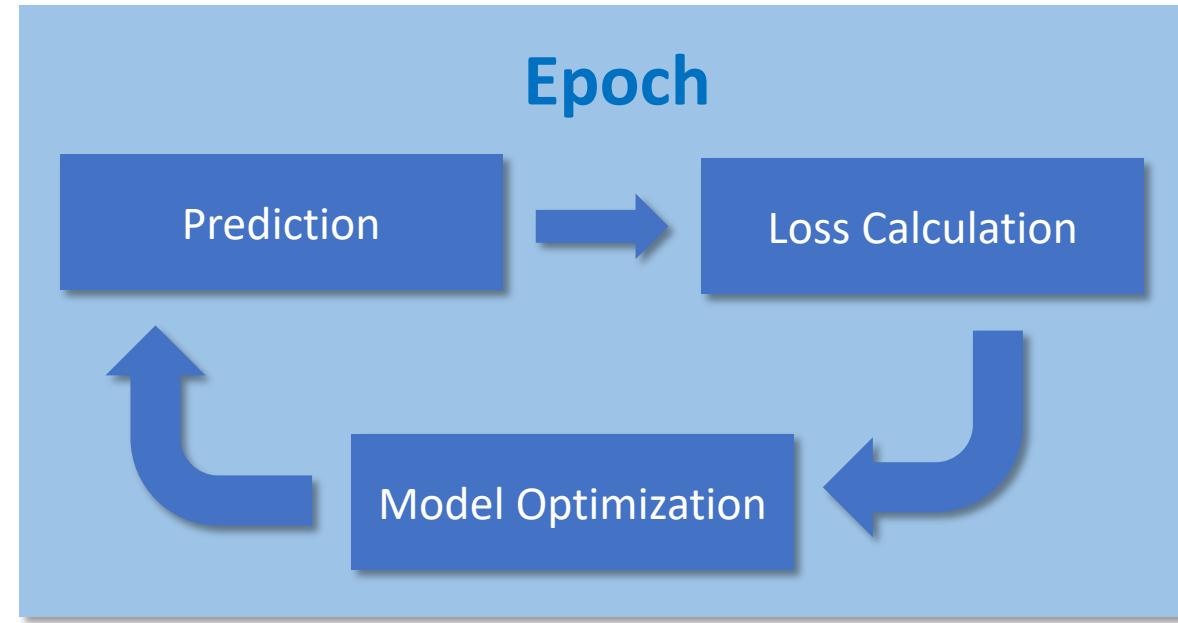


Training

Step 3: Weight And Bias Optimization



Training Steps



Underfitting

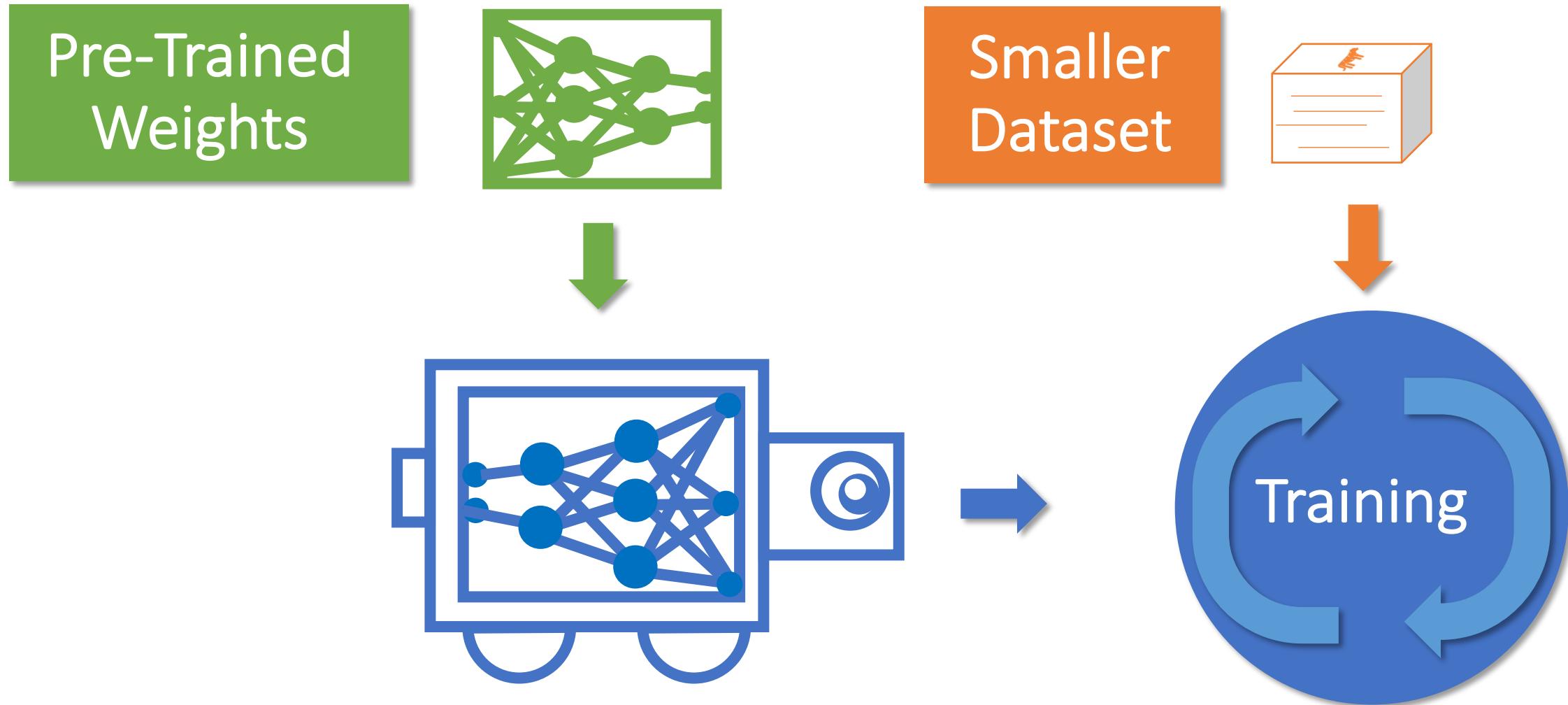


Convergence



Overfitting

Transfer Learning



Examples

Linear Regression

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

Image Classification

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

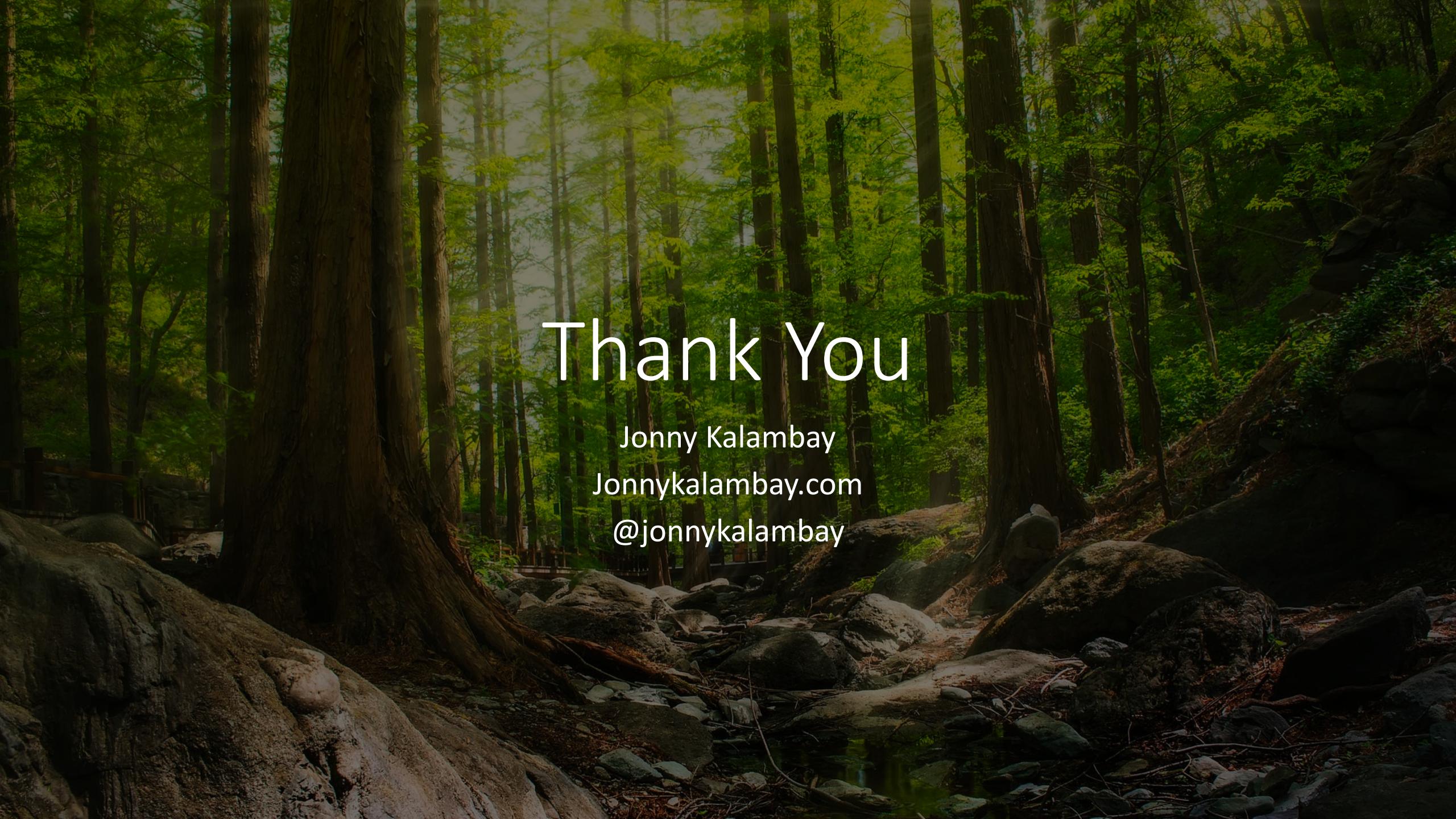
Where to Learn More

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

A photograph of a lush green forest. In the foreground, there's a rocky stream bed with large, mossy stones. The background is filled with tall, thin trees, likely cedars or similar conifers, their trunks creating vertical lines against a bright sky.

Thank You

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