

Assignment 3

Exercise 1a. *Run the Pocket algorithm, starting from $w = 0$.*

Proof. Running the Pocket algorithm for $w = 0$, returns and $E_{out} = 0.012069674941708956$ after 2547 iterations. This number makes sense, given that the Pocket Algorithm will attempt to get the best possible result by trying multiple possibilities, ergo this results in longer computation times.

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Exercise 1b. *Linear Regression (applied as a classification method).*

Proof. Linear Regression Weight = $[0.54592846, -0.96745805, 0.30085587]$ using these weights in the Pocket Algorithm will return $E_{out} = 0.01522424907420107$

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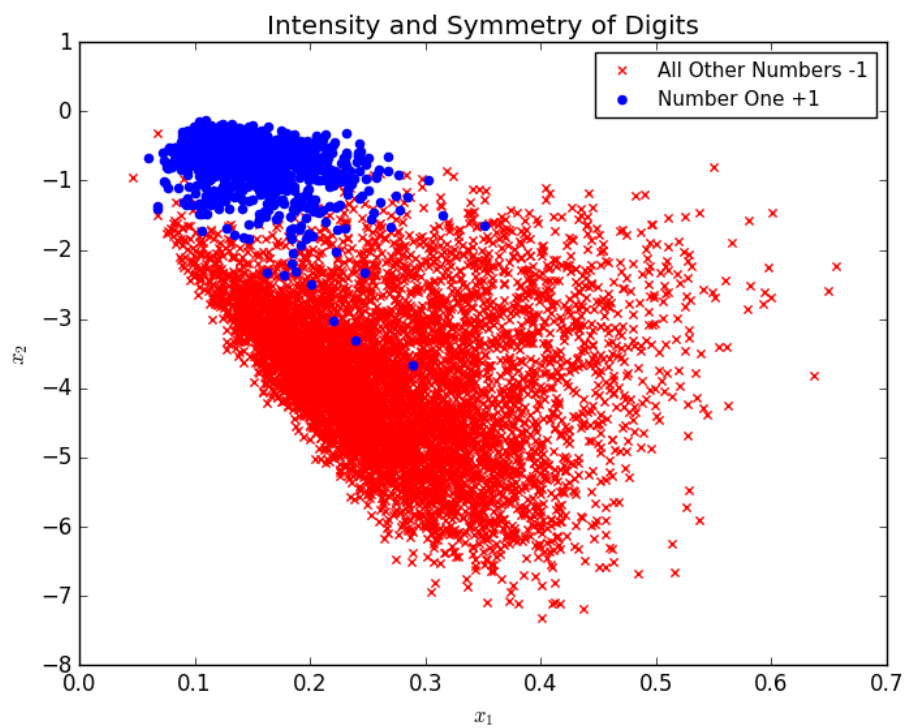
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Exercise 1c. *The Pocket Algorithm, starting from the solution given by linear regression.*

Proof. Using the linear regression results as a starting point for the Pocket Algorithms the result of which equaled $E_{out} = 0.01220683033977383$. The usage of the two algorithms together shows us that by using linear regression we can significantly decrease the necessary running time for the Pocket Algorithm (*i.e.* 521 iterations out of a total 1521).

□

1a.



1b.

