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Introduction to the Course 'Building and Training Neural Networks with PyTorch'

Welcome to the course **Building and Training Neural Networks with PyTorch.** The second part of the 3 course Specialization in PyTorch Ultimate 2024 - From Basics to Cutting-Edge

The course is structured into seven comprehensive modules:

1. **Classification Models:** In this module, we will delve into the realm of classification models, focusing on their types, evaluation metrics, and implementation. You will learn about key concepts such as the confusion matrix and ROC curve and engage in practical exercises to build and evaluate multi-class classification models.
2. **CNN: Image Classification:** In this module, we will explore the power of convolutional neural networks (CNNs) in image classification tasks. You will learn about the CNN architecture, preprocess images for optimal results, and gain hands-on experience in implementing binary and multi-class image classification models.
3. **CNN: Audio Classification:** In this module, we will focus on using convolutional neural networks for audio classification. You will get a comprehensive introduction to the topic, learn how to conduct exploratory data analysis on audio data, and engage in practical exercises to build and evaluate your own audio classification models.
4. **CNN: Object Detection:** In this module, we will dive into object detection using convolutional neural networks. You will learn about essential accuracy metrics, implement popular object detection algorithms like YOLO, and utilize GPU resources for training and inference to build robust object detection models.
5. **Style Transfer:** In this module, we will cover the fascinating topic of neural style transfer. You will understand the underlying principles, implement style transfer algorithms through coding, and explore various creative applications to transform images in unique ways.
6. **Pre-Trained Networks and Transfer Learning:** In this module, we will delve into pre-trained networks and transfer learning. You will learn how to leverage pre-trained models, implement transfer learning techniques through coding exercises, and understand the advantages of applying these concepts to various machine learning tasks.
7. **Recurrent Neural Networks:** In this module, we will introduce recurrent neural networks (RNNs) and their applications. You will explore the basics of RNNs, implement Long Short-Term Memory (LSTM) networks through practical coding exercises, and engage in tasks designed to deepen your understanding of these powerful models.

Target Learner: This course is designed for technical professionals, including data scientists, machine learning engineers, and AI enthusiasts. A basic understanding of Python programming and fundamental machine learning concepts is recommended to fully benefit from this course.

Learning Objectives:

1. Build and train various classification models using PyTorch.
2. Implement and train Convolutional Neural Networks (CNNs) for image and audio classification.
3. Understand and apply style transfer techniques in neural networks.
4. Utilize pre-trained networks and implement transfer learning techniques.
5. Develop and train Recurrent Neural Networks (RNNs) and Long Short-Term Memory (LSTM) networks.
6. Gain experience in optimizing and fine-tuning neural network models.

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