

# problems5

November 29, 2018

## 1 Problem sheet 5

### 1.1 1

First, find a filter for detecting vertical edges. Then, find a filter detecting both horizontal and vertical edges.

### 1.2 2

Analyze the weather data via one-dimensional convolutions.

### 1.3 3

Experiment with strided convolutions instead of max-pooling. What could be an advantage?

### 1.4 4

Under (<https://www.>) you find 25,000 resnet-features together with labels for the cats vs. dogs competition. Proceeding similarly to the lecture, fit an MLP to the extracted features. Also consider a split into training and validation data.

### 1.5 5

Add validation error to fine-tuning. Experiment with different architectures; try adding dropout add batch-normalization. Check if further data-augmentation can reduce the error.