I have recently written paper MTQA. Now, I am writing two paged short paper which is multi-class SVM using MTQA.

What I do is, I have classified few benchmark datasets using OneVsRest strategy classifiers. Sequantial QA solves OneVsRest strategy classifiers one by one, total C(total number of class) number of run for the classifiers. But I am embedding them in parallel, then run QA and solves them in one cycle. First, I embedded OvR strategy classifiers on hardware on parallel. Then we used the embedding for QA (run one by one) then run MTQA solves them in one cycle of annealing.   
  
Quantum annealing parameter settings: number of reads 4000, annealing time 20microseconds, employed UTC chain strength method from ocean SDK with 1.414 of prefactor, we set auto scale to False, then we scaled each embedded qubos to the hardware limitations, other parameters are remains to default.

To evaluate our method, we classified simulated annealing (SA), and classical SMO solver with the same svm parameters:  
B to 2, K to 2, Xi to 1, gamma to 0.01, C to 1, kernel to rbf.

here is the result

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Dataset | Class number | Train size | Test size | SMO | | SA | | QA | | MTQA | |
| Train accuracy | Test accuracy | Train accuracy | Test accuracy | Train accuracy | Test accuracy | Train accuracy | Test accuracy |
| Blob | 3 | 30 | 60 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Blob | 4 | 20 | 60 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Iris (petal) | 3 | 30 | 120 | 100 | 100 | 100 | 98 | 98 | 98 | 98 | 98 |
| Iris (sepal) | 3 | 30 | 120 | 98 | 98 | 98 | 96 | 96 | 96 | 96 | 96 |
| Digit 0, 1,2 | 3 | 20 | 140 |  |  |  |  |  |  |  |  |
| Digit 3,4,5 | 3 | 20 | 140 |  |  |  |  |  |  |  |  |
| Digit 6,7,8,9 | 4 | 10 | 40 | 92 | 86 | 92 | 86 | 88 | 84 | 88 | 84 |