

Deep Learning 2019

Exam May 27th, 2019

Good answer shouldn't be shorter than one page or longer than two pages.

1. **What is the *knowledge representation (KR) challenge*? Why is solving the challenge important? Why is it a challenge? How has deep learning tackled the challenge?**
2. **Explain (in sufficient detail) the basic deep learning workflow.**
3. **Explain the following concepts:**
 - a. Loss function
 - b. Gradient
 - c. Gradient descent
 - d. Learning rate
 - e. Saddle point
 - f. Expected loss
4. **Explain the basics of convolutional neural networks (CNNs). Below is a checklist of some topics related to CNNs, but feel free to tell about other things as well.**
 - Convolution (1D, 2D)
 - Sparse interactions
 - Parameter sharing
 - Equivariant representations
 - Typical CNN layers and layer combinations