Deep Learning progress

Chapter 0: PyTorch Fundamentals [01:17](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=77s)

~~0. Welcome and "what is deep learning?"~~ [~~07:13~~](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=433s)

~~1. Why use machine/deep learning?~~ [~~10:47~~](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=647s)

~~2. The number one rule of ML~~ [~~16:27~~](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=987s)

~~3. Machine learning vs deep learning~~ [~~22:34~~](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=1354s)

~~4. Anatomy of neural networks~~ [~~31:56~~](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=1916s)

~~5. Different learning paradigms~~ [~~36:28~~](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=2188s)

~~6. What can deep learning be used for?~~ [~~42:50~~](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=2570s)

~~7. What is/why PyTorch?~~ [~~53:05~~](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=3185s)

~~8. What are tensors?~~ [~~57:24~~](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=3444s)

~~9. Outline~~ [~~1:03:28~~](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=3808s)

~~10. How to (and how not to) approach this course~~ [~~1:08:37~~](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=4117s)

~~11. Important resources~~ [~~1:14:00~~](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=4440s)

~~12. Getting setup~~ [~~1:21:40~~](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=4900s)

~~13. Introduction to tensors~~ [~~1:35:07~~](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=5707s)

~~14. Creating tensors~~ [~~1:53:33~~](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=6813s)

~~17. Tensor datatypes~~ [~~2:02:58~~](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=7378s)

~~18. Tensor attributes (information about tensors)~~ [~~2:11:22~~](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=7882s)

~~19. Manipulating tensors~~ [~~2:17:22~~](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=8242s)

~~20. Matrix multiplication~~ [~~2:47:50~~](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=10070s)

~~23. Finding the min, max, mean and sum~~ [~~2:57:20~~](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=10640s)

25. Reshaping, viewing and stacking [3:11:03](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=11463s)

26. Squeezing, unsqueezing and permuting [3:23:00](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=12180s)

27. Selecting data (indexing) [3:32:33](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=12753s)

28. PyTorch and NumPy [3:41:42](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=13302s)

29. Reproducibility [3:52:30](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=13950s)

30. Accessing a GPU [4:04:21](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=14661s)

31. Setting up device agnostic code

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Training a model with PyTorch (intuition building) [5:49:03](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=20943s) 44. Setting up a loss function and optimizer [6:01:56](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=21716s) 45. PyTorch training loop intuition [6:39:37](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=23977s) 48. Running our training loop epoch by epoch [6:49:03](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=24543s) 49. Writing testing loop code [7:15:25](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=26125s) 51. Saving/loading a model [7:44:00](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=27840s) 54. Putting everything together 🤨 Chapter 2: Neural Network Classification [8:31:32](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=30692s) 60. Introduction to machine learning classification [8:41:14](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=31274s) 61. Classification input and outputs [8:50:22](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=31822s) 62. Architecture of a classification neural network [9:09:13](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=32953s) 64. Turing our data into tensors [9:25:30](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=33930s) 66. Coding a neural network for classification data [9:43:27](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=35007s) 68. Using torch.nn.Sequential [9:56:45](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=35805s) 69. Loss, optimizer and evaluation functions for classification [10:11:37](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=36697s) 70. From model logits to prediction probabilities to prediction labels [10:27:45](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=37665s) 71. Train and test loops [10:57:27](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=39447s) 73. Discussing options to improve a model [11:27:24](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=41244s) 76. Creating a straight line dataset [11:45:34](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=42334s) 78. Evaluating our model's predictions [11:50:58](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=42658s) 79. The missing piece: non-linearity [12:42:04](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=45724s) 84. Putting it all together with a multiclass problem [13:23:41](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=48221s) 88. Troubleshooting a mutli-class model 😎 Chapter 3: Computer Vision [14:00:20](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=50420s) 92. Introduction to computer vision [14:12:08](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=51128s) 93. Computer vision input and outputs [14:22:18](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=51738s) 94. What is a convolutional neural network? [14:27:21](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=52041s) 95. TorchVision [14:36:42](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=52602s) 96. Getting a computer vision dataset [15:01:06](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=54066s) 98. Mini-batches [15:08:24](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=54504s) 99. Creating DataLoaders [15:51:33](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=57093s) 103. Training and testing loops for batched data [16:25:59](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=59159s) 105. Running experiments on the GPU [16:29:46](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=59386s) 106. Creating a model with non-linear functions [16:41:55](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=60115s) 108. Creating a train/test loop [17:13:04](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=61984s) 112. Convolutional neural networks (overview) [17:21:29](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=62489s) 113. Coding a CNN [17:41:18](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=63678s) 114. Breaking down nn.Conv2d/nn.MaxPool2d [18:28:34](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=66514s) 118. Training our first CNN [18:43:54](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=67434s) 120. Making predictions on random test samples [18:55:33](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=68133s) 121. Plotting our best model predictions [19:19:06](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=69546s) 123. Evaluating model predictions with a confusion matrix 🗃 Chapter 4: Custom Datasets [19:43:37](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=71017s) 126. Introduction to custom datasets [19:59:26](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=71966s) 128. Downloading a custom dataset of pizza, steak and sushi images [20:13:31](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=72811s) 129. Becoming one with the data [20:38:43](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=74323s) 132. Turning images into tensors [21:15:48](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=76548s) 136. Creating image DataLoaders [21:24:52](https://www.youtube.com/watch?v=Z_ikDlimN6A&t=77092s) 137. 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