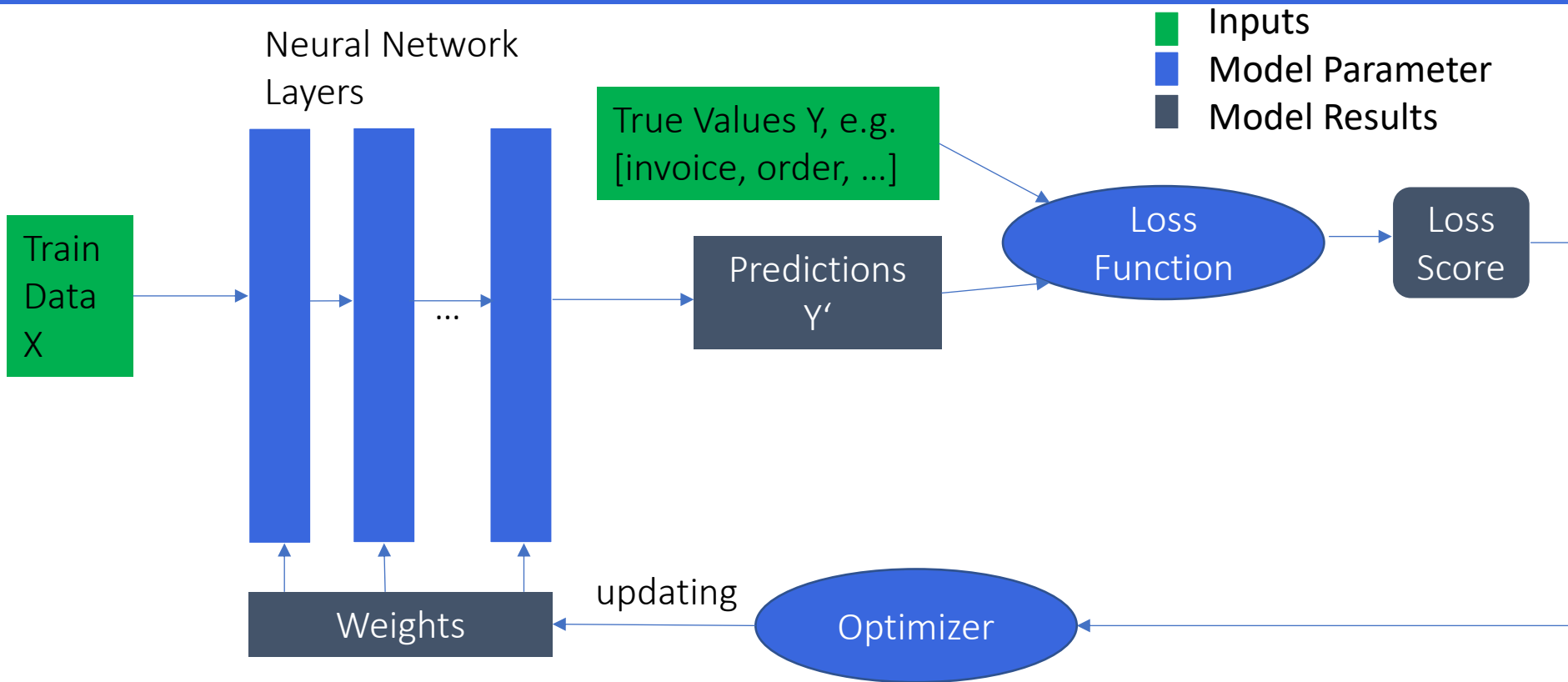


# Zero-Shot Classification

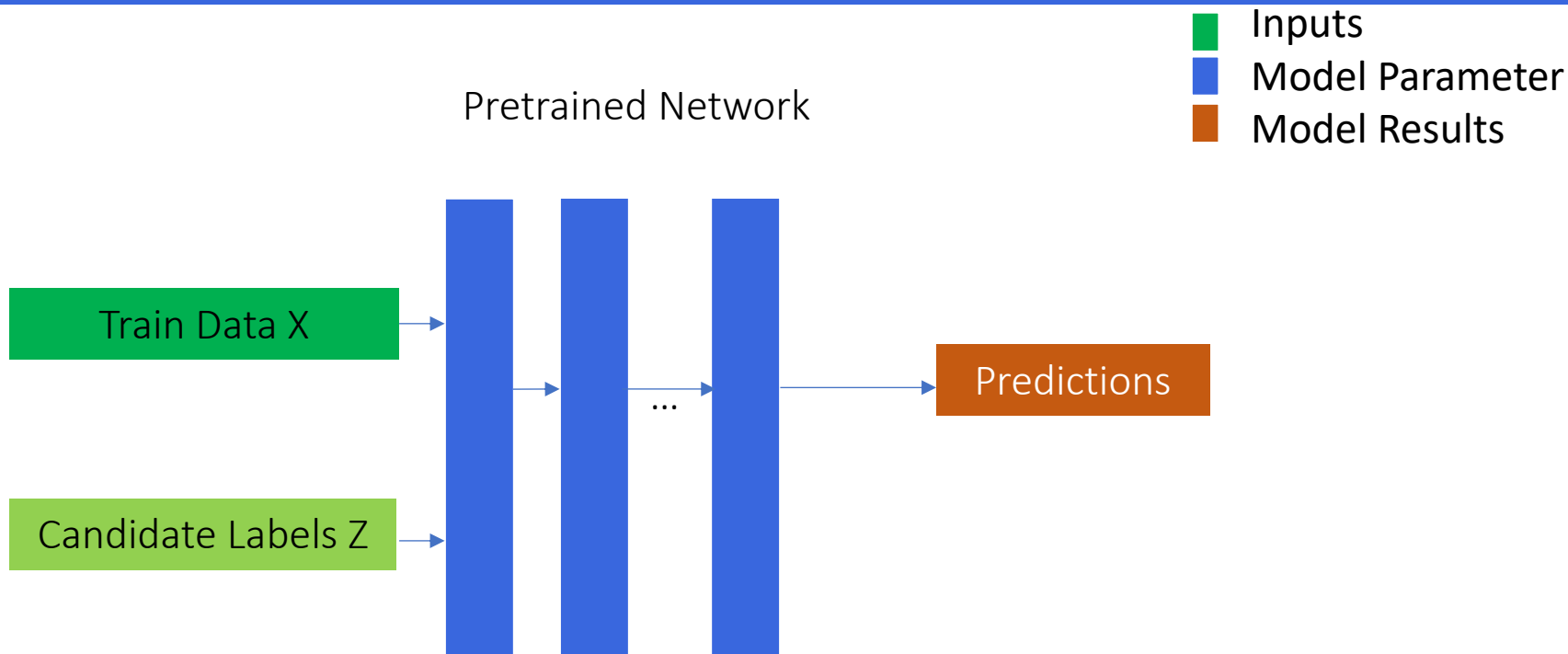
# Zero-Shot Classification

Typical Training Process



# Zero-Shot Classification

Zero-Shot Text Classification



# Zero-Shot Classification

## Zero-Shot Goal

### Goal

- apply model to task it was not trained on
- generalize trained model to new and unseen classes
- avoid retraining
- use of additional information like embeddings associated to the classes
- additional information used to make predictions for new classes by relating to known classes
- especially useful, if
  - large number of classes is available
  - classes change frequently

# Zero-Shot Classification

## Introduction

### Attribute-Based

- classes associated to attributes that describe its character, e.g. animals
- attributes possible like „has fur“, „can fly“, ...
- training: model learns to relate attributes to classes
- inference: able to predict unseen class by combining attributes

### Word Embeddings

### Transfer Learning

# Zero-Shot Classification

## Introduction

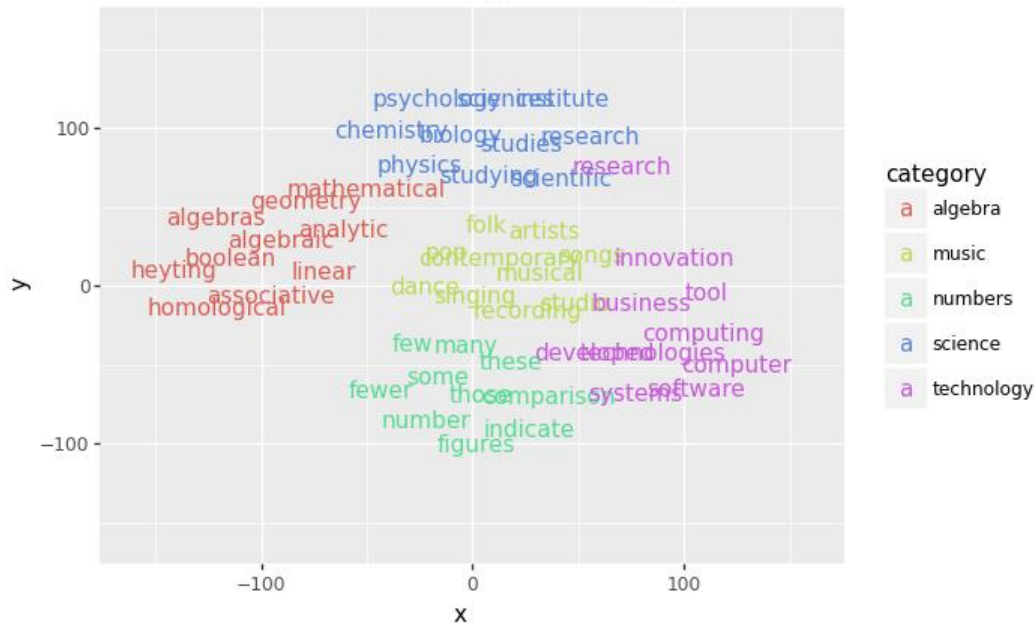
### Attribute-Based

- classes and instances represented in continuous vector space by word embeddings
- embeddings capture semantic relationships between words and concepts
- geometric relationships applied

### Word Embeddings

### Transfer Learning

GloVe Word Embeddings and Categories



# Zero-Shot Classification

## Introduction

Attribute-Based

Word Embeddings

Transfer Learning

- model trained on large dataset
- popular technique „Natural Language Inference“
  - hypothesis tested to be true, false, undetermined given a premise

# Zero-Shot Classification

Natural Language Inference

Premise	Candidate Class	Hypothesis	Prediction
“I watched a documentation and it was amazing.”	Movie	“The text is about a movie”	0.97
	Book	“The text is about a book”	0.02
	Play	“The text is about a play”	0.01



# Zero-Shot Classification

## Coding

huggingface.co/models?pipeline\_tag=zero-shot-classification

Hugging Face Search models, datasets, users...

Models Datasets Spaces Docs Solutions Pricing Log In Sign Up

Tasks Libraries Datasets Languages Licenses Other

Filter Tasks by name Reset Tasks

Multimodal

- Feature Extraction
- Text-to-Image
- Image-to-Text
- Text-to-Video
- Visual Question Answering
- Document Question Answering
- Graph Machine Learning

Computer Vision

- Depth Estimation
- Image Classification
- Object Detection
- Image Segmentation
- Image-to-Image
- Unconditional Image Generation
- Video Classification
- Zero-Shot Image Classification

Natural Language Processing

- Text Classification
- Token Classification
- Table Question Answering
- Question Answering
- Zero-Shot Classification**
- Translation
- Summarization
- Conversational
- Text Generation
- Text2Text Generation
- Fill-Mask
- Sentence Similarity

Models 176 Filter by name

new Full-text search Sort: Trending

- facebook/bart-large-mnli**  
Zero-Shot Classification • Updated Nov 16, 2022 • 2.72M • 644
- sileod/deberta-v3-base-tasksource-nli**  
Zero-Shot Classification • Updated 6 days ago • 10.1k • 66
- MoritzLaurer/DeBERTa-v3-large-mnli-fever-anli-ling...**  
Zero-Shot Classification • Updated Mar 20 • 49.9k • 51
- sileod/deberta-v3-large-tasksource-nli**  
Zero-Shot Classification • Updated 17 days ago • 3.3k • 16
- ClaudeYang/awesome\_fb\_model**  
Zero-Shot Classification • Updated Nov 15, 2021 • 9 • 1
- NbAilab/nb-bert-base-mnli**  
Zero-Shot Classification • Updated Mar 24 • 590 • 4
- cointegrated/rubert-base-cased-nli-threeway**  
Zero-Shot Classification • Updated Mar 20 • 327 • 15
- typeform/roberta-large-mnli**  
Zero-Shot Classification • Updated May 21, 2021 • 206 • 7
- olday/theme\_classification**
- MoritzLaurer/mDeBERTa-v3-base-xnli-multilingual-nli...**  
Zero-Shot Classification • Updated Mar 20 • 21k • 86
- MoritzLaurer/DeBERTa-v3-base-mnli-fever-anli**  
Zero-Shot Classification • Updated Mar 20 • 9.28M • 68
- MoritzLaurer/multilingual-MiniLMv2-L6-mnli-xnli**  
Zero-Shot Classification • Updated Mar 20 • 7.18k • 21
- mjwong/multilingual-e5-large-xnli**  
Zero-Shot Classification • Updated Jul 23 • 667 • 6
- MoritzLaurer/mDeBERTa-v3-base-mnli-xnli**  
Zero-Shot Classification • Updated Mar 22 • 65.9k • 151
- Sahajtomar/German\_Zeroshot**  
Zero-Shot Classification • Updated May 19, 2021 • 1.3k • 19
- joeddav/xlm-roberta-large-xnli**  
Zero-Shot Classification • Updated Mar 22 • 2.12M • 138
- vicgalle/xlm-roberta-large-xnli-anli**  
Zero-Shot Classification • Updated Mar 21 • 269k • 20
- Reblatx/llama-2-7b-hf-base-finetuned-...**