CES 417T - HW5

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2018 - 11 - 21

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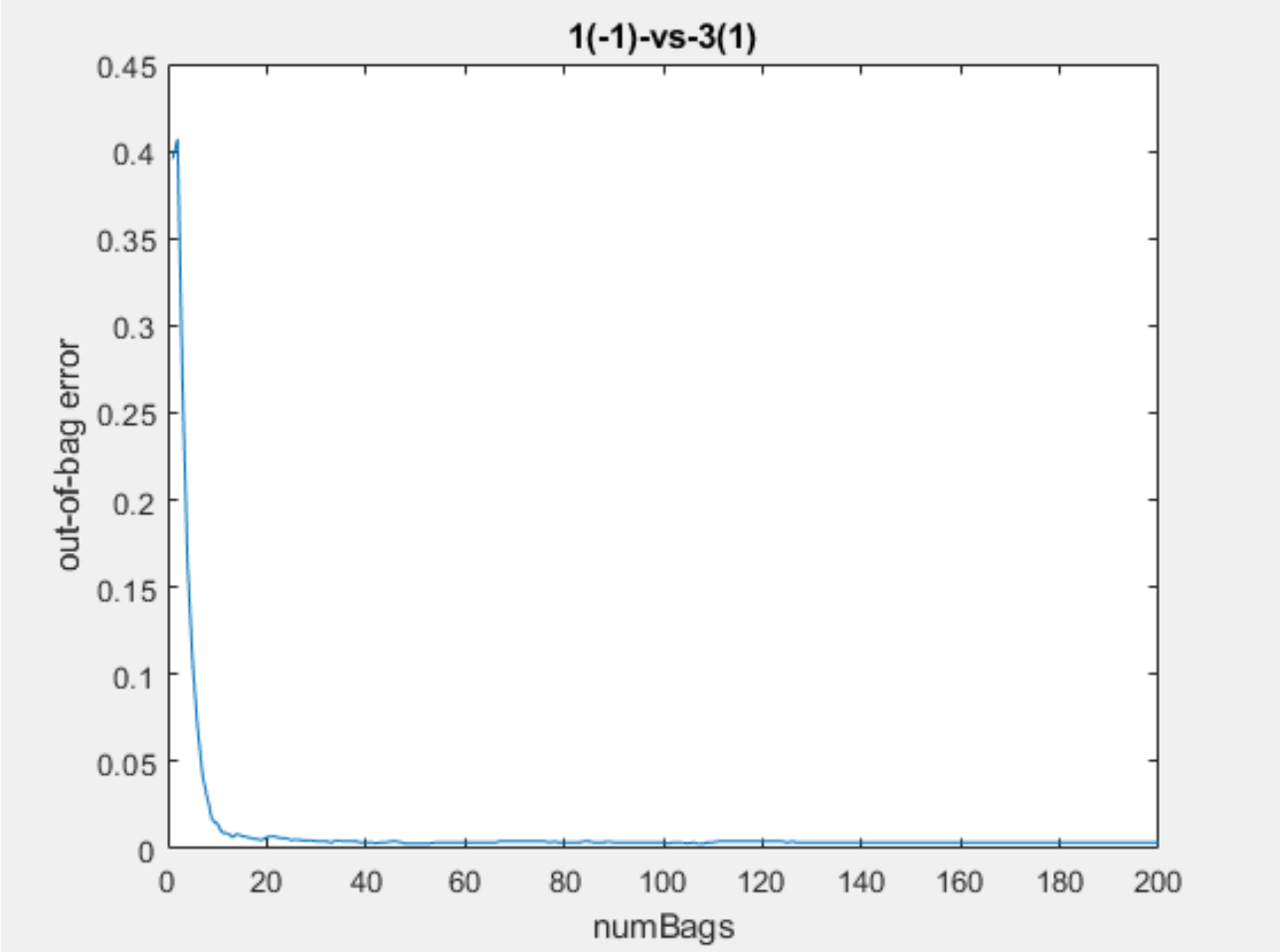
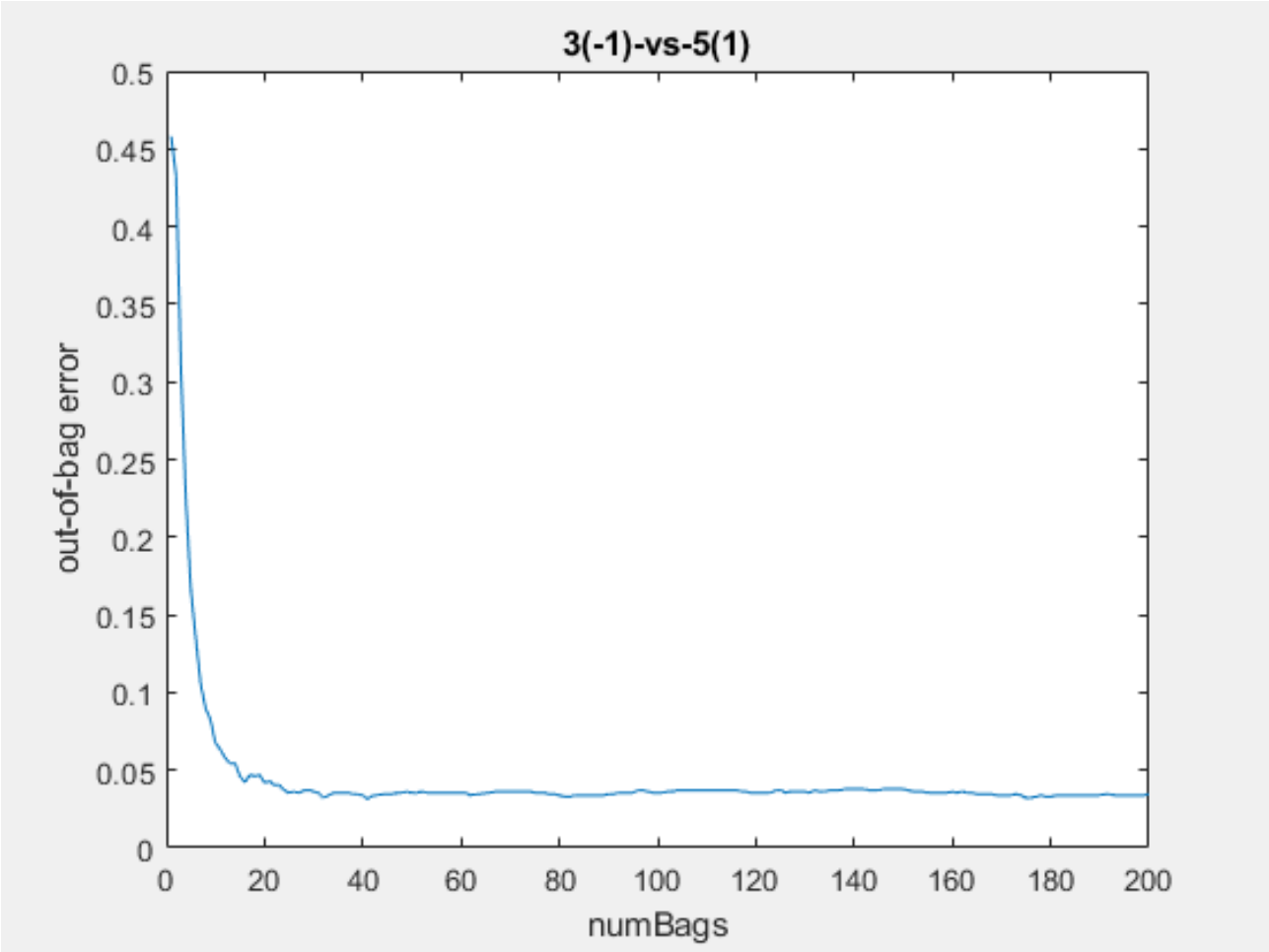
(b) The following two plots is my result of running `OneThreeFive` script.





And here is the console out put.

```
>> OneThreeFive
Working on the one-vs-three problem...

The cross-validation error of decision trees is 0.0114
The OOB error of 200 bagged decision trees is 0.0036

Now working on the three-vs-five problem...

The cross-validation error of decision trees is 0.0651
The OOB error of 200 bagged decision trees is 0.0346
>>
```

(c) After modified the `OneThreeFive` and `BaggedTrees`. The console output bellow.

```
>> TestOneThreeFive
Working on the one-vs-three problem...

The test error of decision trees is 0.0163
The test error of 200 bagged decision trees is 0.0116
Working on the three-vs-five problem...

The test error of decision trees is 0.1196
The test error of 200 bagged decision trees is 0.0982
>>
```

(d) From the result I get. I knew that when $numBags$ increasing, the E_{oob} decreasing significantly. And when $numBags$ close to zero, E_{oob} is close to 0.4 which means every single tree is a pretty weak prediction. But conbined them together they achieved even more accuracy than built-in function.

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