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FACHBEREICH MATHEMATIK
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Hints for Problem Sheet 5

Task 1

- Familiarize yourself with the concept of convolutional autoencoders vs (standard) autoencoders. Think about using a convoutional autoencoder?
- Think about attaching a softmax layer at the end of the encoder (as a minimal solution).
- Improve your minimal solution.
- View Task 1 as a semi-supervised learning approach. Did you employ the data set correctly in view of simulating a semi-supervised approach?

Task 2

- Start to generate noisy images by adding Gaussian noise to your training images.
- Apply the autoencoder to the noisy images and compare with the non-noisy groundtruth using, e.g., euclidean distance.

Optional Task

- For joint denoising and deblurring proceed as in Task 2, but also convolve the images with a convolution kernel modeling the blur/point spread function.
- For inpainting, modify the images by randomly destroying image parts, e.g. small random rectangles.