Mid Project Report

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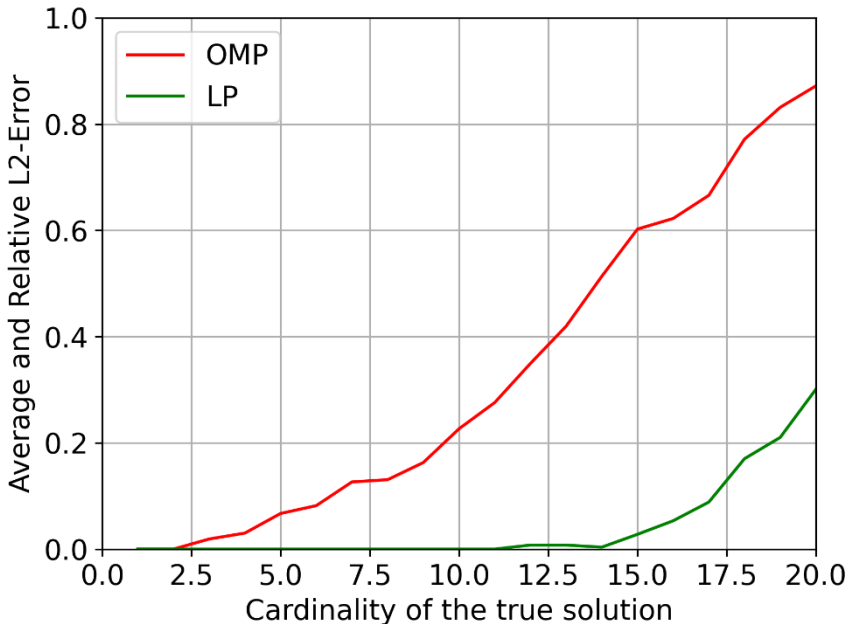
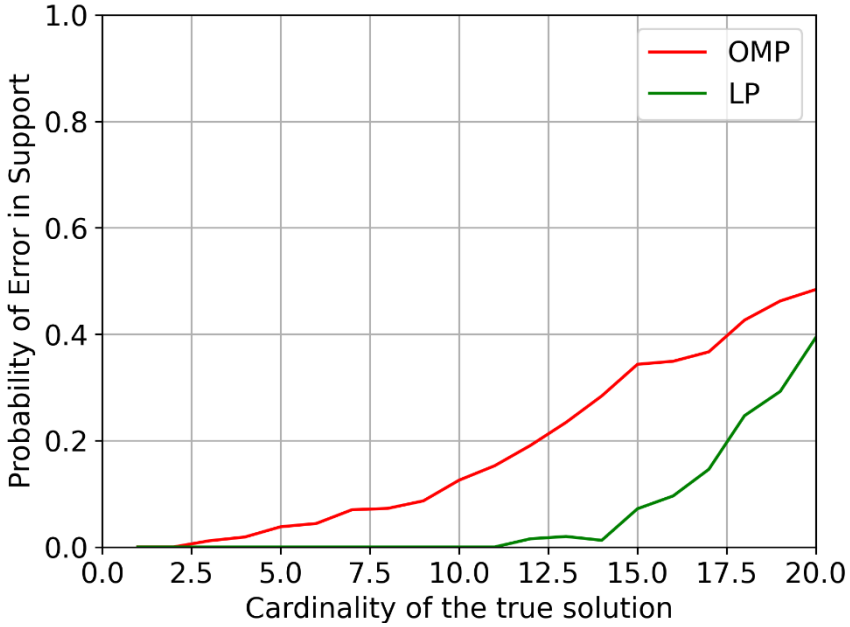
Part C – Analyzing the results:





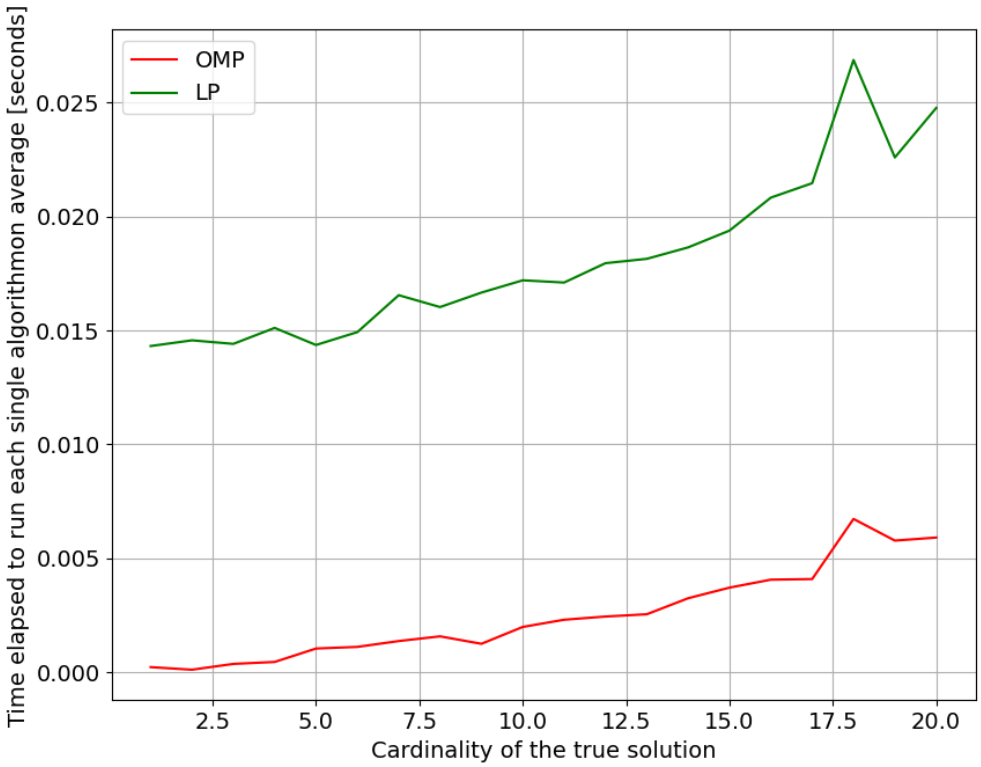
Discuss the results below:

We have on purpose run the experiment on maximal cardinality reaching 20 to emphasize the conclusions that we draw.

We can observe that:

- Up until cardinality of 2 both algorithms have similar performance, but for any cardinality above that the OMP algorithm demonstrates inferior performance, not being able to recover the true support vector, thus leading to the increase in the L2-Error.
- The LP algorithm performs quiet well up until the cardinality of 12-13. Beyond that, the Probability of Error starts growing, which leads to the growth in the L2-Error.

To make a more reasonable comparison we have also averaged the time required to run each of the algorithms, and those are the results:



As we can see, indeed solving LP problem required much greater computational costs, relative to the simpler and less precise OMP method. This may be the trade-off when designing the Sparse signal representation recovery system.