Rate-Agnostic (Causal) Structure Learning

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Carnegie Mellon University, The Mind Research Network

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Abstract

Causal structure learning from time series data is a major scientific challenge. Existing algorithms assume that measurements occur sufficiently quickly; more precisely, they assume that the system and measurement timescales are approximately equal. In many scientific domains, however, measurements occur at a significantly slower rate than the underlying system changes. Moreover, the size of the mismatch between timescales is often unknown. We present three distinct causal structure learning algorithms, all of which discover all dynamic graphs that could explain the observed measurement data as arising from undersampling at some rate. That is, these algorithms all learn causal structure without assuming any particular relation between the measurement and system timescales; they are thus rate-agnostic. We apply these algorithms to data from simulations. The results provide insight into the challenge of undersampling.

Representation

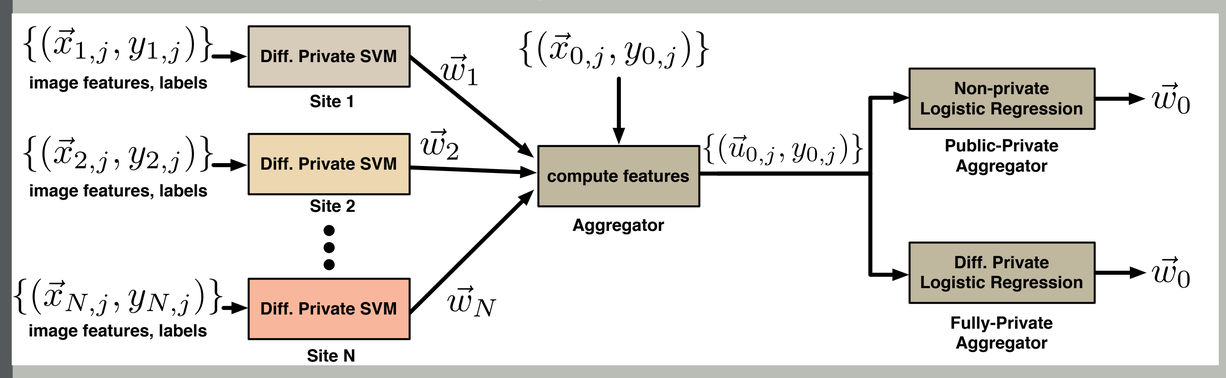
- Describe the problem
-
-

Algorithms

- Recursive
- Iterative edgecentric
- Iterative loopcentric
- Would it be easier just to place the pseudocode for each algorithm here?

Results

Talk about results and include pictures:



Conclusions

Conclude stuff here

References

[] Authors Title In *Journal*, year.