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Question 1. What are the main messages you learned from this chapter?

- CNN is a kind of neural network that processes data with a grid-like layout, such as time series or images. Convolution and pooling layers are designed to take advantage of local characteristics, namely compositionality and translational invariance.
- Several CNN architectures have been created to enhance the performance metric for time series data and image classification.

Question 2. Which part do you want to improve in this chapter?

I do not have any any comment regarding the chapter.

Question 3. Any additional topics do you suggest adding?

Although time series data were mentioned at the beginning of the chapter, there was no example of how CNN was used to handle them. Time series has a time-dependent axis instead of locally-related pixels such as images. How would CNN overcome the time-dependent axis?

Question 4. If you are given a dataset of 100 X-ray images, would you still use CNN models? If so, which architecture would you try? And why?

Given that CNN can manage data with a grid-like structure, I would still use CNN models. Additionally, I would still need to ask for help from a domain expert to classify the X-ray images based on the purpose of the research. However, since the data size is too small, I would try to reduce the dimension of the images by combining the nearby pixels into local features. I would then feed the data into a simple CNN architecture such as LeNet and use its performance as a benchmark. Then, since there are fewer parameters in these models than in other architecture, I would attempt GoogleNet Inception Net or ResNet (5-25 million parameters).

Question 5. What about you are given 1000 images, which CNN models would you try?

Although I presume there is not much of a difference, I'm not sure how much more expensive and time-consuming annotating 1000 images would be compared to 100 images. In addition to trying other architectures like AlexNet and VGG, which have 60 million parameters each and 138 million parameters respectively, I would still follow the same process as in the previous question.