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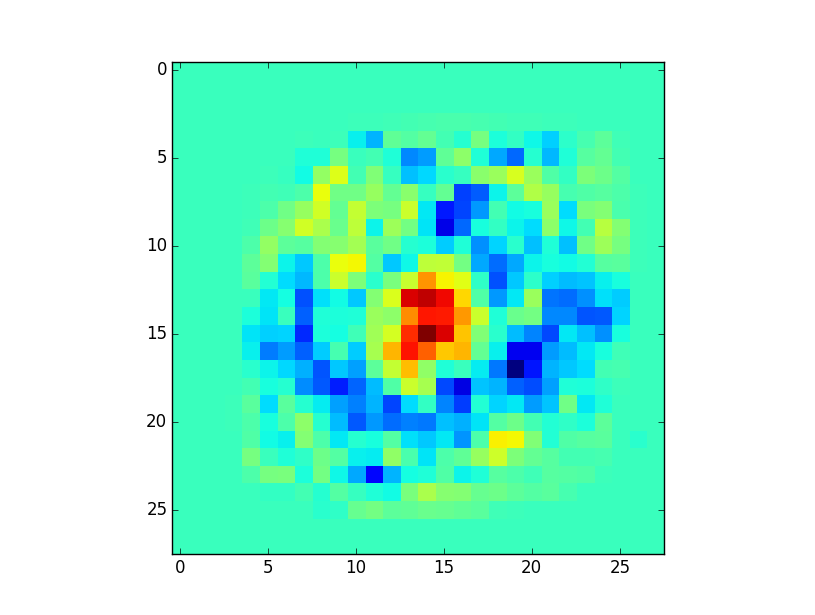
**Introduction To Machine Learning – EX 2**

1. **A:**Directory: " /specific/a/home/cc/students/csguests/roeiherzig/ML/EX2"See function "part\_a" in file "q1.py"

**TBD** as well as the 5% and 95% percentiles of the accuracies obtained. **B:**

Directory: " /specific/a/home/cc/students/csguests/roeiherzig/ML/EX2"See function "part\_b" in file "q1.py"

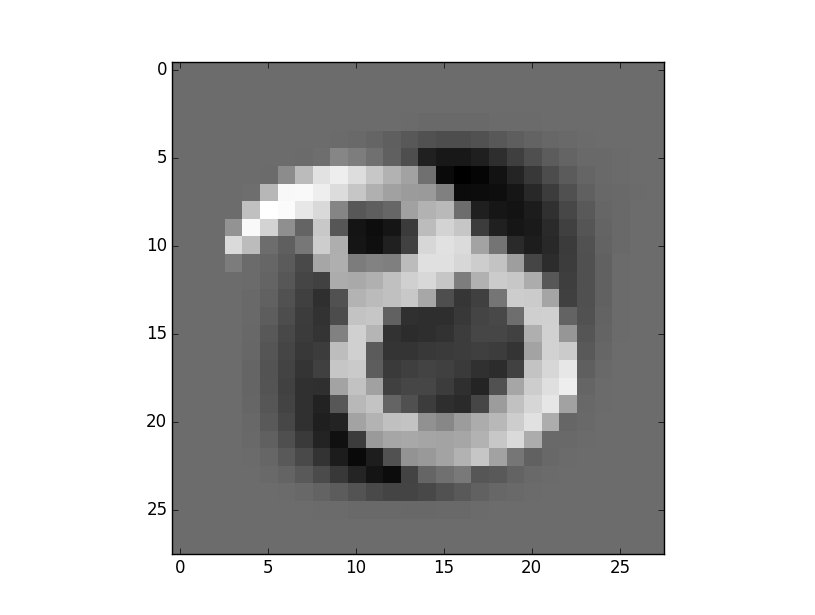
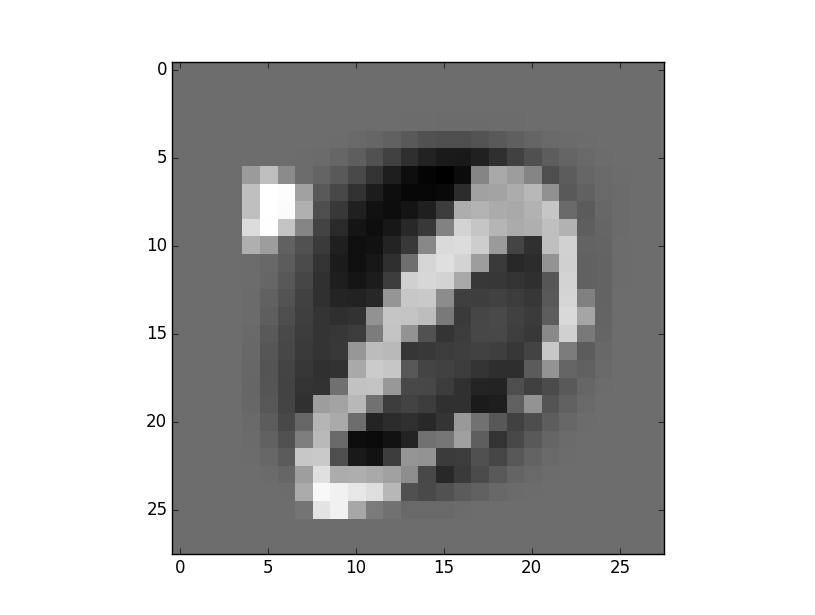
Name of the image: “part\_1b.png”



TBD - intuition

**C:**Directory: " /specific/a/home/cc/students/csguests/roeiherzig/ML/EX2"See function "part\_c" in file "q1.py"  
Mean accuracy of the full train samples: 99.13%

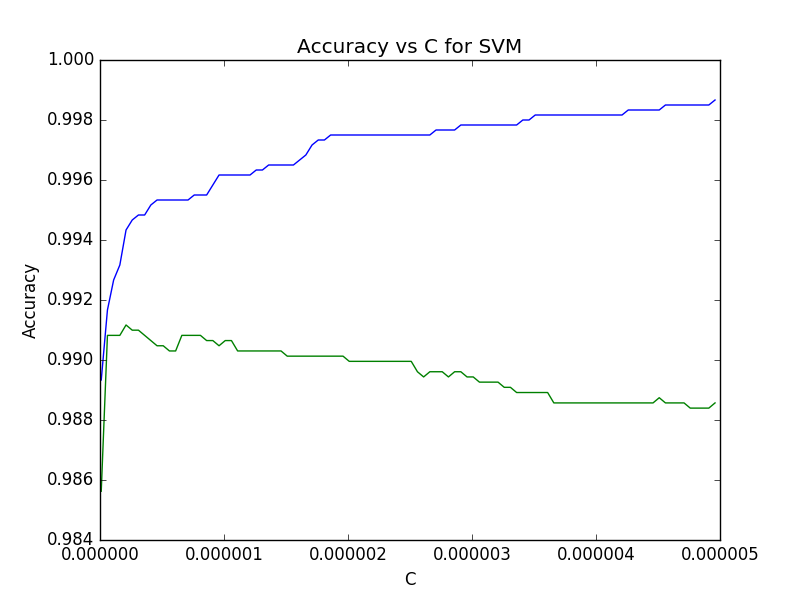
**D:**Directory: " /specific/a/home/cc/students/csguests/roeiherzig/ML/EX2"See function "part\_d" in file "q1.py"Image file: "part\_1d\_rotat0.png" and “part\_1d\_rotat8.png”



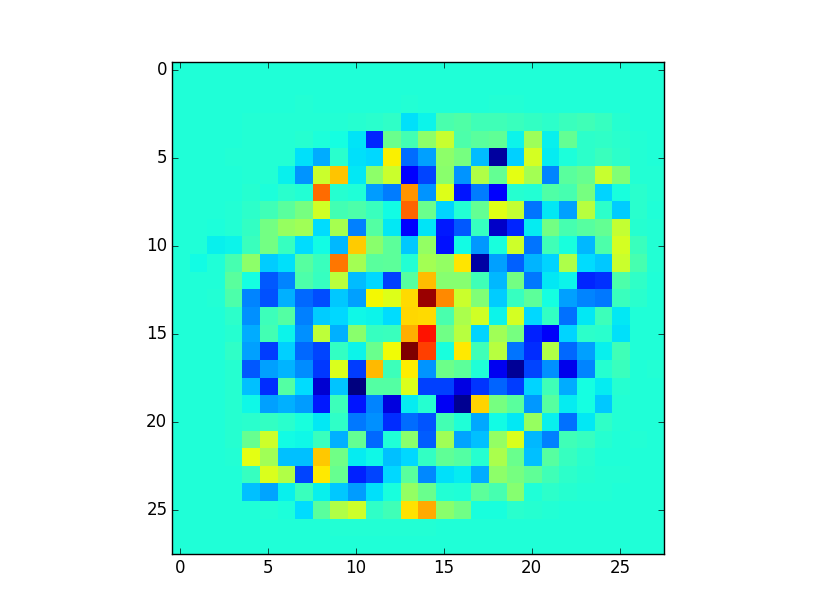
In both cases, we can see images are miss-classified because the images are distorted. We can see that our classifier is not invariant to some affine transformation such as scale, translation and rotation.

**2.**

**A:**Directory: " /specific/a/home/cc/students/csguests/roeiherzig/ML/EX2"Function main in file "q2.py"

The image file name: "q2\_part\_a.png"  
**B:**  
When c is large, we try to fit as close as possible to the training data with a risk overfitting,  
We can see the overfitting in the graph, for large c the training accuracy getting smaller while the validation accuracy getting larger.   
When c is small, there is no penalty for misclassification, so we might underfittiing, and will get small accuracy in both validation.

**C:**Directory: " /specific/a/home/cc/students/csguests/roeiherzig/ML/EX2"Function main in file "q2.py" (done in parta a)

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**D:**

Directory: " /specific/a/home/cc/students/csguests/roeiherzig/ML/EX2"Function main in file "q2.py"

(also done in part a)

The best c is 2.09999996059e-07 for error: 0.991167301697